FINAL UTILITY REPORT: The Brickyard

Address:
401 Prairie Hawk Dr.
Castle Rock, CO 80109

Prepared:
June 12, 2024
Rev. July 10, 2025

Owner/Developer:
CD-ACME LLC, (Confluence Companies)
430 Indiana St, Ste. 200
Golden, CO 80401
303-643-5775

Prepared by:
John O'Rourke, PE
Harris Kocher Smith
303.623.6300

Harris Kocher Smith Project No. 200726
Town of Castle Rock Project No. SDP24-0022/CD24-0030



Harris Kocher Smith
1120 Lincoln Street, Ste. 1000
Denver, CO 80203
P: 303.623.6300
F: 303.623.6311

www.HarrisKocherSmith.com

Table of Contents

UTILITY REPORT APPROVAL BLOCKS iv

I. INTRODUCTION 1

A. Site Location 1

B. Description of Property and Land Use 1

II. WATER INFRASTRUCTURE 2

A. Calculated Water Demands 2

Average Day Demands (ADD) 2

Max Day Demands (MDD) 3

Peak Hour Demands (PHD) 3

Irrigation Demands 3

B. Existing Water System 3

Existing Supply Facilities 3

Existing Water Distribution System 4

Future Water Distribution System 4

C. Proposed Water System 4

Proposed Distribution System 4

Proposed Supply Facility 4

Required Fire Flows 4

Land Dedication Requirements 5

D. Proposed Water System Analysis & Modeling 6

Hydraulic Models 6

Hydraulic Modeling Scenarios 6

Hydraulic Modeling Output and Required Schematics 6

Fire Flow Test Results 6

III. WASTEWATER INFRASTRUCTURE 7

A. CALCULATED WASTEWATER FLOWS 7

Average Day Wastewater Flows 7

Peaking Factor 7

Peak Design Flows 8

B. EXISTING COLLECTION SYSTEM 8

Existing Collection System 8

C. PROPOSED WASTEWATER SYSTEM 9

Proposed Collection System 9
Proposed Wastewater Facilities 10
Land Dedication Requirements 10
IV. Potential Subdivision Improvement Agreement (SIA Items) 10
V. Potential Permitting Requirements..... 10
VI. LIST OF REFERENCES 11
APPENDIX A – WATER DEMANDS
APPENDIX B – WATER STORAGE
APPENDIX C – WATER HYDRAULIC ANALYSYS AND MODELING
APPENDIX D – WASTEWATER FLOWS
APPENDIX E – WASTER WATER HYDRAULIC MODELING
APPENDIX F – MAPS AND PLANS
APPENDIX G – REFERENCE MATERIALS
APPENDIX H – FINAL UTILITY REPORT CHECKLIST

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: _____

John D. O'Rourke, P.E.
Senior Vice President
State Of Colorado No.43327

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.

_____

CD-ACME LLC, (Confluence Companies)

I. INTRODUCTION

A. Site Location

Parcel 1: Lot 1, Citadel Station, Filing No. 2, county of Douglas, state of Colorado.

Parcel 2: Lot 1, Block 10, Citadel Station, Filing No. 6, county of Douglas, state of Colorado.

Parcel 3: A tract of land situated in sections 10 and 11, township 8 south, range 67 west of the 6th principal meridian, county of Douglas, state of Colorado, more particularly

Described as follows:

Beginning at the east quarter corner of said section 10; thence west along the south line of the northeast quarter of said section 10 a distance of 329.60 feet; thence north at right angles a distance of 704.21 feet; thence on an angle to the right of 88 degrees 03 minutes 33 seconds a distance of 597.47 feet to a point on the west line of the vacated Santa Fa addition; thence southerly on an angle to the right of 90 degrees 00 minutes 00 seconds along said west line a distance of 726.00 feet to the south line of the northeast quarter of said section 11; thence westerly along said south line to the point of beginning, county of Douglas, state of Colorado.

Parcel 4: Lot 1, Block 7, Citadel Station, Filing No. 6, county of Douglas, state of Colorado.

A Vicinity Map is included in Appendix F.

B. Description of Property and Land Use

The 31.10-acre Brickyard development ("Site") will consist of a hotel, apartments, recreation center, retail, office buildings, a water quality/detention pond, landscaped areas, and paved surfaces. See Appendix F for the Planned Development Plan – Overall Utility Plan.

The property is currently zoned as an IO, Interchange Overlay District and I-2, General Industrial in support of a Mixed-Use Development. The property is being rezoned to Interchange Overlay Planned Development Plan. The project will consist of 69,493 square feet of office, retail and commercial space, 22,119 square feet of restaurant space, a 123-room hotel, a 145,000 square foot recreation center, and 528 dwelling units of residential space. As each phase within the development moves towards final plan approval, a conformance letter will be submitted confirming compliance with this utility report and not adversely impacting surrounding infrastructure. There is vacant and undeveloped land to the south and west of the property. However, a water main will be installed to the west in the Praxis Street extension as part of this development and the future Miller's Landing development. From the assumed uses for the project, it is expected that 749 water Single Family Equivalents (SFEs) and 772 wastewater SFEs will be produced. The project will be phased, and phasing will be addressed in the future final utility report. All easements and tracts necessary for utilities will be provided at time of final construction documents, in accordance with Town standards. See Appendix A and D for the tabulation of the number of SFEs proposed for the overall development.

II. WATER INFRASTRUCTURE

A. Calculated Water Demands

The calculations for the Average Day Demands, Max Day Demands and Peak Hour Demands are shown below in Table 1:

Table 1:

BUILDING TYPE	AMOUNT (UNITS or SF)	Typical SFEs	AVG DAILY DEMAND (GPD)	AVG DAILY DEMAND (GPM)	MAX DAILY DEMAND (GPM)	PEAK HOUR DEMAND (GPM)
1 (Office/Restaurant)	37,900(O); 11,200(R)	102.95	41,180.00	28.60	71.49	157.28
2 (Hotel)	123	23.37	9,225.00	6.41	16.02	35.23
3 (Parking Garage)	81,500	0.00	0.00	0.00	0.00	0.00
4 (Multi-Fam Resi)	66	42.90	17,160.00	11.92	29.79	65.54
5 (MFR/Office/Resta)	298(MFR); 30,000(O); 11,200(R)	292.70	117,080.00	81.31	203.26	447.18
6 (Multi-Fam Resi)	20	13.00	5,200.00	3.61	9.03	19.86
7 (Gym/Fitness)	67600	84.50	33,800.00	23.47	58.68	129.10
8 (Retail)	15000	7.50	3,000.00	2.08	5.21	11.46
9 (Gym/Fitness)	145,593	181.99	72,796.50	50.55	126.38	278.04
Demand Totals		748.91	299,441.50	207.95	519.86	1,143.70

*Note: Due to Building 13 only have a sprinkler system and no other water demand, we will be ignoring it for our day demand calculations.

Average Day Demands (ADD)

The Average Day Demand (ADD) is calculated based on the usage. Equations are shown below:

Multi-Family Residential and Townhomes Average Day Demand (Section 4.4.1):

$ADD_{res\ (Multi\text{-}Family)}$ = (528 DU) x (260 gpd)

Retail/Office Average Day Demand (Section 4.4.1):

ADD_{retail} = (69,493 SF) x (0.2 gpd/SF)

Hotels/Motels Average Day Demand (Section 4.4.1):

ADD_{hotel} = (123 rooms) x (75 gpd/room)

Restaurants Average Day Demand (Section 4.4.1):

$ADD_{restaurant}$ = (22,119 SF) x (3.0 gpd/SF)

Gym/Fitness Center Average Day Demand (Section 4.4.1):

ADD_{gym} = (145,000 SF) x (0.5 gpd/SF)

The calculations above are found in section 4.4.1 of the Town of Castle Rock Water System Design 2018 Criteria Manual ("Standards"). ADD values from all area scenarios range from 1 to 81 gpm. Refer to Appendix A below for the calculated water demands.

Max Day Demands (MDD)

The Max Day Demand (MDD) calculations are computed using the equation shown below:

MDD = (ADD) x (2.5)

The calculations above are found in section 4.4.1 of the Standards. MDD values from all area scenarios range from 3 to 203 gpm. Refer to Appendix A below for the calculated water demands.

Peak Hour Demands (PHD)

The Peak Hour Demand (PHD) calculations for all average day demands are computed using the factor shown below:

PHD = (ADD) x (5.5)

The calculations above are found in section 4.4.1 of the Standards. MDD values from all area scenarios range from 6 to 447 gpm. Refer to Appendix A below for the calculated water demands.

Irrigation Demands

The Average Day Demand is calculated based on the usage. Equations are shown below:

Irrigated Average Day Demand (IADD) (Section 4.4.1):

IADD = (Acreage) x (3750 gpd/Acre)

The calculated irrigation demand for the Site is 23,400 gpd or 16.25 gpm based on the Standards for 6.24 acres. It is assumed that this demand is spread out across the Site and occurs during off hours when other demands are low. This includes the 1-inch Tap #1 (Castle Rock Sports Center Public Improvement Construction Plans, CD24-0037) water irrigation meter for the Castle Rock Sports Center, the 1.5-inch Tap #1 and 1-inch Tap #4 (Brickyard Public Infrastructure Construction Plans, CD-0030) water irrigation meters for the public infrastructure, the ¾-inch Tap #3 (Praxis Street – Off Site Improvement Construction Plans, CD-0040) water irrigation meter for the Praxis St. improvements and the irrigation taps and meters for streetscape and multiple private taps for the internal lots spread across the site. The largest irrigation peak flow is 40 gpm from the 1.5" Tap #1 (Brickyard Public Infrastructure Construction Plans, CD-0030). The calculated Irrigation demands are considered negligible and are not included in the water model. Refer to Appendix A for the irrigation charts/worksheets provided by HydroSystems KDI.

B. Existing Water System

Existing Supply Facilities

The Town of Castle Rock's yellow pressure zone is in the northeast portion of the Site and some of the existing services for the Brickyard are connected to this pressure zone. The Town's blue pressure zone is located on the north and west side of the industrial tributary within Topeka Way and Atchinson Way (future Prairie Hawk Drive extension). The site is served by Blue Zone West Tank No. 8 located at 1420 Coachline with a combined capacity of 3.13MG. The required storage volume for the Site is 1.05MG based on the calculated MDD and largest building fire flow scenario. The Town has requested that the Brickyard development design an extension to the blue pressure zone water system currently being constructed/designed by the nearby/adjacent Miller's Landing development. See Appendix B for the Water Storage Calculations and Appendix E for the Pressure Zone Map.

Existing Water Distribution System

The Brickyard is located near both blue pressure zone water main and yellow pressure zone water main. There is an existing 12-inch yellow zone main and 12-inch blue zone main located in Prairie Hawk Drive on the east side of the property. There is an existing 12-inch blue zone main located in Topeka Way intersection on the west side of the property. The Site falls within the blue pressure zone and cannot utilize the yellow pressure zone main. See Appendix D for the Utility Maps.

Future Water Distribution System

There will be a future Prairie Hawk Extension east of the Site connecting to the proposed Prairie Hawk Improvements as well as extending the blue pressure zone water main west of the site in the Praxis Street Extension for future Miller's Landing development. The future Prairie Hawk main will be extended under the channel to connect to the existing 10-inch blue zone main located in Topeka Way. This future main will be complete by other contractors and developers. There is future 16-inch main being installed in Plum Creek Parkway as a part of the Dawson Trails Project.

C. Proposed Water System

Proposed Distribution System

The Brickyard is Located within the Town of Castle Rock's blue pressure zone and Tank No. 8 will serve the area. The proposed off-site improvements to connect to the blue pressure system east and west of the Site is approximately 3,261 linear feet of 16-inch PVC pipe. The east off-site connection will extend from the north end of the Site along existing Prairie Hawk Drive and connect into the existing main within Topeka Way intersection. The west off-site connection will extend from the west end of the Site along proposed Praxis Street and connect into the existing main within Plum Creek Parkway. The proposed on-site improvements will consist of approximately 4,820 linear feet of 8-inch PVC pipe and approximately 1,593 linear feet of 12-inch PVC pipe to connect to the water main in Prairie Hawk Drive. The proposed on-site water system will be connected to the existing water main on the west side of the Site as proposed by the Miller's Landing development and connected to the proposed off-site improvements on the east side of the Site in existing Prairie Hawk Drive. Any future development of the existing water infrastructure needed to service this Site is the responsibility of the developer. However, the Town has indicated in the development agreement for Miller's Landing that the Brickyard Development is responsible for extending the water main in the future Praxis Street Extension to Plum Creek Parkway and Prairie Hawk Extension east of the Site to Topeka Way.

Proposed Supply Facility

There are no additional water supply facilities that are anticipated to serve this development. The system will be further analyzed throughout the project design process to confirm that there is no demand for additional supply facilities.

Required Fire Flows

The values below are the hydraulic conditions that the Town of Castle Rock uses from section 4.4.3 in the Engineering Standards:

- Minimum static pressure with zero demand (20% tank stage) - 43 psi

- Maximum static pressure with zero demand (100% tank stage) - 125 psi
- Minimum dynamic pressures (based on 20% tank stage):
    - Max Daily Demand + fire flow (see note below) - 20 psi
    - Peak Hour Demand (see note below) – 35 psi

Pressure and velocity criteria listed above for the MDD plus fire flow and PHD conditions shall be satisfied with one critical distribution loop out of service.

The values below are the maximum velocities and headlosses that the Town of Castle rock uses from section 4.4.3.3 in the Standards:

- Maximum velocity with Peak Hour Demands: 10 fps
- Maximum velocity with Max Day Demands: 5 fps
- Maximum velocity with Max Day + Fire Flow Demands: 15 fps
- Maximum headloss through 16" (transmission): 2.0 ft/1000 ft
- Maximum headloss through 20” (transmission): 1.5 ft/1000 ft
- Maximum headloss 24" and larger (transmission): 1.0 ft/1000 ft
- Hazen Williams 'C' factor (PVC & DIP): 120

All buildings on the Site will include sprinklering. A 75% reduction is assumed across all the buildings on the Site due to the proposed sprinklering. The largest potential fire flow is Building 9 (Castle Rock Sports Center) with a square footage of 145,593 square-feet, a construction type of II-B, and a sprinklering-adjusted fire flow of 2,000 gpm or 2,880,000 gpd. The sprinkler demand provided by the fire sprinkler engineer is 656.80 gpm. This value can move plus or minus 10 gpm while finalizing the full sprinkler design, so the fire sprinkler service demand used in the model is 670 gpm to accommodate the uncertainty in the final demand. The maximum (total) fire flow required for the site during this fire scenario is 3,190 gpm. We had previously coordinated with the fire department and received a confirmation memorandum from Castle Rock Fire allowing us to increase the hydrant fire flow reduction to 62.5% or potentially even 75% with an increase in the sprinkler density to 0.2 gpm/sq ft or 0.3 gpm/sq ft, respectively. A copy of the memorandum for the 62.5% is included in Appendix A. After further discussion with Castle Rock Water and Castle Rock Fire Department , it has been determined that an increase in the sprinkler density is not necessary with the fire reduction increase from the standard 50% to 75%. We understand that the existing off-site water pipe in Topeka Way is undersized in certain locations and this project will be required to remove and replace several sections of 8-inch pipe with 12-inch pipe in order for the system to provide the total required flow. See Appendix A for Fire Flow Calculations.

Land Dedication Requirements

There are no known land dedication requirements needed specifically for the proposed water distribution system. This project will include public Right-of-Way (ROW) dedication for public roadways, utility easements, and public land dedication for a recreation center.

D. Proposed Water System Analysis & Modeling

Hydraulic Models

The water model was built using WaterCAD (software), a Bentley product. The WaterCAD model for the Site contains multiple pipes and junctions. Junctions within the model are defined at all fire hydrant tees, building fire service connections, domestic service connections, water main tees, water main crosses, and connections to existing infrastructure. Pipe minor losses are defined at each pipe segment and can be due to bends, tee connections, valve placement, and cross connections.

Multiple scenarios were modeled using the software. The network model and associated pipe and junction tables for all modeled scenarios can be found in Appendix C. The ADD, MDD, and PHD equations were used to populate domestic and commercial water demands for the respective scenarios. Table 1 (on page 4) breaks down the demand for the different building types for each scenario. A map showing all junctions and pipes is included in Appendix C.

Hydraulic Modeling Scenarios

Given the number of buildings, nineteen scenarios were assessed to determine the capacity of the proposed design. Two static scenarios were run in accordance with Town's standards with the tank elevation at 100% and 20%. The hydraulic grade lines for the Town's blue zone are 6523' at 100% and 6303' at 20%. Three dynamic scenarios were run using the ADD, MDD, and PHD of the Site. Nine dynamic scenarios used MDD+ Fire Flow (FF) with the tank elevation set at 20% for each individual building and their corresponding fire flow calculation. One dynamic scenario, 20% MDD+FF Building (Bldg) 9, was duplicated twice, one with the west pipe run closed and one with the east pipe run closed. These two dynamic scenarios were used to simulate a loop-out situation. Three dynamic scenarios were run using MDD with the tank elevation set at 20% for each of the hydrants in the Praxis Street water extension. Refer to the WaterCAD map and tables in Appendix C.

Hydraulic Modeling Output and Required Schematics

The design of off-site 12 and 16-inch PVC pipe and the on-site 8 and 12-inch pipe follows size and clearance requirements set by the Town of Castle Rock. Most sections of pipe are located at design depth per the Town's requirements, where some sections have lowerings to accommodate crossings with other utilities. The minimum pressure of 90 psi occurs at junctions J-16, J-17, and H-21 during all scenarios excluding the 100% static scenario. The maximum pressure of 136 psi occurs at junctions J-1 during the 100% Static scenario. The minimum velocity of 0.0 fps occurs at all pipes during the 100% Static and 20% Static scenarios. The maximum velocity of 9.05 fps occurs at pipes P-56 during the 20%MDD+FF Bldg 9 Loop out @J2 scenario. These scenarios do not warrant an up-sizing of any of these pipes. Refer to the WaterCAD map and tables in Appendix C.

Fire Flow Test Results

The existing and proposed water systems have been analyzed to determine if the proposed project has any negative impacts on the existing infrastructure. The proposed development will cause existing water systems to exceed minimum/maximum junction pressures and/or minimum/ maximum pipe velocities during max day demand plus fire flow demand. The proposed off-site 12 and 16-inch and onsite 8 and 12-inch water system do not have any junctions or velocities that exceed minimum and maximum pressures or velocities, respectively, during max day plus fire flow demand. Given the WaterCAD results, we believe the current design does require upsizing to existing water main in Topeka Way due to the given layout.

III. WASTEWATER INFRASTRUCTURE

A. CALCULATED WASTEWATER FLOWS

The Site has been divided into six sub-basins to evaluate the wastewater demand for the full development. The scope of these calculations is limited to the connection points to the existing sewer main within existing Prairie Hawk Dr, for review on the capacity of the existing downstream network and whether upsizing the existing main greater than 18" is appropriate. Refer to Appendix F for a Basin Map reflecting the general routing and design points used to evaluate the proposed sewer capacity, and the capacity and the connections to the existing sewer within existing Prairie Hawk Drive.

An assumed existing base flow of 0.033 cfs at the intersection of Topeka Ave and existing Prairie Hawk Drive was provided by Town staff, and is available in Appendix G.

A review of the future development Miller's Landing project to the west of the Site is included with this report. A selection of applicable pages from the Final Utility Report for the Miller's Landing Phase 1 (CD19-0019) by CORE Consultants, dated June 2 2022, is included in Appendix G. This report shows a sanitary sewer connection to the existing main in existing Prairie Hawk Dr to the south of the Site, with a peak flow of 1.33 cfs for all phases.

Also included with this analysis is future development flow from the Dawson Trail development to the south of the Site. Refer to Appendix F for excerpts from the most recent Utility Study available for this development, with an estimate peak flow of 11.89 cfs.

The Town has also communicated that another project (Castle Meadows) upstream of the Site is showing interest in development, however estimate peak flow rates are not available at this time.

Average Day Wastewater Flows

Wastewater Average Day Flows (ADF) have been computed using the following equation, utilizing standard values from Table 4.4.1.1 of the Town of Castle Rock Wastewater Collection Design Manual:

ADF = ADF/Unit * Unit

A summary table is provided below for each:

Table 1 - Average Day Wastewater Flow Summary

Design Point	Average Daily Flow (GPD)						Total Average Daily Flow (GPD)	Total Average	Peaking Factor
	Residential (MF)	*Retail/Office*	*Resturaunts*	*Other*	*Hotel*	*Gym/Fitness*			
Rec Center	-	-	-		-	72,500.00	72,500.00	0.07	5.00
Plan Area 1	-	5,340.00	21,150.00		9,225.00	-	35,715.00	0.04	5.00
Plan Area 2	8,580.00				-	-	8,580.00	0.01	5.00
Plan Area 3	2,600.00			-	-	-	2,600.00	0.00	5.00
Plan Area 4				930.00	-	-	930.00	0.00	5.00
Plan Area 5	38,740.00	3,000.00	16,800.00		-	-	58,540.00	0.06	5.00
Total	49,920.00	8,340.00	37,950.00	930.00	9,225.00	72,500.00	178,865.00	0.18	4.87

Peaking Factor

Wastewater Flow Peaking Factors (PF) shall be computed using the following equation:

$$PF = 3.65 \times [(ADF)^{-0.168}]$$

The peaking factor will not be less than two and one-half (2.5) or greater than five (5.0). The peaking factor was calculated for each planning area and is shown in Table 1 above.

Peak Design Flows

Peak Design Flow (PDF) shall be calculated using the following equation, utilizing an I/I allowance equal to 10% of the calculated ADF:

$$PDF = (ADF*PF) + (0.1*ADF)$$

Full calculations of PDF for each design basin can be found in Appendix D of this report, and a summary is provided below:

Table 2 - Wastewater Calculations Summary

Sanitary Sewer Pipe Tabulation - OS to DP7

Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity [1] (cfs)*	*PDF/Max Capacity (%)*	*Notes*
EX	24	1.49%	-	-	-	-	0.034	-	35.90	26.92	0.13%	Per ToCR (Topeka & Prairie Hawk)
OS	24	1.50%	-	-	-	-	13.22	-	36.02	27.01	48.94%	Future development flow per Miller's Landing Phase 1 Utility Report (1.33 cfs) + Dawson Trail Estimate (11.89 cfs)
1	8	1.65%	-	359.83	0.11	5.00	0.86	5.09	2.02	1.51	56.52%	Rec Center & Plan Area 1
1.5	8	1.65%	1, 33% of PA-5	457.39	0.13	5.00	0.86	5.15	2.02	1.51	56.52%	Rec Center & Plan Area 1 & 33% of PA-5 (Building 5)
2	24	0.52%	OS, EX, 1, 1.5	457.39	0.13	5.00	14.11	6.65	21.21	15.91	88.71%	Rec Center + Existing Prairie Hawk+Miller's Landing
3	8	3.00%	-	42.90	0.01	5.00	0.07	2.89	2.72	2.04	3.32%	Plan area 5
4	8	1.10%	-	18.61	0.00	5.00	0.02	2.31	1.65	1.24	1.66%	Plan area 2
5	8	1.86%	3, 4	61.51	0.01	5.00	0.09	2.72	2.14	1.61	5.50%	Plan area 2, 3
6	8	1.86%	67% of PA-5	261.29	0.05	5.00	0.40	4.22	2.14	1.61	25.16%	Plan area 2, 3, 4, and 67% of PA-5 (Building 5)
7	24	0.80%	2, 6	718.69	-	-	14.51	7.9	26.30	19.73	73.57%	Site Total + Existing Prairie Hawk+Miller's Landing

Sanitary Sewer Pipe Tabulation - DP7 to DP-D8

Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity [1] (cfs)*	*PDF/Max Capacity (%)*	*Notes*
D1	24	0.50%	2, 6	718.69	-	-	14.51	4.5	20.80	15.60	93.06%	
D2	24	0.50%	2, 6	718.69	-	-	14.51	4.5	20.80	15.60	93.06%	
D3	24	2.72%	2, 6	718.69	-	-	14.51	4.5	48.50	36.38	39.90%	
D4	24	0.53%	2, 6	718.69	-	-	14.51	4.5	21.41	16.06	90.38%	
D5	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D6	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D7	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D8	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	

1. Maximum capacity is defined as 75% of Q_{full}

B. EXISTING COLLECTION SYSTEM

Existing Collection System

Per Town of Castle Rock (Town) utility GIS information, there is an existing 12-inch sanitary sewer main along Prairie Hawk Drive to the east of the project site, and within Topeka Way to the northwest of the Site there is an existing 8-inch sanitary sewer main. The existing sewer flows from south to north, for eventual collection and treatment by the Plum Creek Water Reclamation Authority.

C. PROPOSED WASTEWATER SYSTEM

Proposed Collection System

The on-site proposed improvements consist of 8-inch PVC and 12-inch PVC sanitary lines within the proposed public right-of-way and connecting to the existing Prairie Hawk Drive sewer main, and various wastewater service connections to the planned commercial, residential, and recreation center areas.

The development is also responsible for the upsizing of the existing 12-inch sanitary main in Prairie Hawk Drive up to 24-inches from the south end of the Site to Wolfensberger Road located as indicated in the Town's Master Plan, approximately 3,836 linear feet of pipe. The developer is also required to contribute to the downstream Malibu Sewer Upsize project.

Due to the large upstream offsite flow being planned upstream via the Dawson Trails and Miller's Landing developments, the analysis includes those flows for capacity review of the upsizing of the existing sewer in Prairie Hawk Drive.

As each sub-basin within the development moves towards final plan approval, they will be required to submit a conformance letter confirming compliance with this utility report and not adversely impacting the downstream infrastructure.

Hydraulic analysis of the sanitary sewer has been provided for two scenarios for each design point within the development and downstream within Appendix E. One for the peak flow capacity including future offsite flows upstream of the Site (Table 2, above), and one reviewing the capacity of the existing Prairie Hawk improvements from only this Site (Table 3, below). Each details minimum pipe slopes required to provide self-cleaning sewer velocities of 2.0 ft/s or greater during peak flow events and overall sewer capacity. The results show that if the existing Prairie Hawk Drive sewer improvements only had to accommodate flows from the Site, 18 inches would be a sufficient size. However, due to the large upstream offsite flows from the Dawson Trails and Miller's Landing sites, 24-inch sewer is recommended to provide the required capacity for all sources within existing Prairie Hawk Drive without adverse impacts.

Table 3 - Wastewater Calculations Summary (without Upstream Offsite Flow)

Sanitary Sewer Pipe Tabulation - OS to DP7												
Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity*[1] *(cfs)*	*PDF/Max Capacity (%)*	*Notes*
EX	24	1.49%	-	-	-	-	0.034	-	35.90	26.92	0.13%	Per ToCR (Topeka & Prairie Hawk)
~~OS~~	~~24~~	~~1.50%~~	~~-~~	~~-~~	~~-~~	~~-~~	~~13.22~~	~~-~~	~~36.02~~	~~27.01~~	~~48.94%~~	~~Future development flow per Miller's Landing Phase 1 Utility Report (1.33 cfs) + Dawson Trail Estimate (11.89 cfs)~~
1	8	1.69%	-	359.83	0.11	5.00	0.86	2.68	2.04	1.53	55.85%	Rec Center & Plan Area 1
1.5	8	1.65%	1, 33% of PA-5	457.39	0.13	5.00	0.86	5.15	2.02	1.51	56.52%	Rec Center & Plan Area 1 & 33% of PA-5 (Building 5)
2	24	0.50%	M, EX, 1	457.39	0.13	5.00	0.89	5.28	20.80	15.60	5.70%	Rec Center + Existing Prairie Hawk
3	8	0.45%	-	42.90	0.01	5.00	0.07	2.11	1.05	0.79	8.58%	Plan area 5
4	8	1.10%	-	18.61	0.00	5.00	0.02	2.09	1.65	1.24	1.66%	Plan area 2
5	8	1.00%	3, 4	61.51	0.01	5.00	0.09	2.31	1.57	1.18	7.50%	Plan area 2, 3, 5
6	8	2.31%	5	261.29	0.01	5.00	0.40	2.34	2.39	1.79	22.57%	Plan area 2, 3, 4, 5
7	24	0.82%	2, 6	718.69	-	-	1.29	4.5	26.63	19.97	6.48%	Site Total + Existing Prairie Hawk+Miller's Landing

Sanitary Sewer Pipe Tabulation - DP7 to D8												
Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity*[1] *(cfs)*	*PDF/Max Capacity (%)*	*Notes*
D1	18	0.50%	2, 6	718.69	-	-	1.29	4.5	9.66	7.24	17.86%	
D2	18	0.50%	2, 6	718.69	-	-	1.29	4.5	9.66	7.24	17.86%	
D3	18	2.72%	2, 6	718.69	-	-	1.29	4.5	22.52	16.89	7.66%	
D4	18	0.53%	2, 6	718.69	-	-	1.29	4.5	9.94	7.46	17.35%	
D5	18	1.80%	2, 6	718.69	-	-	1.29	4.5	18.32	13.74	9.41%	
D6	18	1.80%	2, 6	718.69	-	-	1.29	4.5	18.32	13.74	9.41%	
D7	18	1.80%	2, 6	718.69	-	-	1.29	4.5	18.32	13.74	9.41%	
D8	18	1.80%	2, 6	718.69	-	-	1.29	4.5	18.32	13.74	9.41%	

1. Maximum capacity is defined as 75% of Q_{full}

Proposed Wastewater Facilities

There are no proposed wastewater facilities such as lift stations, force mains, or pretreatment facilities proposed for this development. It is anticipated that there will be future grease and sand/oil interceptors for restaurant/commercial use and in the parking garages, but exact locations will be determined during the Construction Document phases of the project for each plan area as the design develops for each individual basin.

Land Dedication Requirements

No additional land dedication requirements as a result of the proposed wastewater facilities are anticipated at this time.

IV. POTENTIAL SUBDIVISION IMPROVEMENT AGREEMENT (SIA ITEMS)

There are no anticipated items to be inspected as public improvements, outside of the public water and sanitary sewer proposed to serve the development and the Prairie Hawk Drive improvements. The public improvements are as follows:

- Two blue zone water main extensions; one in Prairie Hawk Drive from Topeka Way and one in Praxis Street from Plum Creek Parkway
- Replacing existing sanitary sewer in Prairie Hawk Drive from Wolfensberger Road to the proposed end of the Dawson Trail Interceptor.
- Pay a proportional share to upsize the Malibu Sewer Interceptor.

V. POTENTIAL PERMITTING REQUIREMENTS

There are no additional permitting requirements above and beyond the permitting requirements of the Town of Castle Rock.

VI. LIST OF REFERENCES

Castle Rock 2018 Water System Design, Castle Rock Water Engineering, December 2018

Castle Rock 2017 Water Master Plan, Castle Rock Water Engineering, March 2018

Castle Rock 2018 Wastewater Collection Design, Castle Rock Water Engineering, December 2018

Castle Rock 2016 Wastewater Master Plan Update, Castle Rock Water Engineering, March 2017

APPENDIX A – WATER DEMANDS

Brickyard Master
Water Demands
Project # 200726
Date: 07-01-2025

BUILDING TYPE	AMOUNT (UNITS or SF)	Typical SFEs	AVG DAILY DEMAND (GPD)	AVG DAILY DEMAND (GPM)	MAX DAILY DEMAND (GPM)	PEAK HOUR DEMAND (GPM)
1 (Office/Restaurant)	37,900(O); 11,200(R)	102.95	41,180.00	28.60	71.49	157.28
2 (Hotel)	123	23.37	9,225.00	6.41	16.02	35.23
3 (Parking Garage)	81,500	0.00	0.00	0.00	0.00	0.00
4 (Multi-Fam Resi)	66	42.90	17,160.00	11.92	29.79	65.54
5 (MFR/Office/Resta)	298(MFR); 30,000(O); 11,200(R)	292.70	117,080.00	81.31	203.26	447.18
6 (Multi-Fam Resi)	20	13.00	5,200.00	3.61	9.03	19.86
7 (Gym/Fitness)	67600	84.50	33,800.00	23.47	58.68	129.10
8 (Retail)	15000	7.50	3,000.00	2.08	5.21	11.46
9 (Gym/Fitness)	145,593	181.99	72,796.50	50.55	126.38	278.04
Demand Totals		748.91	299,441.50	207.95	519.86	1,143.70

MD = 2.5 x AD
PD = 5.5 x AD

The Brickyard
Fire Flow Demands
Project # 200726
7/29/2025

TABLE 1. THE BRICKYARD - FIRE FLOW TABLE

BUILDING	TOTAL SQUARE FOOTAGE	CONSTRUCTION TYPE	NUMBER OF STORIES	SPRINKLED	UNADJUSTED FIRE FLOW (IFC TABLE B105.1)(GPM)	CALCULATED FIRE FLOW (50% REDUCTION FOR SPRINKLERED BUILDING (IFC TABLE B105.1)(GPM)	CALCULATED FIRE FLOW (62.5% REDUCTION FOR SPRINKLERED BUILDING (IFC TABLE B105.1)(GPM)	CALCULATED FIRE FLOW (75% REDUCTION FOR SPRINKLERED BUILDING (IFC TABLE B105.1)(GPM)	CALCULATED FIRE SERVICE DEMAND (IFC B 105.2)(GPM)	MINIMUM NUMBERS OF HYDRANTS (IFC TABLE C105.1)	AVG SPACING BETWEEN HYD (FT) (IFC TABLE C105.1)	FIRE FLOW TO EACH HYDRANT (GPM)
Building 1	49,100	Type III-B	3	YES, NFPA 13	4750	2380	1781	1188	1188	1	500	1188
Building 2	99,700	Type I-A & III-A	6	YES, NFPA 13	4420	2210	1658	1105	1105	1	500	1105
Building 3	81,500	I-B	3	YES, NFPA 13	3000	1500	1125	750	750	1	500	750
Building 4	108,000	V-A	4	YES, NFPA 13	6000	3000	2250	1500	1500	1	500	1500
Building 5	493,403	Type I-A & V-A	5	YES, NFPA 13	6740	3370	2528	1685	1685	1	450	1685
Building 6	35,000	V-B	3	YES, NFPA 13R	5000	2500	1875	1250	1250	1	500	1250
Building 7	67,600	II-A	2	YES, NFPA 13	3750	1880	1406	938	938	1	500	938
Building 8	15,000	II-A	1	YES, NFPA 13	1750	880	656	438	438	1	500	438
Building 9	145,593	Type II-B	2	YES, NFPA 13	8000	4000	3000	2000	2000	2	450	1000

Notes:

1. Calculated fire flow (GPM) is from the 2018 International Fire Code Table B105.1
2. Minimum number of hydrants is from the 2018 International Fire Code Table C105.1
3. Standard 50% reduction is used for all flows. A 62.5% reduction with a sprinkler density of 0.2 gpm/sq ft or 75% reduction with a sprinkler density of 0.3 gpm will be used to keep all flows under the maximum 2000 gpm if a 50% reduction is not sufficient.
4. For all calculated flows below 1500 gpm needing one hydrant, a minimum flow of 1500 gpm for one hydrant will be used per fire departement standards.

Project Name: 8015-The Brickyard — **Intrastructure**
Project Location: *Castle Rock*
Tap Description: *Tap 1*
Date prepared: *18-Mar-25*

Seasonal Water Use and Peak Flow Projections Prepared By HydroSystems-KDI, Inc.

Description	Irrigated Area (Acre)	Month	Application Rate (in/mo/sqft)	Water Application (gallons)	Peak Season Projected Demand (GPM)
		May	1.67	117,058	
Shrubs & Trees	2.58	June	2.22	155,762	
Drip Irrigated		July	**2.40**	**168,271**	**26.4**
		August	2.09	146,322	
		September	1.62	113,282	
Irrigation Season Totals			10.00	700,695	
				2.15	acre-feet
		May	1.17	63,128	
Right of Way Mix	1.99	June	1.56	84,001	
Spray Irrigated		July	**1.68**	**90,747**	**14.2**
		August	1.46	78,910	
		September	1.13	61,092	
Irrigation Season Totals			7.00	377,878	
				1.16	acre-feet

Site Totals		
Irrigated Area:	***199,014 Sq.Ft.***	***4.57 Acres***
Water Use per Year:	***1,078,573 Gallons***	***3.31 Acre-feet***
Average Water per Year:	***5.42 Gallons/SqFt***	***8.69 Inches/SqFt***
Peak Season Monthly Water Use:	***259,017 Gallons***	***0.79 Acre-feet***
Average Peak Season Flow:	***41 GPM***	
Required Tap Size:	***1 1/2 Inches***	

Projections are based on a three day per week, eight hour per day, peak season watering schedule.
Peak season application for Right of Way Mix is 0.38" per week.
Peak season application for Shrubs & Trees is 0.54" per week.

WATER USE CHART
POINT OF CONNECTION #1 — C1

Project Name: 8015-The Brickyard
Project Location: *Castle Rock*
Tap Description: *Tap 1*
Tap Size: *1.5"*
Irrigation System Hydraulic Worksheet
Prepared by HydroSystems-KDI, Inc.

Date: *18-Mar-25*
Static Water Pressure:* *104* ***From:*** *Julia Wells*
This value has been decreased by safety factor of:* *10%* ***of:* *Water Operations TOCR*
Hydraulic Grade calculated at Zone:

Equipment or Material	Quantity (one if not specified)	Nominal Size	Equipment or Pipe Material	Friction Loss Through Pipe per Chart (psi)	Velocity through pipes (ft/sec)	Flow Rate (gpm)	Loss/Gain (psi)
Corp Stop:		1 1/2"	Typical Corp. Stop			40	0.60
Svc Line (tap to meter):	30 LF	1 1/2"	K Copper	6.63 /100 FT	7.44	40	1.99
Curb Stop:		1 1/2"	Typical Curb Stop			40	0.30
Water Meter:		1 1/2"	Typical Meter			40	3.30
Svc Line (meter to backflow):	20 LF	1 1/2"	K Copper	6.63 /100 FT	7.44	40	1.33
Stop & Waste:		1 1/2"	Typical Stop & Waste Valve			40	0.40
Backflow:		1 1/2"	Febco 825YA			40	12.50
Point of Connection (POC) Subtotal:							**20.42**
Pressure downstream of POC:							**83.99**
Master Valve:		1 1/2"	Hunter ICV			40	1.70
Flow Sensor:		1 1/2"	CST FSI			40	1.00
Gate Valve:	4	2"	Typical Bronze Gate Valve			40	0.08
Pressure Required at Head:			Rotors				35.00
Lateral Allowance:							3.00
Control Valve allowance:		1 1/2"	Hunter ICV			40	1.70
Mainline allowances:							
	20 LF	2"	CL 200 PVC	0.95 /100 FT	3.53	40	0.19
	2692 LF Looped	2"	CL 200 PVC	0.26 /100 FT	1.77	40	7.00
	2059 LF Looped	2"	CL 200 PVC	0.26 /100 FT	1.77	40	5.35
Mainline Fitting allowance:		10%	of Mainline allowances				1.25
Elevation:							
Tap Elev.	6242		Control Valve Elev.	6261			8.23
Factor of Safety:		5%	System Losses				4.25

Total System Hydraulic Losses (PSI)	***89.16***
Provided Water Pressure (PSI)	***104.40***
Pump Pressure Boost (PSI)	***0.00***
Residual Pressure (PSI), PRV Required	***15.24***

Irrigated Area: ***199014 sqft***
Town of Castle Rock provides a minimum of 43 psi

HYDRAULIC WORKSHEET
POINT OF CONNECTION #1 — C2

TOWN OF CASTLE ROCK COLORADO

IRRIGATION CHART

Contact Information

Registered Landscaper	See Stamp, Same Sheet
Company Name	HydrosystemsKDI
Address	860 Tabor St., Suite 200
Phone	303.980.5327
Email	See Stamp, Same Sheet
Registration #	See Stamp, Same Sheet

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle* (Nozzle/Emitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*
A1	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A2	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A3	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A4	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A5	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A6	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
A7	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
A8	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
A9	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
A10	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
A11	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A12	Low	Native Tall Grass	12" Hunter Spray	15	1.10	35	1.7	92	7	3209
A13	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A14	Low	Native Tall Grass	12" Hunter Spray	15	1.10	27	1.7	92	7	2476
A15	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A16	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	25	0.4	36	3	891
A17	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A18	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A19	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A20	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	25	0.4	36	3	891
A21	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	25	0.4	36	3	891
A22	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A23	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	20	0.4	25	2	490
A24	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	32	0.4	25	2	785
A25	Low	Native Tall Grass	12" Hunter Spray	12	1.10	22	1.7	92	7	2017
A26	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A27	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A28	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A29	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	32	0.4	25	2	785
A30	Low	Right of Way Native	Hunter 12" Rotor	#8.0 FC	0.46	40	0.4	50	4	1983
A31	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	36	0.4	25	2	883
A32	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A33	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	14	0.4	36	3	499
A34	Low	Native Tall Grass	12" Hunter Spray	15	1.10	40	1.7	92	7	3668
A35	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A36	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A37	Low	Right of Way Native	Hunter 12" Rotor	#4.0 PC	0.51	24	0.4	45	3	1073
A38	Low	Native Tall Grass	12" Hunter Spray	12	1.10	21	1.7	92	7	1926
A39	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A40	Low	Native Tall Grass	12" Hunter Spray	15	1.10	40	1.7	92	7	3668
A41	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A42	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A43	Low	Native Tall Grass	12" Hunter Spray	15	1.10	40	1.7	92	7	3668
A44	Low	Native Tall Grass	12" Hunter Spray	15	1.10	40	1.7	92	7	3668
A45	Low	Right of Way Native	Hunter 12" Rotor	#8.0 FC	0.46	40	0.4	50	4	1983
A46	Low	Right of Way Native	Hunter 12" Rotor	#8.0 FC	0.46	32	0.4	50	4	1586
A47	Low	Right of Way Native	Hunter 12" Rotor	#8.0 FC	0.93	32	0.4	25	2	785
A48	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	32	0.4	25	2	785
A49	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A50	Low	Right of Way Native	Hunter 12" Rotor	#8.0 FC	0.46	32	0.4	50	4	1586
A51	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	25	0.4	25	2	613
A52	Low	Right of Way Native	Hunter 12" Rotor	#8.0 PC	0.93	28	0.4	25	2	686
A53	Low	Right of Way Native	Hunter 12" Rotor	M30	0.64	39	0.4	36	3	1389
A54	Low	Right of Way Native	Hunter 12" Rotor	M35	0.64	39	0.4	36	3	1389
A55	Low	Native Tall Grass	12" Hunter Spray	15	1.10	40	1.7	92	7	3668
A56	Low	Right of Way Native	Hunter 12" Rotor	M30	0.64	32	0.4	36	3	1140
A57	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A58	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
A59	Low	Right of Way Native	Hunter 12" Rotor	M30	0.64	40	0.4	36	3	1425
A60										
A61		(** important -Drip Valves to be multripled together &							**	
Total		run simultaneously with spray zones **)						**Min/Month**	**Min/cycle**	**Gallons/Month**
								9906	420	77014

CONTROLLER CHART
POINT OF CONNECTION #1 — C3

DIRECTORY

IRRIGATION SCHEDULE	190
IRRIGATION NOTES	190
IRRIGATION OVERALL PLAN	191
IRRIGATION PLANS	192 - 198
IRRIGATION DETAILS	199 - 202
IRRIGATION CHARTS	203 - 204

Registered Landscape Professional/Irrigation Designer:
Jill Bersano #15-1080

KDI HydroSystems
Irrigation Consulting & Water Management
13949 W. Colfax Ave, Suite 260 Lakewood, Colorado 80401
o: 303.980.5327 www.hydrosystemskdi.com

811 Know what's below. Call before you dig.

DESIGNED BY: KJD
CHECKED BY: JSB
DRAWN BY: KJD

ISSUE DATE: 08-02-2024

DATE	REVISION COMMENTS
10-22-2024	PRICING SET
12-06-2024	PER TOWN COMMENTS
03-21-2025	PER TOWN COMMENTS

w e n k ASSOCIATES PLANNERS & LANDSCAPE ARCHITECTS
1130 31ST ST STE 101 DENVER, CO 80205 FAX.628.0004 303.628.0003

CONFLUENCE COMPANIES, LLC

THE BRICKYARD - INFRASTRUCTURE
IRRIGATION DETAILS & CHARTS

PROJECT #:
SHEET NUMBER
203
203 OF 204

PLOTTED: 1/8/2026 @ 08:08:08 AM BY: KEN DAVIDSON
FILEPATH: I:\8000\8008_JOB\BOX\THE BRICKYARD CASTLE ROCK\8015-THE BRICKYARD INFRASTRUCTURE-IRR\DRAWING LAYOUT.IR13

Project Name:	**8015-Prairie Hawk Drive**		**Prairie Hawk Drive**
Project Location:	***Castle Rock***		
Tap Description:	***Tap 1***		
Date prepared:	***05-Dec-24***		

Seasonal Water Use and Peak Flow Projections Prepared By HydroSystems-KDI, Inc.

Description	Irrigated Area (Acre)	Month	Application Rate (in/mo/sqft)	Water Application (gallons)	Peak Season Projected Demand (GPM)
		May	1.67	28,443	
Shrubs & Trees	0.63	June	2.22	37,848	
Drip Irrigated		July	**2.40**	**40,887**	**6.4**
		August	2.09	35,554	
		September	1.62	27,526	
Irrigation Season Totals			10.00	170,257	
				0.52	acre-feet
		May	1.17	34,354	
Right of Way Mix	1.08	June	1.56	45,713	
Spray Irrigated		July	**1.68**	**49,384**	**7.7**
		August	1.46	42,943	
		September	1.13	33,246	
Irrigation Season Totals			7.00	205,640	
				0.63	acre-feet

Site Totals		
Irrigated Area:	***74,443 Sq.Ft.***	***1.71 Acres***
Water Use per Year:	***375,897 Gallons***	***1.15 Acre-feet***
Average Water per Year:	***5.05 Gallons/SqFt***	***8.10 Inches/SqFt***
Peak Season Monthly Water Use:	***90,271 Gallons***	***0.28 Acre-feet***
Average Peak Season Flow:	***14 GPM***	
Required Tap Size:	***1 Inches***	

Projections are based on a three day per week, eight hour per d··· ·eak season watering schedule.
Peak season application for Right of Way Mix is 0.38" per week. 4
Peak season application for Shrubs & Trees is 0.54" per week.

WATER USE CHART
POINT OF CONNECTION #4

C4

Project Name:	**8015-Prairie Hawk Drive**						**Prairie Hawk Drive**	
Project Location:	***Castle Rock***							
Tap Description:	***Tap*** 4							
Tap Size:	***1"***							
Irrigation System Hydraulic Worksheet								
Prepared by HydroSystems-KDI, Inc.								
Date:	***21-Mar-25***							
Static Water Pressure:*					***104***	***From:***	***Julia Wells***	
****This value has been decreased by safety factor of:***					***10%***	***of:***	***Water Operations TOCR***	
Hydraulic Grade calculated at Zone:								

Equipment or Material	Quantity (one if not specified)	Nominal Size	Equipment or Pipe Material	Friction Loss Through Pipe per Chart (psi)		Velocity through pipes (ft/sec)	Flow Rate (gpm)	Loss/Gain (psi)
Corp Stop:		1	" Typical Corp. Stop				18	0.90
Svc Line (tap to meter):	30 LF	1	" K Copper	10.47	/100 FT	7.42	18	3.14
Curb Stop:		1	" Typical Curb Stop				18	0.50
Water Meter:		1	" Typical Meter				18	1.80
Svc Line (meter to backflow):	20 LF	1	" K Copper	10.47	/100 FT	7.42	18	2.09
Stop & Waste:		1	" Typical Stop & Waste Valve				18	0.50
Backflow:		1	" Febco 825YA				18	12.50
Point of Connection (POC) Subtotal:								**21.44**
Pressure downstream of POC:								**82.97**
Master Valve:		1	" Hunter ICV				18	3.00
Flow Sensor:		1	" CST FSI				18	1.00
Gate Valve:	4	2	" Typical Bronze Gate Valve				18	0.00
Pressure Required at Head:			Rotors					45.00
Lateral Allowance:								3.00
Control Valve allowance:		1	" Hunter ICV				18	3.00
Mainline allowances:								
	20 LF	1 1/2"	CL 200 PVC	0.64	/100 FT	3.48	18	0.13
	4212 LF Looped	1 1/2"	CL 200 PVC	0.18	/100 FT	1.24	18	7.58
Mainline Fitting allowance:		10%	of Mainline allowances					0.77
Elevation:								
	Tap Elev. 6223		Control Valve Elev.		6192			-13.42
Factor of Safety:		5%	System Losses					3.57

Total System Hydraulic Losses (PSI)	***75.07***
Provided Water Pressure (PSI)	***104.40***
Pump Pressure Boost (PSI)	***0.00***
Residual Pressure (PSI), PRV Required	***29.33***
Irrigated Area: ***74443 sqft***	
Town of Castle Rock provides a minimum of 43 psi	

HYDRAULIC WORKSHEET
POINT OF CONNECTION #4

C5

TOWN OF CASTLE ROCK COLORADO

IRRIGATION CHART

Contact Information

Registered Landscaper	See Stamp, Same Sheet
Company Name	HydrosystemsKDI
Address	860 Tabor St., Suite 200
Phone	303.980.5327
Email	See Stamp, Same Sheet
Registration #	See Stamp, Same Sheet

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle* (Nozzle/Emitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*
D1	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
D2	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
D3	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	18	0.4	36	3	641
D4	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
D5	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	18	0.4	36	3	641
D6	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	18	0.4	36	3	641
D7	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D8	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	18	0.4	36	3	641
D9	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	16	0.4	36	3	570
D10	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	15	0.4	36	3	534
D11	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
D12	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	15	0.4	36	3	534
D13	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	15	0.4	36	3	534
D14	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	15	0.4	36	3	534
D15	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D16	Low	Right of Way Native	Hunter 12" Rotor	M25	0.64	13	0.4	36	3	463
D17	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D18	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D19	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D20	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D21	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D22	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D23	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
D24	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	4	2.4	288	22	1153
Total								**Min/Month**	**Min/cycle**	**Gallons/Month**
								4391	330	20721

*Zones noting "Assorted" nozzles contain a mix of popup heads from the same family, in multiple throw radii. Refer to plans & construction notes for spacing and throw of each head.

CONTROLLER CHART
POINT OF CONNECTION #4

C6

DIRECTORY

IRRIGATION SCHEDULE	190
IRRIGATION NOTES	190
IRRIGATION OVERALL PLAN	191
IRRIGATION PLANS	192 - 198
IRRIGATION DETAILS	199 - 202
IRRIGATION CHARTS	203 - 204

Registered Landscape Professional/Irrigation Designer:
Jill Bersano #15-1080

KDI HydroSystems
Irrigation Consulting & Water Management
13949 W. Colfax Ave, Suite 260 Lakewood, Colorado 80401
o: 303.980.5327 www.hydrosystemskdi.com

811 Know what's below. Call before you dig.

DESIGNED BY:
CHECKED BY:
DRAWN BY:

ISSUE DATE: 08-02-2024

DATE	REVISION COMMENTS
10-22-2024	PRICING SET
12-06-2024	PER TOWN COMMENTS
03-21-2025	PER TOWN COMMENTS

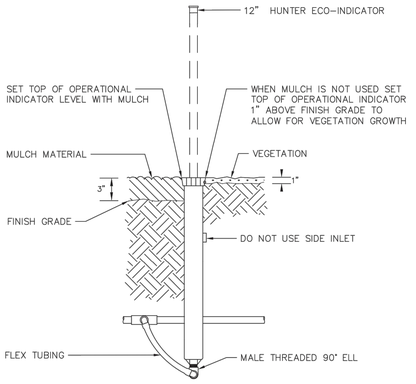
wenk ASSOCIATES PLANNERS & LANDSCAPE ARCHITECTS
1190 31ST ST STE 101 DENVER, CO 80205 FAX.628.0004 303.628.0003

CONFLUENCE COMPANIES, LLC

THE BRICKYARD - INFRASTRUCTURE
IRRIGATION CHARTS

PROJECT #:
SHEET NUMBER
204

FILEPATH: T:\8000-8999_JOBS\8015-THE BRICKYARD-CASTLE ROCK\8015-THE BRICKYARD INFRASTRUCTURE-BIR-CONSULTING_LAYOUT IR14
2025
PLOTTED: 04/04/2025 8:58 AM BY: BEN DAVIS

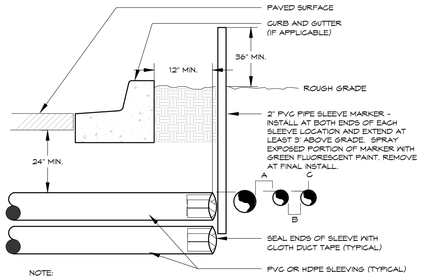


Sheet Revisions	
Date	Comments
3/23	STAFF CHANGES
4/23	STAFF CHANGES
1/24	REVISED BY STAFF

Town of Castle Rock
100 N. Wilcox St.
Castle Rock, CO. 80104
Phone: (720) 733-2200
Fax: (720) 733-2217
Development Services

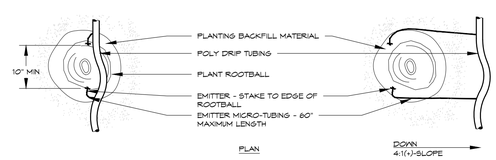
NON-RESIDENTIAL
OPERATIONAL INDICATOR
Issued By: Town of Castle Rock, Development Services February 1, 2024

DETAIL PLAN NO.
IR-34
Sheet 1 of 1

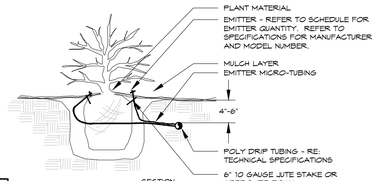


NOTE:
- ALL SLEEVE MATERIAL PER IRRIGATION SCHEDULE, SIZE AS NOTED ON PLAN.
- INSTALL SLEEVES IN SIDE-BY-SIDE CONFIGURATION WHERE MULTIPLE SLEEVES ARE TO BE INSTALLED. SPACE SLEEVES 4" TO 6" APART. DO NOT STACK SLEEVES VERTICALLY.
- CONTRACTOR TO COORDINATE WITH FLATWORK INSTALLER TO BRAND A "V" IN SIDEWALK OR CURB AT BOTH ENDS OF SLEEVE CROSSING.
- SLEEVING THROUGH OR UNDER RETAINING WALLS, PLANTER WALLS, POND LINING, OR WATER QUALITY AREAS SHALL BE COORDINATED WITH CIVIL WORK AT APPROXIMATE LOCATIONS SHOWN.
- AN INDIVIDUAL SLEEVE SHALL CONTAIN NO MORE THAN ONE PIPE OR WIRE BUNDLE.

IRRIGATION SLEEVING
TYPICAL — 1



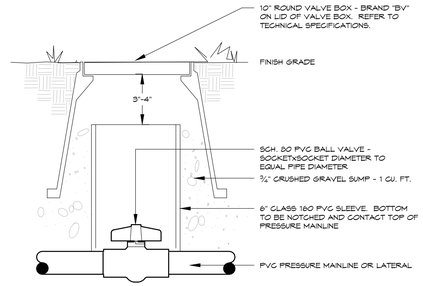
PLANT SIZE	EMITTER FLOW RATE	EMITTER QTY. AT MULCHED BED LOCATIONS	EMITTER QTY. AT NATIVE SEED LOCATIONS
1 - 2 GALLON MATERIAL	1.0 GPH	ONE EACH	ONE EACH
5 GALLON MATERIAL	1.0 GPH	TWO EACH	TWO EACH
1½" CALIPER TREE	2.0 GPH	THREE EACH	FOUR EACH
2" CALIPER TREE	2.0 GPH	FOUR EACH	SIX EACH
2½" CALIPER TREE	2.0 GPH	SIX EACH	EIGHT EACH
3" CALIPER TREE	2.0 GPH	EIGHT EACH	TEN EACH
3½" CALIPER TREE	2.0 GPH	NINE EACH	ELEVEN EACH
4" CALIPER TREE	2.0 GPH	TEN EACH	TWELVE EACH
6 FT. CONIFEROUS TREE	2.0 GPH	FOUR EACH	SIX EACH
8 FT. CONIFEROUS TREE	2.0 GPH	SIX EACH	NINE EACH
10 FT. CONIFEROUS TREE	2.0 GPH	EIGHT EACH	TWELVE EACH
12 FT. CONIFEROUS TREE	2.0 GPH	TEN EACH	FOURTEEN EACH



SECTION

NOTES:
- INSTALL EMITTERS ON OPPOSING SIDES OF ROOTBALL. THREE OR MORE EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
- EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM OF 2".
- FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION.
- IF PLANTING ON A 4:1 SLOPE OR STEEPER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOT BALL.
- EMITTERS SHALL BE SELF-FLUSHING, PRESSURE COMPENSATING-TYPE UNLESS NOTED OTHERWISE WITHIN TECHNICAL SPECIFICATIONS.
- DRIP VALVE ZONES ARE DESIGNED TO ACCOUNT FOR DIFFERENCES IN PLANT REQUIREMENTS (HYDROZONES) AND SUN EXPOSURE.
- CONTRACTOR SHALL ENSURE HYDROZONES ARE VALVED SEPARATELY AS SHOWN ON PLAN.
- SITE CONDITIONS MAY DICTATE THAT MULTIPLE SUN EXPOSURES ARE VALVED TOGETHER DURING THE DESIGN PROCESS. CONTRACTOR SHALL ADJUST EMITTER SCHEDULE AS FOLLOWS:
  - EMITTER QUANTITIES SHALL REMAIN THE SAME BUT EMITTER GALLONAGES SHALL BE DOUBLED FOR PLANTS WITH SOUTH AND WEST EXPOSURES.
  - EMITTER QUANTITIES AND GALLONAGE SHALL BE AS SHOWN IN SCHEDULE FOR PLANTS WITH NORTH AND EAST EXPOSURES.
  - PLANTINGS WITH NORTH AND EAST EXPOSURE SHALL DICTATE VALVE RUN-TIMES AND CONTRACTOR SHALL ADJUST SCHEDULING ACCORDINGLY.

DRIP EMITTER
BELOW GRADE — 2



PIPING SHUT-OFF VALVE
3

Project Name:	**Castle Rock Sports Center**							
Project Location:	***Castle Rock, CO***							
Tap Description:	***Tap 1***							
Date prepared:	***18-Apr-25***							
Seasonal Water Use and Peak Flow Projections Prepared By HydroSystems-KDI, Inc.								
Description	Irrigated Area (Acre)	Month	Application Rate (in/mo/sqft)	Water Application (gallons)	Peak Season Projected Demand (GPM)			
		May	1.17	20,875				
Native Tall Grass	0.66	June	1.56	27,777				
Spray Irrigated		July	**1.68**	**30,007**	**4.7**			
		August	1.46	26,093				
		September	1.13	20,201				
Irrigation Season Totals			7.00	124,953				
				0.38	acre-feet			
		May	1.67	43,853				
Shrubs & Trees	0.97	June	2.22	58,353				
Drip Irrigated		July	**2.40**	**63,038**	**9.9**			
		August	2.09	54,816				
		September	1.62	42,438				
Irrigation Season Totals			10.00	262,498				
				0.81	acre-feet			
Site Totals								
Irrigated Area:		***70,749***	***Sq.Ft.***		***1.62***	***Acres***		
Water Use per Year:		***387,451***	***Gallons***		***1.19***	***Acre-feet***		
Average Water per Year:		***5.48***	***Gallons/SqFt***		***8.78***	***Inches/SqFt***		
Peak Season Monthly Water Use:		***93,046***	***Gallons***		***0.29***	***Acre-feet***		
Average Peak Season Flow:		***15***	***GPM***					
Required Tap Size:		***1***	***Inches***					
Projections are based on a three day per week, eight hour per day, peak season watering schedule.								
Peak season application for Native Tall Grass is 0.38" per week.								
Peak season application for Shrubs & Trees is 0.54" per week.								

WATER USE CHART
POINT OF CONNECTION #1 — C1

Project Name:	**Castle Rock Sports Center**							
Project Location:	***Castle Rock, CO***							
Tap Description:	***Tap 1***							
Tap Size:	***1"***							
Irrigation System Hydraulic Worksheet								
Prepared by HydroSystems-KDI, Inc.								
Date:	***28-Feb-25***							
Static Water Pressure:#			***93***	***From: John O'Rourke***				
#This value has been decreased by safety factor of:			***10%***	***of: HKS***				
Equipment or Material	Quantity (one if not specified)		Nominal Size	Equipment or Pipe Material	Friction Loss Through Pipe per Chart (psi)	Velocity through pipes (ft/sec)	Flow Rate (gpm)	Loss/Gain (psi)
Corp Stop:			1	" Typical Corp. Stop			18	0.90
Svc Line (tap to meter):	18	LF	1	" K Copper	10.47 /100 FT	7.42	18	1.88
Curb Stop:			1	" Typical Curb Stop			18	0.50
Water Meter:			1	" Typical Meter			18	1.80
Svc Line (meter to backflow):	22	LF	1	" K Copper	10.47 /100 FT	7.42	18	2.30
Stop & Waste:			1	" Typical Stop & Waste Valve			18	0.50
Backflow:			1	" Febco 825YA			18	12.50
Point of Connection (POC) Subtotal:								**20.39**
Pressure downstream of POC:								**71.41**
Master Valve:			1	" Rain Bird PEB			18	2.90
Flow Sensor:			1	" CST FSI			18	1.00
Gate Valve:	10		1 1/2"	Typical Bronze Gate Valve			18	0.20
Pressure Required at Head:				Hunter I-20 Rotors				45.00
Lateral Allowance:								3.00
Control Valve allowance:			1	" Rain Bird PEB			18	2.90
Mainline allowances:								
	95	LF	1 1/2"	CL 200 PVC	0.64 /100 FT	3.48	18	0.61
	2010	LF Looped	1 1/2"	CL 200 PVC	0.18 /100 FT	1.24	18	3.62
Mainline Fitting allowance:				10% of Mainline allowances				0.42
Elevation:								
Tap Elev.	6273			Control Valve Elev.		6278		2.17
Factor of Safety:				5% System Losses				4.11
Total System Hydraulic Losses (PSI)								***86.31***
Provided Water Pressure (PSI)								***91.80***
Residual Pressure (PSI)								***5.49***
			Irrigated Area:	***69461 sqft***				
			Town of Castle Rock provides a minimum of 43 psi					

HYDRAULIC WORKSHEET
POINT OF CONNECTION #1 — C2

Town of Castle Rock Colorado

IRRIGATION CHART

Contact Information

Registered Landscaper	See Stamp, Same Sheet
Company Name	HydrosystemsKDI
Address	860 Tabor St., Suite 200
Phone	303.980.5327
Email	See Stamp, Same Sheet
Registration #	See Stamp, Same Sheet

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle* (Nozzle/Emitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*
A1	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A2	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A3	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A4	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						10			22	
A5	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A6	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	1	2.4	288		288
A7	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A8	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						9			22	
A9	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A11	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A12	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A18	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						9			22	
A19	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A20	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A21	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A22	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						10			22	
A15	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A25	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	1	2.4	288		288
A30	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A35	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						7			22	
A16	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288		865
A17	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	1	2.4	288		288
A26	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A27	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	1	2.4	288		288
						7			22	
A32	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A34	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
A36	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	2	2.4	288		576
						6			22	
A13	Low	Native Tall Grass	Head - Hipop	#18	0.73	9	1.7	138		1244
A23	Low	Native Tall Grass	Head - Hipop	#18	0.73	2	1.7	138		276
						11			10	
A14	Low	Native Tall Grass	Head - Hipop	#18	0.73	8	1.7	138		1105
A28	Low	Native Tall Grass	Head - Hipop	#18	0.73	5	1.7	138		691
						13			10	
A10	Low	Native Tall Grass	Head - Rotor	#1.5 PC	0.28	9	1.7	360	27	3242
A24	Low	Native Tall Grass	Head - Rotor	#1.5 PC	0.28	18	1.7	360	27	6484
A29	Low	Native Tall Grass	Head - Rotor	#1.5 PC	0.28	15	1.7	360	27	5403
A33	Low	Native Tall Grass	Head - Rotor	#1.5 PC	0.28	12	1.7	360	27	4323
A31	Low	Native Tall Grass	Head - Rotor	#1.5 PC	0.14	5	1.7	720	54	3602
Total								**Min/Month**	**Min/cycle**	**Gallons/Month**
								10495	337	43085

***Zones noting "Assorted" nozzles contain a mix of popup heads from the same family, in multiple throw radii. Refer to plans & construction notes for spacing and throw of each head.**

CONTROLLER CHART
POINT OF CONNECTION #1 — C3

Registered Landscape Professional/Irrigation Designer:
Jill Bersano #15-1080

KDI HydroSystems
Irrigation Consulting & Water Management
13949 W. Colfax Ave, Suite 260 Lakewood, Colorado 80401
o: 303.980.5327 www.hydrosystemskdi.com

TOWN OF CASTLE ROCK APPROVAL
PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

Approved By:

Development Services Date

811 Know what's below. Call before you dig.

DESIGNED BY:
CHECKED BY:
DRAWN BY:

ISSUE DATE: 05-24-2024

DATE	REVISION COMMENTS
07-31-2024	50% CD
08-30-2024	70% CD
10-02-2024	95% CD
10-22-2024	PRICING SET
11-08-2024	TOWN SUBMITTAL
02-28-2025	TOWN SUBMITTAL
04-21-2025	TOWN SUBMITTAL

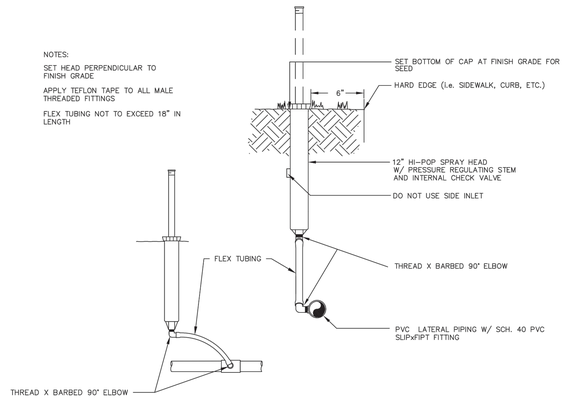
HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

CONFLUENCE COMPANIES, LLC

CASTLE ROCK SPORTS CENTER
IRRIGATION DETAILS & CHARTS

PROJECT #:
SHEET NUMBER
CD48
48 OF 70

FILEPATH: T:\800-899\808\PROJECT\CASTLE ROCK SPORTS CENTER\CASTLE ROCK SPORTS CENTER-808-100-CD-04-18.DWG LAYOUT: CD48
COPYRIGHT 2025 HARRIS KOCHER SMITH



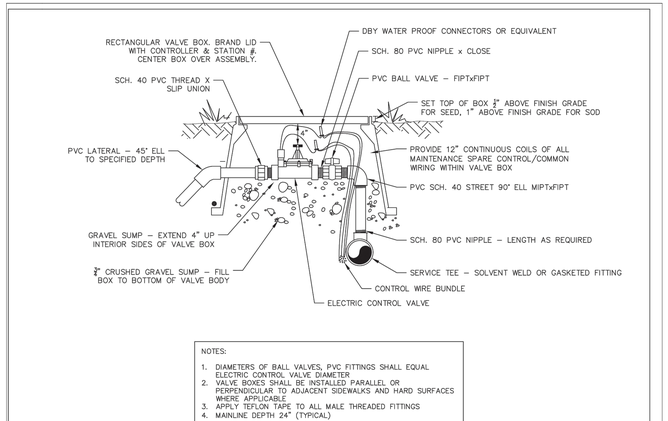
Sheet Revisions		
Date	Comments	
9/23	REVISED BY STAFF	
1/24	REVISED BY STAFF	

Town of Castle Rock
100 N. Wilcox St.
Castle Rock, CO 80104
Phone: (720) 733-2200
Fax: (720) 733-2217
Development Services

HI-POP (12") SPRAY HEAD

DETAIL PLAN NO.
IR-2
Sheet 1 of 1

Issued By: Town of Castle Rock, Development Services February 1, 2024



NOTES:
1. DIAMETERS OF BALL VALVES, PVC FITTINGS SHALL EQUAL ELECTRIC CONTROL VALVE DIAMETER
2. VALVE BOXES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO ADJACENT SIDEWALKS AND HARD SURFACES WHERE APPLICABLE
3. APPLY TEFLON TAPE TO ALL MALE THREADED FITTINGS
4. MAINLINE DEPTH 24" (TYPICAL)

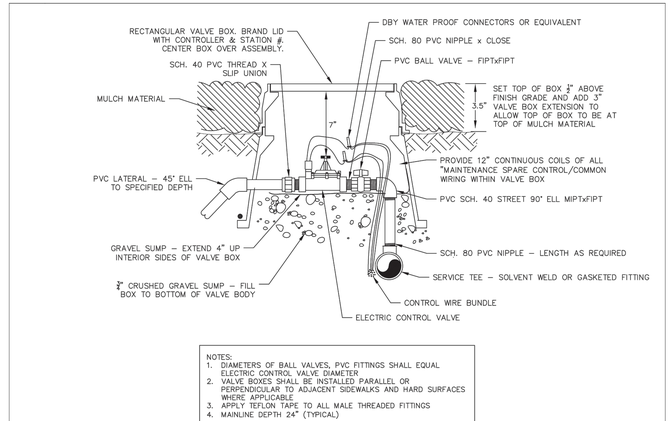
Sheet Revisions		
Date	Comments	
3/21	STAFF CHANGES	
9/23	REVISED BY STAFF	
1/24	REVISED BY STAFF	

Town of Castle Rock
100 N. Wilcox St.
Castle Rock, CO 80104
Phone: (720) 733-2200
Fax: (720) 733-2217
Development Services

ELECTRIC CONTROL VALVE

DETAIL PLAN NO.
IR-16
Sheet 1 of 1

Issued By: Town of Castle Rock, Development Services February 1, 2024



NOTES:
1. DIAMETERS OF BALL VALVES, PVC FITTINGS SHALL EQUAL ELECTRIC CONTROL VALVE DIAMETER
2. VALVE BOXES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO ADJACENT SIDEWALKS AND HARD SURFACES WHERE APPLICABLE
3. APPLY TEFLON TAPE TO ALL MALE THREADED FITTINGS
4. MAINLINE DEPTH 24" (TYPICAL)

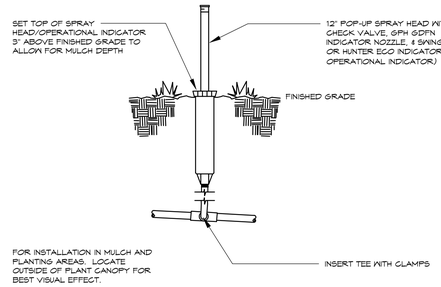
Sheet Revisions		
Date	Comments	
3/21	STAFF CHANGES	
9/23	REVISED BY STAFF	
1/24	REVISED BY STAFF	

Town of Castle Rock
100 N. Wilcox St.
Castle Rock, CO 80104
Phone: (720) 733-2200
Fax: (720) 733-2217
Development Services

ELECTRIC CONTROL VALVE IN MULCH BEDS

DETAIL PLAN NO.
IR-17
Sheet 1 of 1

Issued By: Town of Castle Rock, Development Services February 1, 2024



OPERATIONAL INDICATOR

4

Project Name:	**8015-Praxis Street** **Praxis Street**
Project Location:	***Castle Rock***
Tap Description:	***Tap 3***
Date prepared:	***28-Jan-25***

Seasonal Water Use and Peak Flow Projections Prepared By HydroSystems-KDI, Inc.

Description	Irrigated Area (Acre)	Month	Application Rate (in/mo/sqft)	Water Application (gallons)	Peak Season Projected Demand (GPM)
		May	1.67	5,937	
Shrubs & Trees	0.13	June	2.22	7,900	
Drip Irrigated		July	**2.40**	**8,534**	**1.3**
		August	2.09	7,421	
		September	1.62	5,745	
Irrigation Season Totals			10.00	35,536	
				0.11 acre-feet	
		May	1.17	7,429	
Right of Way Mix	0.23	June	1.56	9,886	
Spray Irrigated		July	**1.68**	**10,680**	**1.7**
		August	1.46	9,287	
		September	1.13	7,190	
Irrigation Season Totals			7.00	44,471	
				0.14 acre-feet	

Site Totals		
Irrigated Area:	***15,893 Sq.Ft.***	***0.36 Acres***
Water Use per Year:	***80,007 Gallons***	***0.25 Acre-feet***
Average Water per Year:	***5.03 Gallons/SqFt***	***8.07 Inches/SqFt***
Peak Season Monthly Water Use:	***19,214 Gallons***	***0.06 Acre-feet***
Average Peak Season Flow:	***3 GPM***	
Required Tap Size:	***3/4 Inches***	

Projections are based on a three day per week, eight hour per day, peak season watering schedule.
Peak season application for Right of Way Mix is 0.38" per week.
Peak season application for Shrubs & Trees is 0.54" per week.

WATER USE CHART

POINT OF CONNECTION #3

C1

Project Name:	**8015-Praxis Street** **Praxis Street**
Project Location:	***Castle Rock***
Tap Description:	***Tap 3***
Tap Size:	***3/4"***

Irrigation System Hydraulic Worksheet
Prepared by HydroSystems-KDI, Inc.

Date: ***03-Dec-24***
Static Water Pressure:* ***104*** ***From:*** ***Julia Wells***
*****This value has been decreased by safety factor of:*** ***10%*** ***of:*** ***Water Operations TOCR***
Hydraulic Grade calculated at Zone:

Equipment or Material	Quantity (one if not specified)	Nominal Size	Equipment or Pipe Material	Friction Loss Through Pipe per Chart (psi)		Velocity through pipes (ft/sec)	Flow Rate (gpm)	Loss/Gain (psi)
Corp Stop:		3/4"	Typical Corp. Stop				11	1.00
Svc Line (tap to meter):	30 LF	3/4"	K Copper	17.19	/100 FT	8.09	11	5.16
Curb Stop:		3/4"	Typical Curb Stop				11	0.50
Water Meter:		3/4"	Typical Meter				11	1.90
Svc Line (meter to backflow):	20 LF	3/4"	K Copper	17.19	/100 FT	8.09	11	3.44
Stop & Waste:		3/4"	Typical Stop & Waste Valve				11	0.60
Backflow:		3/4"	Febco 825YA				11	12.50
Point of Connection (POC) Subtotal:								**25.10**
Pressure downstream of POC:								**79.31**
Master Valve:	1	"	Hunter ICV				11	3.00
Flow Sensor:	1	"	CST FSI				11	1.00
Gate Valve:	4	2"	Typical Bronze Gate Valve				11	0.00
Pressure Required at Head:			Drip					35.00
Lateral Allowance:								3.00
Control Valve allowance:	1	"	Hunter ICV				11	3.00
Mainline allowances:	1151 LF	1 1/2"	CL 200 PVC	0.30	/100 FT	1.65	11	3.45
Mainline Fitting allowance:		10%	of Mainline allowances					0.35
Elevation: Tap Elev.	6276		Control Valve Elev.	6285				3.90
Factor of Safety:		5%	System Losses					3.89

Total System Hydraulic Losses (PSI)		***81.68***
Provided Water Pressure (PSI)		***104.40***
Pump Pressure Boost (PSI)		***0.00***
Residual Pressure (PSI), PRV Required		***22.72***
	Irrigated Area: ***14953 sqft***	
	Town of Castle Rock provides a minimum of 43 psi	

HYDRAULIC WORKSHEET

POINT OF CONNECTION #3

C2

TOWN OF CASTLE ROCK COLORADO

IRRIGATION CHART

Contact Information

Registered Landscaper	See Stamp, Same Sheet
Company Name	HydrosystemsKDI
Address	860 Tabor St., Suite 200
Phone	303.980.5327
Email	See Stamp, Same Sheet
Registration #	See Stamp, Same Sheet

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle* (Nozzle/Emitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*
C1	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	10	0.4	14	1	136
C2	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
C3	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	10	0.4	14	1	136
C4	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
C5	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
C6	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	6	0.4	14	1	81
C7	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	7	0.4	14	1	95
C8	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	11	0.4	14	1	149
C9	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	11	0.4	14	1	149
C10	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
C11	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	9	0.4	14	1	122
C12	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	9	0.4	14	1	122
C13	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	11	0.4	14	1	149
C14	Low	Shrubs & Trees	Drip - Point Source	0.5gph - 1.0gph	0.50	3	2.4	288	22	865
C15	Low	Right of Way Native	Hunter 12" pop-up	12	1.68	11	0.4	14	1	149
Total							**Min/Month**	**Min/cycle**	**Gallons/Month**	
							1577	119	5612	

***Zones noting "Assorted" nozzles contain a mix of popup heads from the same family, in multiple throw radii. Refer to plans & construction notes for spacing and throw of each head.**

CONTROLLER CHART

POINT OF CONNECTION #3

C3

DIRECTORY

IRRIGATION SCHEDULE	IR0
IRRIGATION NOTES	IR0
IRRIGATION OVERALL PLAN	IR1
IRRIGATION PLANS	IR2 - IR5
IRRIGATION DETAILS	IR6 - IR9
IRRIGATION CHARTS	IR9

TOWN APPROVAL BLOCK
TOWN OF CASTLE ROCK APPROVAL
PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

APPROVED BY: TOWN OF CASTLE ROCK COLORADO — DEVELOPMENT SERVICES APPROVED — By tkucewesky on 04/15/2025

DEVELOPMENT SERVICES Approved CD24-0040 Plans.pdf — DATE
Record Document on File

PROFESSIONAL LANDSCAPE ARCHITECT CERTIFICATION

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES; AND I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

Registered Landscape Professional/Irrigation Designer: Jill Bersano #15-1080

KDI HydroSystems
Irrigation Consulting & Water Management
13949 W. Colfax Ave, Suite 260 Lakewood, Colorado 80401
o: 303.980.5327 www.hydrosystemskdi.com

02/07/2025
(LANDSCAPE ARCHITECT SIGNATURE AND SEAL) DATE

Know what's below. Call before you dig.

DESIGNED BY: KJD
CHECKED BY: JSB
DRAWN BY: KJD

ISSUE DATE: 02-07-2025

DATE	REVISION COMMENTS
12-06-2024	PRAXIS PICD #1
02-07-2025	PRAXIS PICD #2

WENK ASSOCIATES
PLANNERS & LANDSCAPE ARCHITECTS
1130 31ST ST STE 101
DENVER, CO 80205
FAX. 628.0004
303.628.0003

CONFLUENCE COMPANIES, LLC

PRAXIS STREET - OFF SITE IMPROVEMENT PLANS
IRRIGATION DETAILS & CHARTS

FOR AND ON BEHALF OF WENK ASSOCIATES
NOT VALID WITHOUT ORIGINAL SIGNATURE

PROJECT #: 200726
SHEET NUMBER
66
66 OF 66

PLOTTED: 7/8/2025 8:08:08 AM BY KEVIN.JACKSON
FILE PATH: I:\2007\007-006\CAD\SHEETS\PRAXIS STREET\IRRIGATION\PRAXIS ST REVISED LAYOUT.dwg

HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

April 23, 2025

Attention: Kevin Sullivan
Castle Rock Fire and Rescue Department
300 Perry Street
Castle Rock, CO 80104

Brickyard- Building 15 (Castle Rock Sports Center)

RE: Confirmation Memo of Required Fire Flow

HKS Project No. 200726

To Life Safety Division,

Please accept the following required fire flow evaluation(s) based upon the currently adopted 2018 International Fire Code for review and confirmation for each of the following proposed buildings.

Building 15

Lot 1/Block 4

Total Fire Flow Calculation Area: 145,593 square feet

Building Construction Type: II-B

Are fire sprinklers provided throughout this building? YES, NFPA 13

Are you proposing a reduction in Required Fire Flow for fire sprinklers? YES

Are Fire walls provided in this building? NO

Reference Appendix B, Table B105.1

Calculated Fire Flow: 8000 gpm at 20 psi

Required (minimum) Fire Flow: 3000 gpm at 20 psi

Flow Duration: 3- hours

The fire department will allow a 62.5% reduction bringing the required fire flow to the minimum allowable of: 3000 gpm for a duration of 3-Hours

Reference Appendix C, Table C105.1

Required Number of Fire Hydrants: 3

Maximum Average Spacing: 400-ft

Maximum Distance from Fire Hydrant to Building: 15-feet, as a fire truck would drive

(Note in sprinkled buildings, a hydrant shall be located within 100-ft of the FDC)

Design Engineers Signature: _____ Date: 04-23-2025

The determined Required Fire Flow, Number of Fire Hydrants and Hydrant Spacing as shown above satisfy the fire protection requirements of the Castle Rock Fire and Rescue Department.
Final fire hydrant placement will be determined and approved during the Site Development (SDP) and/or Construction Document (CD) review phase.

Castle Rock Fire Signature: Kevin Sullivan Digitally signed by Kevin Sullivan DN: C=US, E=FPO@CRGOV.COM, O=Castle Rock Fire and Rescue Department, OU="Castle Rock Fire and Life Safety Division ", CN=Kevin Sullivan Reason: Signature Contact Info: ksullivan@crgov.com Date: 2025.04.28 12:27:36-06'00' Date: 08-30-2024

Fire Department Plan Review Number: FIRE REVIEW 18337

APPENDIX B – WATER STORAGE

Brickyard
Water System Design Criteria - Storage Requirements
HKS Project #:200726
ToCR Project #: CD24-0030
Date: 07-01-2025

$$Storage\ Volume\ (MG) = Maximum\ Day\ Demand\ (MG) + Fire\ Flow\ (MG)$$

Max Demand = (Average Day Demand) x 2.5
City of Castle Rock Multi Family Design = 260 gpd/dwelling unit
Proposed Unit Count = 384
City of Castle Rock Hotel Design = 75gpd/dwelling unit
Proposed Unit Count = 123
City of Castle Rock Office/Retail Design = 0.2 gpd/SF
Proposed SF = 82,900
City of Castle Rock Gym Design = 0.5 gpd/SF
Proposed SF = 213,193
City of Castle Rock Restaurant = 3.0 gpd/SF
Proposed SF = 22,400
Irrigated Acreage Demand = 3750 gpd/acre
Irrigated Acreage = 6.24
Fire Flow is based on Building 9; 2 Hydrants at 1000 gpm

Maximum Day Demand = (GPM x 60 Minutes x 24 hours)

560.49	GPM
807,104	Gal

Fire Flow = (Total Reduced Fire Flow x 60 Minutes x Required Fire Flow Duration)

2,000	GPM
2	hr
240,000	Gal

Total	
1,047,104	Gal
1.047	MG

TOWN OF CASTLE ROCK
FIRE FLOW TEST FORM

5/24/2023 **F9-2023**

Brickyard Project - Prairie Hawk and Topeka

see attached map for location

Test Conducted By: Fire flow is estimated with hydraulic model

Pressure Hydrant

Hydrant ID	FH	**3608**	
Pre-test Static Pressure (Ps1)		128	psi
Residual Pressure (Pr)		117	psi
Post-test Static Pressure (Ps2)			psi
Flowing Hydrant			
Hydrant ID	FH	**2846**	
Orifice Side (D)			in
Main Size (Dp)			in
Calculated Flowrate (Qr)		1500	gpm
Estimated Volume Discharged (Q)			gallons



CASTLE ROCK water
Securing our future drop by drop

VICINITY MAP

0 40 80 160 240 Feet

Date: 5/24/2023

1 inch = 96 feet

Document Path: \\CRSAN1\UTUsers\jwells\Desktop\Julia ArcMap - Letter.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 it's 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 2020, Town of Castle Rock Utilities Mapping.

CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

TOWN OF CASTLE ROCK
FIRE FLOW TEST FORM

5/24/2023 **F10-2023**

Brickyard Project - Topeka and Atchison

see attached map for location

Test Conducted By: Fire flow is estimated with hydraulic model

Pressure Hydrant

Hydrant ID FH	**2836**	
Pre-test Static Pressure (Ps1)	103.8	psi
Residual Pressure (Pr)	95	psi
Post-test Static Pressure (Ps2)		psi
Flowing Hydrant		
Hydrant ID FH	**2841**	
Orifice Side (D)		in
Main Size (Dp)		in
Calculated Flowrate (Qr)	1500	gpm
Estimated Volume Discharged (Q)		gallons



CASTLE ROCK Qwater
Securing our future drop by drop

VICINITY MAP

0 40 80 160 240 Feet

Date: 5/24/2023

1 inch = 96 feet

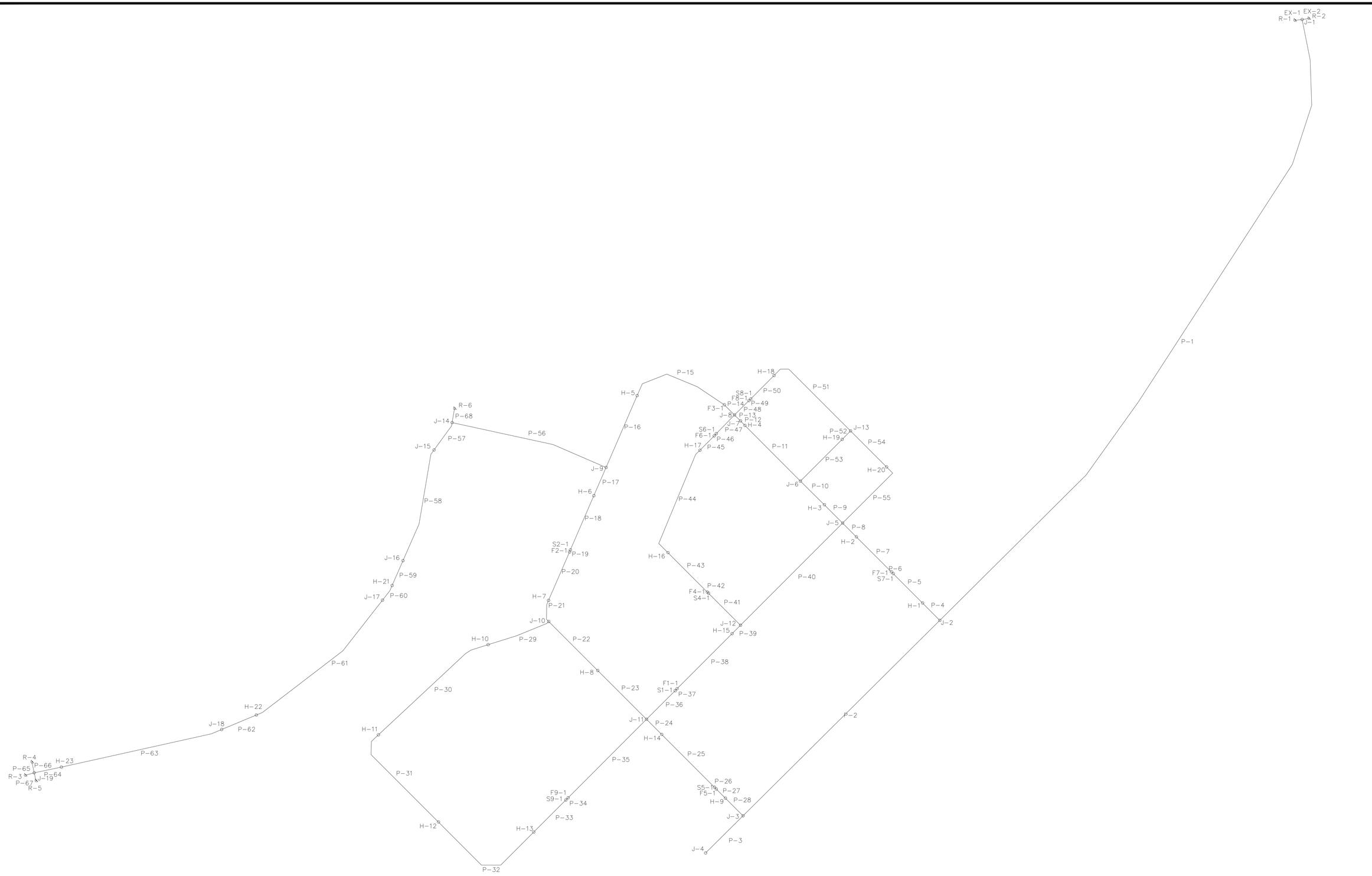
Document Path: \\CRSAN1\UTUsers\jwells\Desktop\Julia ArcMap - Letter.mxd

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 it's 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 2020, Town of Castle Rock Utilities Mapping.

CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

APPENDIX C – WATER HYDRAULIC ANALYSIS AND MODELING

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

100 0 100 200
SCALE: 1" = 100'

Filepath: P:\2020\20072600\DOCUMENTS\UTILITIES\WATER\WATERCAD\BRICKYARD WATERCAD MAP EXHIBIT.DWG Layout: LAYOUT1
Model: Model
Plotted: MON 07/07/23 3:36:28P By: JT Robbins

100% Static

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	0	PVC	120.0	0.00	0.000	0.0
EX-2	16	12.0	0	PVC	120.0	0.00	0.000	0.0
P-1	1,723	16.0	0	PVC	120.0	0.00	0.000	0.0
P-2	657	16.0	0	PVC	120.0	0.00	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	0	PVC	120.0	0.00	0.000	0.0
P-5	98	8.0	0	PVC	120.0	0.00	0.000	0.0
P-6	6	8.0	0	PVC	120.0	0.00	0.000	0.0
P-7	117	8.0	0	PVC	120.0	0.00	0.000	0.0
P-8	46	8.0	0	PVC	120.0	0.00	0.000	0.0
P-9	61	8.0	0	PVC	120.0	0.00	0.000	0.0
P-10	80	8.0	0	PVC	120.0	0.00	0.000	0.0
P-11	186	8.0	0	PVC	120.0	0.00	0.000	0.0
P-12	15	8.0	0	PVC	120.0	0.00	0.000	0.0
P-13	20	12.0	0	PVC	120.0	0.00	0.000	0.0
P-14	34	12.0	0	PVC	120.0	0.00	0.000	0.0
P-15	248	12.0	0	PVC	120.0	0.00	0.000	0.0
P-16	185	12.0	0	PVC	120.0	0.00	0.000	0.0
P-17	73	12.0	0	PVC	120.0	0.00	0.000	0.0
P-18	140	12.0	0	PVC	120.0	0.00	0.000	0.0
P-19	5	12.0	0	PVC	120.0	0.00	0.000	0.0
P-20	125	12.0	0	PVC	120.0	0.00	0.000	0.0
P-21	53	12.0	0	PVC	120.0	0.00	0.000	0.0
P-22	164	12.0	0	PVC	120.0	0.00	0.000	0.0
P-23	163	12.0	0	PVC	120.0	0.00	0.000	0.0
P-24	51	12.0	0	PVC	120.0	0.00	0.000	0.0
P-25	176	12.0	0	PVC	120.0	0.00	0.000	0.0
P-26	6	12.0	0	PVC	120.0	0.00	0.000	0.0
P-27	30	12.0	0	PVC	120.0	0.00	0.000	0.0
P-28	59	12.0	0	PVC	120.0	0.00	0.000	0.0
P-29	154	12.0	0	PVC	120.0	0.00	0.000	0.0
P-30	340	12.0	0	PVC	120.0	0.00	0.000	0.0
P-31	279	12.0	0	PVC	120.0	0.00	0.000	0.0
P-32	300	12.0	0	PVC	120.0	0.00	0.000	0.0
P-33	108	12.0	0	PVC	120.0	0.00	0.000	0.0
P-34	7	12.0	0	PVC	120.0	0.00	0.000	0.0
P-35	263	12.0	0	PVC	120.0	0.00	0.000	0.0
P-36	96	8.0	0	PVC	120.0	0.00	0.000	0.0
P-37	7	8.0	0	PVC	120.0	0.00	0.000	0.0
P-38	184	8.0	0	PVC	120.0	0.00	0.000	0.0
P-39	28	8.0	0	PVC	120.0	0.00	0.000	0.0
P-40	342	8.0	0	PVC	120.0	0.00	0.000	0.0
P-41	107	8.0	0	PVC	120.0	0.00	0.000	0.0
P-42	4	8.0	0	PVC	120.0	0.00	0.000	0.0
P-43	132	8.0	0	PVC	120.0	0.00	0.000	0.0
P-44	273	8.0	0	PVC	120.0	0.00	0.000	0.0

100% Static

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	0	PVC	120.0	0.00	0.000	0.0
P-46	7	6.0	0	PVC	120.0	0.00	0.000	0.0
P-47	62	6.0	0	PVC	120.0	0.00	0.000	0.0
P-48	48	8.0	0	PVC	120.0	0.00	0.000	0.0
P-49	6	8.0	0	PVC	120.0	0.00	0.000	0.0
P-50	78	8.0	0	PVC	120.0	0.00	0.000	0.0
P-51	248	8.0	0	PVC	120.0	0.00	0.000	0.0
P-52	28	6.0	0	PVC	120.0	0.00	0.000	0.0
P-53	139	8.0	0	PVC	120.0	0.00	0.000	0.0
P-54	121	8.0	0	PVC	120.0	0.00	0.000	0.0
P-55	188	8.0	0	PVC	120.0	0.00	0.000	0.0
P-56	381	12.0	0	PVC	120.0	0.00	0.000	0.0
P-57	78	12.0	0	PVC	120.0	0.00	0.000	0.0
P-58	275	12.0	0	PVC	120.0	0.00	0.000	0.0
P-59	64	12.0	0	PVC	120.0	0.00	0.000	0.0
P-60	42	12.0	0	PVC	120.0	0.00	0.000	0.0
P-61	408	12.0	0	PVC	120.0	0.00	0.000	0.0
P-62	89	12.0	0	PVC	120.0	0.00	0.000	0.0
P-63	390	12.0	0	PVC	120.0	0.00	0.000	0.0
P-64	66	12.0	0	PVC	120.0	0.00	0.000	0.0
P-65	22	12.0	0	PVC	120.0	0.00	0.000	0.0
P-66	26	16.0	0	PVC	120.0	0.00	0.000	0.0
P-67	19	16.0	0	PVC	120.0	0.00	0.000	0.0
P-68	34	12.0	0	PVC	120.0	0.00	0.000	0.0

100% Static

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	122	6,523.00	122
F2-1	0	112	6,523.00	112
F3-1	0	118	6,523.00	118
F4-1	0	119	6,523.00	119
F5-1	0	127	6,523.00	127
F6-1	0	122	6,523.00	122
F7-1	0	126	6,523.00	126
F8-1	0	119	6,523.00	119
F9-1	0	119	6,523.00	119
H-1	0	130	6,523.00	130
H-2	0	124	6,523.00	124
H-3	0	124	6,523.00	124
H-4	0	119	6,523.00	119
H-5	0	113	6,523.00	113
H-6	0	109	6,523.00	109
H-7	0	115	6,523.00	115
H-8	0	120	6,523.00	120
H-9	0	127	6,523.00	127
H-10	0	115	6,523.00	115
H-11	0	112	6,523.00	112
H-12	0	113	6,523.00	113
H-13	0	118	6,523.00	118
H-14	0	122	6,523.00	122
H-15	0	121	6,523.00	121
H-16	0	115	6,523.00	115
H-17	0	117	6,523.00	117
H-18	0	119	6,523.00	119
H-19	0	123	6,523.00	123
H-20	0	124	6,523.00	124
H-21	0	99	6,523.00	99
H-22	0	103	6,523.00	103
H-23	0	106	6,523.00	106
J-1	0	136	6,523.00	136
J-2	0	130	6,523.00	130
J-3	0	128	6,523.00	128
J-4	0	128	6,523.00	128
J-5	0	124	6,523.00	124
J-6	0	122	6,523.00	122
J-7	0	119	6,523.00	119
J-8	0	119	6,523.00	119
J-9	0	109	6,523.00	109
J-10	0	116	6,523.00	116
J-11	0	122	6,523.00	122
J-12	0	123	6,523.00	123
J-13	0	122	6,523.00	122
J-14	0	102	6,523.00	102

100% Static

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	101	6,523.00	101
J-16	0	99	6,523.00	99
J-17	0	99	6,523.00	99
J-18	0	104	6,523.00	104
J-19	0	105	6,523.00	105
S1-1	0	122	6,523.00	122
S2-1	0	111	6,523.00	111
S4-1	0	119	6,523.00	119
S5-1	0	127	6,523.00	127
S6-1	0	122	6,523.00	122
S7-1	0	126	6,523.00	126
S8-1	0	119	6,523.00	119
S9-1	0	119	6,523.00	119

100% Static

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,523.00
R-2	6,504.00	6,523.00
R-3	6,504.00	6,523.00
R-4	6,504.00	6,523.00
R-5	6,504.00	6,523.00
R-6	6,504.00	6,523.00

20% Static

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	0	PVC	120.0	0.00	0.000	0.0
EX-2	16	12.0	0	PVC	120.0	0.00	0.000	0.0
P-1	1,723	16.0	0	PVC	120.0	0.00	0.000	0.0
P-2	657	16.0	0	PVC	120.0	0.00	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	0	PVC	120.0	0.00	0.000	0.0
P-5	98	8.0	0	PVC	120.0	0.00	0.000	0.0
P-6	6	8.0	0	PVC	120.0	0.00	0.000	0.0
P-7	117	8.0	0	PVC	120.0	0.00	0.000	0.0
P-8	46	8.0	0	PVC	120.0	0.00	0.000	0.0
P-9	61	8.0	0	PVC	120.0	0.00	0.000	0.0
P-10	80	8.0	0	PVC	120.0	0.00	0.000	0.0
P-11	186	8.0	0	PVC	120.0	0.00	0.000	0.0
P-12	15	8.0	0	PVC	120.0	0.00	0.000	0.0
P-13	20	12.0	0	PVC	120.0	0.00	0.000	0.0
P-14	34	12.0	0	PVC	120.0	0.00	0.000	0.0
P-15	248	12.0	0	PVC	120.0	0.00	0.000	0.0
P-16	185	12.0	0	PVC	120.0	0.00	0.000	0.0
P-17	73	12.0	0	PVC	120.0	0.00	0.000	0.0
P-18	140	12.0	0	PVC	120.0	0.00	0.000	0.0
P-19	5	12.0	0	PVC	120.0	0.00	0.000	0.0
P-20	125	12.0	0	PVC	120.0	0.00	0.000	0.0
P-21	53	12.0	0	PVC	120.0	0.00	0.000	0.0
P-22	164	12.0	0	PVC	120.0	0.00	0.000	0.0
P-23	163	12.0	0	PVC	120.0	0.00	0.000	0.0
P-24	51	12.0	0	PVC	120.0	0.00	0.000	0.0
P-25	176	12.0	0	PVC	120.0	0.00	0.000	0.0
P-26	6	12.0	0	PVC	120.0	0.00	0.000	0.0
P-27	30	12.0	0	PVC	120.0	0.00	0.000	0.0
P-28	59	12.0	0	PVC	120.0	0.00	0.000	0.0
P-29	154	12.0	0	PVC	120.0	0.00	0.000	0.0
P-30	340	12.0	0	PVC	120.0	0.00	0.000	0.0
P-31	279	12.0	0	PVC	120.0	0.00	0.000	0.0
P-32	300	12.0	0	PVC	120.0	0.00	0.000	0.0
P-33	108	12.0	0	PVC	120.0	0.00	0.000	0.0
P-34	7	12.0	0	PVC	120.0	0.00	0.000	0.0
P-35	263	12.0	0	PVC	120.0	0.00	0.000	0.0
P-36	96	8.0	0	PVC	120.0	0.00	0.000	0.0
P-37	7	8.0	0	PVC	120.0	0.00	0.000	0.0
P-38	184	8.0	0	PVC	120.0	0.00	0.000	0.0
P-39	28	8.0	0	PVC	120.0	0.00	0.000	0.0
P-40	342	8.0	0	PVC	120.0	0.00	0.000	0.0
P-41	107	8.0	0	PVC	120.0	0.00	0.000	0.0
P-42	4	8.0	0	PVC	120.0	0.00	0.000	0.0
P-43	132	8.0	0	PVC	120.0	0.00	0.000	0.0
P-44	273	8.0	0	PVC	120.0	0.00	0.000	0.0

20% Static

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	0	PVC	120.0	0.00	0.000	0.0
P-46	7	6.0	0	PVC	120.0	0.00	0.000	0.0
P-47	62	6.0	0	PVC	120.0	0.00	0.000	0.0
P-48	48	8.0	0	PVC	120.0	0.00	0.000	0.0
P-49	6	8.0	0	PVC	120.0	0.00	0.000	0.0
P-50	78	8.0	0	PVC	120.0	0.00	0.000	0.0
P-51	248	8.0	0	PVC	120.0	0.00	0.000	0.0
P-52	28	6.0	0	PVC	120.0	0.00	0.000	0.0
P-53	139	8.0	0	PVC	120.0	0.00	0.000	0.0
P-54	121	8.0	0	PVC	120.0	0.00	0.000	0.0
P-55	188	8.0	0	PVC	120.0	0.00	0.000	0.0
P-56	381	12.0	0	PVC	120.0	0.00	0.000	0.0
P-57	78	12.0	0	PVC	120.0	0.00	0.000	0.0
P-58	275	12.0	0	PVC	120.0	0.00	0.000	0.0
P-59	64	12.0	0	PVC	120.0	0.00	0.000	0.0
P-60	42	12.0	0	PVC	120.0	0.00	0.000	0.0
P-61	408	12.0	0	PVC	120.0	0.00	0.000	0.0
P-62	89	12.0	0	PVC	120.0	0.00	0.000	0.0
P-63	390	12.0	0	PVC	120.0	0.00	0.000	0.0
P-64	66	12.0	0	PVC	120.0	0.00	0.000	0.0
P-65	22	12.0	0	PVC	120.0	0.00	0.000	0.0
P-66	26	16.0	0	PVC	120.0	0.00	0.000	0.0
P-67	19	16.0	0	PVC	120.0	0.00	0.000	0.0
P-68	34	12.0	0	PVC	120.0	0.00	0.000	0.0

20% Static

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,504.00	113
F2-1	0	103	6,504.00	103
F3-1	0	110	6,504.00	110
F4-1	0	111	6,504.00	111
F5-1	0	118	6,504.00	118
F6-1	0	110	6,504.00	110
F7-1	0	116	6,504.00	116
F8-1	0	110	6,504.00	110
F9-1	0	111	6,504.00	111
H-1	0	122	6,504.00	122
H-2	0	116	6,504.00	116
H-3	0	115	6,504.00	115
H-4	0	111	6,504.00	111
H-5	0	105	6,504.00	105
H-6	0	101	6,504.00	101
H-7	0	107	6,504.00	107
H-8	0	111	6,504.00	111
H-9	0	118	6,504.00	118
H-10	0	107	6,504.00	107
H-11	0	103	6,504.00	103
H-12	0	105	6,504.00	105
H-13	0	109	6,504.00	109
H-14	0	114	6,504.00	114
H-15	0	113	6,504.00	113
H-16	0	109	6,504.00	109
H-17	0	109	6,504.00	109
H-18	0	111	6,504.00	111
H-19	0	114	6,504.00	114
H-20	0	116	6,504.00	116
H-21	0	90	6,504.00	90
H-22	0	95	6,504.00	95
H-23	0	98	6,504.00	98
J-1	0	128	6,504.00	128
J-2	0	122	6,504.00	122
J-3	0	120	6,504.00	120
J-4	0	120	6,504.00	120
J-5	0	116	6,504.00	116
J-6	0	114	6,504.00	114
J-7	0	110	6,504.00	110
J-8	0	110	6,504.00	110
J-9	0	101	6,504.00	101
J-10	0	107	6,504.00	107
J-11	0	114	6,504.00	114
J-12	0	115	6,504.00	115
J-13	0	114	6,504.00	114
J-14	0	94	6,504.00	94

20% Static

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,504.00	93
J-16	0	90	6,504.00	90
J-17	0	90	6,504.00	90
J-18	0	96	6,504.00	96
J-19	0	98	6,504.00	98
S1-1	0	113	6,504.00	113
S2-1	0	103	6,504.00	103
S4-1	0	111	6,504.00	111
S5-1	0	118	6,504.00	118
S6-1	0	110	6,504.00	110
S7-1	0	116	6,504.00	116
S8-1	0	110	6,504.00	110
S9-1	0	111	6,504.00	111

20% Static

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% ADD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	52	PVC	120.0	0.15	0.000	0.0
EX-2	16	12.0	-54	PVC	120.0	0.15	0.000	0.0
P-1	1,723	16.0	105	PVC	120.0	0.17	0.000	0.0
P-2	657	16.0	84	PVC	120.0	0.13	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	22	PVC	120.0	0.14	0.000	0.0
P-5	98	8.0	22	PVC	120.0	0.14	0.000	0.0
P-6	6	8.0	-2	PVC	120.0	0.01	0.000	0.0
P-7	117	8.0	-2	PVC	120.0	0.01	0.000	0.0
P-8	46	8.0	-2	PVC	120.0	0.01	0.000	0.0
P-9	61	8.0	-11	PVC	120.0	0.07	0.000	0.0
P-10	80	8.0	11	PVC	120.0	0.07	0.000	0.0
P-11	186	8.0	-11	PVC	120.0	0.07	0.000	0.0
P-12	15	8.0	-11	PVC	120.0	0.07	0.000	0.0
P-13	20	12.0	-11	PVC	120.0	0.03	0.000	0.0
P-14	34	12.0	35	PVC	120.0	0.10	0.000	0.0
P-15	248	12.0	-35	PVC	120.0	0.10	0.000	0.0
P-16	185	12.0	-35	PVC	120.0	0.10	0.000	0.0
P-17	73	12.0	67	PVC	120.0	0.19	0.000	0.0
P-18	140	12.0	67	PVC	120.0	0.19	0.000	0.0
P-19	5	12.0	61	PVC	120.0	0.17	0.000	0.0
P-20	125	12.0	61	PVC	120.0	0.17	0.000	0.0
P-21	53	12.0	61	PVC	120.0	0.17	0.000	0.0
P-22	164	12.0	38	PVC	120.0	0.11	0.000	0.0
P-23	163	12.0	38	PVC	120.0	0.11	0.000	0.0
P-24	51	12.0	-2	PVC	120.0	0.01	0.000	0.0
P-25	176	12.0	-2	PVC	120.0	0.01	0.000	0.0
P-26	6	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-27	30	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-28	59	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-29	154	12.0	23	PVC	120.0	0.07	0.000	0.0
P-30	340	12.0	-23	PVC	120.0	0.07	0.000	0.0
P-31	279	12.0	-23	PVC	120.0	0.07	0.000	0.0
P-32	300	12.0	-23	PVC	120.0	0.07	0.000	0.0
P-33	108	12.0	-23	PVC	120.0	0.07	0.000	0.0
P-34	7	12.0	28	PVC	120.0	0.08	0.000	0.0
P-35	263	12.0	28	PVC	120.0	0.08	0.000	0.0
P-36	96	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-37	7	8.0	16	PVC	120.0	0.10	0.000	0.0
P-38	184	8.0	16	PVC	120.0	0.10	0.000	0.0
P-39	28	8.0	16	PVC	120.0	0.10	0.000	0.0
P-40	342	8.0	16	PVC	120.0	0.10	0.000	0.0
P-41	107	8.0	0	PVC	120.0	0.00	0.000	0.0
P-42	4	8.0	-12	PVC	120.0	0.08	0.000	0.0
P-43	132	8.0	-12	PVC	120.0	0.08	0.000	0.0
P-44	273	8.0	-12	PVC	120.0	0.08	0.000	0.0

20% ADD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-12	PVC	120.0	0.08	0.000	0.0
P-46	7	6.0	-12	PVC	120.0	0.13	0.000	0.0
P-47	62	6.0	-15	PVC	120.0	0.18	0.000	0.0
P-48	48	8.0	9	PVC	120.0	0.06	0.000	0.0
P-49	6	8.0	9	PVC	120.0	0.06	0.000	0.0
P-50	78	8.0	7	PVC	120.0	0.05	0.000	0.0
P-51	248	8.0	7	PVC	120.0	0.05	0.000	0.0
P-52	28	6.0	0	PVC	120.0	0.00	0.000	0.0
P-53	139	8.0	0	PVC	120.0	0.00	0.000	0.0
P-54	121	8.0	-7	PVC	120.0	0.04	0.000	0.0
P-55	188	8.0	7	PVC	120.0	0.04	0.000	0.0
P-56	381	12.0	-103	PVC	120.0	0.29	0.000	0.0
P-57	78	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-58	275	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-59	64	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-60	42	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-61	408	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-62	89	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-63	390	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-64	66	12.0	-12	PVC	120.0	0.03	0.000	0.0
P-65	22	12.0	-2	PVC	120.0	0.01	0.000	0.0
P-66	26	16.0	-4	PVC	120.0	0.01	0.000	0.0
P-67	19	16.0	-5	PVC	120.0	0.01	0.000	0.0
P-68	34	12.0	-91	PVC	120.0	0.26	0.000	0.0

20% ADD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.97	113
F2-1	0	103	6,503.98	103
F3-1	0	110	6,503.98	110
F4-1	0	111	6,503.97	111
F5-1	0	118	6,503.97	118
F6-1	0	110	6,503.98	110
F7-1	0	116	6,503.98	116
F8-1	0	110	6,503.98	110
F9-1	0	111	6,503.97	111
H-1	0	122	6,503.98	122
H-2	0	116	6,503.98	116
H-3	0	115	6,503.98	115
H-4	0	111	6,503.98	111
H-5	0	105	6,503.98	105
H-6	0	101	6,503.98	101
H-7	0	107	6,503.98	107
H-8	0	111	6,503.97	111
H-9	0	118	6,503.97	118
H-10	0	107	6,503.97	107
H-11	0	103	6,503.97	103
H-12	0	105	6,503.97	105
H-13	0	109	6,503.97	109
H-14	0	114	6,503.97	114
H-15	0	113	6,503.97	113
H-16	0	109	6,503.98	109
H-17	0	109	6,503.98	109
H-18	0	111	6,503.98	111
H-19	0	114	6,503.98	114
H-20	0	116	6,503.98	116
H-21	0	90	6,504.00	90
H-22	0	95	6,504.00	95
H-23	0	98	6,504.00	98
J-1	0	128	6,504.00	128
J-2	0	122	6,503.98	122
J-3	0	120	6,503.98	120
J-4	0	120	6,503.98	120
J-5	0	116	6,503.98	116
J-6	0	114	6,503.98	114
J-7	0	110	6,503.98	110
J-8	0	110	6,503.98	110
J-9	0	101	6,503.98	101
J-10	0	107	6,503.97	107
J-11	0	114	6,503.97	114
J-12	0	115	6,503.97	115
J-13	0	114	6,503.98	114
J-14	0	94	6,504.00	94

20% ADD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,504.00	93
J-16	0	90	6,504.00	90
J-17	0	90	6,504.00	90
J-18	0	96	6,504.00	96
J-19	0	98	6,504.00	98
S1-1	29	113	6,503.97	113
S2-1	6	103	6,503.98	103
S4-1	12	111	6,503.97	111
S5-1	81	118	6,503.97	118
S6-1	4	110	6,503.98	110
S7-1	23	116	6,503.98	116
S8-1	2	110	6,503.98	110
S9-1	51	111	6,503.97	111

20% ADD

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	129	PVC	120.0	0.37	0.000	0.0
EX-2	16	12.0	-134	PVC	120.0	0.38	0.000	0.0
P-1	1,723	16.0	263	PVC	120.0	0.42	0.000	0.0
P-2	657	16.0	209	PVC	120.0	0.33	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	54	PVC	120.0	0.35	0.000	0.0
P-5	98	8.0	54	PVC	120.0	0.35	0.000	0.0
P-6	6	8.0	-5	PVC	120.0	0.03	0.000	0.0
P-7	117	8.0	-5	PVC	120.0	0.03	0.000	0.0
P-8	46	8.0	-5	PVC	120.0	0.03	0.000	0.0
P-9	61	8.0	-28	PVC	120.0	0.18	0.000	0.0
P-10	80	8.0	28	PVC	120.0	0.18	0.000	0.0
P-11	186	8.0	-27	PVC	120.0	0.17	0.000	0.0
P-12	15	8.0	-27	PVC	120.0	0.17	0.000	0.0
P-13	20	12.0	-27	PVC	120.0	0.08	0.000	0.0
P-14	34	12.0	89	PVC	120.0	0.25	0.000	0.0
P-15	248	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-16	185	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-17	73	12.0	168	PVC	120.0	0.48	0.000	0.0
P-18	140	12.0	168	PVC	120.0	0.48	0.000	0.0
P-19	5	12.0	152	PVC	120.0	0.43	0.000	0.0
P-20	125	12.0	152	PVC	120.0	0.43	0.000	0.0
P-21	53	12.0	152	PVC	120.0	0.43	0.000	0.0
P-22	164	12.0	95	PVC	120.0	0.27	0.000	0.0
P-23	163	12.0	95	PVC	120.0	0.27	0.000	0.0
P-24	51	12.0	-6	PVC	120.0	0.02	0.000	0.0
P-25	176	12.0	-6	PVC	120.0	0.02	0.000	0.0
P-26	6	12.0	-209	PVC	120.0	0.59	0.000	0.0
P-27	30	12.0	-209	PVC	120.0	0.59	0.000	0.0
P-28	59	12.0	-209	PVC	120.0	0.59	0.000	0.0
P-29	154	12.0	57	PVC	120.0	0.16	0.000	0.0
P-30	340	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-31	279	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-32	300	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-33	108	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-34	7	12.0	69	PVC	120.0	0.20	0.000	0.0
P-35	263	12.0	69	PVC	120.0	0.20	0.000	0.0
P-36	96	8.0	-31	PVC	120.0	0.20	0.000	0.0
P-37	7	8.0	40	PVC	120.0	0.26	0.000	0.0
P-38	184	8.0	40	PVC	120.0	0.26	0.000	0.0
P-39	28	8.0	40	PVC	120.0	0.26	0.000	0.0
P-40	342	8.0	40	PVC	120.0	0.26	0.000	0.0
P-41	107	8.0	0	PVC	120.0	0.00	0.000	0.0
P-42	4	8.0	-30	PVC	120.0	0.19	0.000	0.0
P-43	132	8.0	-30	PVC	120.0	0.19	0.000	0.0
P-44	273	8.0	-30	PVC	120.0	0.19	0.000	0.0

20% MDD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-30	PVC	120.0	0.19	0.000	0.0
P-46	7	6.0	-30	PVC	120.0	0.34	0.000	0.0
P-47	62	6.0	-39	PVC	120.0	0.44	0.000	0.0
P-48	48	8.0	23	PVC	120.0	0.15	0.000	0.0
P-49	6	8.0	23	PVC	120.0	0.15	0.000	0.0
P-50	78	8.0	18	PVC	120.0	0.12	0.000	0.0
P-51	248	8.0	18	PVC	120.0	0.12	0.000	0.0
P-52	28	6.0	1	PVC	120.0	0.01	0.000	0.0
P-53	139	8.0	-1	PVC	120.0	0.01	0.000	0.0
P-54	121	8.0	-17	PVC	120.0	0.11	0.000	0.0
P-55	188	8.0	17	PVC	120.0	0.11	0.000	0.0
P-56	381	12.0	-257	PVC	120.0	0.73	0.000	0.0
P-57	78	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-58	275	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-59	64	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-60	42	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-61	408	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-62	89	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-63	390	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-64	66	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-65	22	12.0	-6	PVC	120.0	0.02	0.000	0.0
P-66	26	16.0	-11	PVC	120.0	0.02	0.000	0.0
P-67	19	16.0	-13	PVC	120.0	0.02	0.000	0.0
P-68	34	12.0	-227	PVC	120.0	0.64	0.000	0.0

20% MDD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.85	113
F2-1	0	103	6,503.88	103
F3-1	0	110	6,503.89	110
F4-1	0	111	6,503.86	111
F5-1	0	118	6,503.85	118
F6-1	0	109	6,503.87	109
F7-1	0	116	6,503.88	116
F8-1	0	110	6,503.89	110
F9-1	0	111	6,503.84	111
H-1	0	122	6,503.89	122
H-2	0	116	6,503.88	116
H-3	0	115	6,503.88	115
H-4	0	111	6,503.89	111
H-5	0	105	6,503.90	105
H-6	0	101	6,503.90	101
H-7	0	107	6,503.87	107
H-8	0	111	6,503.86	111
H-9	0	118	6,503.86	118
H-10	0	106	6,503.86	106
H-11	0	103	6,503.85	103
H-12	0	105	6,503.85	105
H-13	0	109	6,503.85	109
H-14	0	114	6,503.85	114
H-15	0	113	6,503.86	113
H-16	0	109	6,503.86	109
H-17	0	109	6,503.87	109
H-18	0	111	6,503.88	111
H-19	0	114	6,503.88	114
H-20	0	116	6,503.88	116
H-21	0	90	6,504.00	90
H-22	0	95	6,504.00	95
H-23	0	98	6,504.00	98
J-1	0	128	6,504.00	128
J-2	0	122	6,503.89	122
J-3	0	119	6,503.87	119
J-4	0	119	6,503.87	119
J-5	0	116	6,503.88	116
J-6	0	114	6,503.88	114
J-7	0	110	6,503.89	110
J-8	0	110	6,503.89	110
J-9	0	101	6,503.90	101
J-10	0	107	6,503.86	107
J-11	0	114	6,503.85	114
J-12	0	115	6,503.86	115
J-13	0	114	6,503.88	114
J-14	0	94	6,503.99	94

20% MDD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.99	93
J-16	0	90	6,504.00	90
J-17	0	90	6,504.00	90
J-18	0	96	6,504.00	96
J-19	0	98	6,504.00	98
S1-1	71	113	6,503.85	113
S2-1	16	103	6,503.88	103
S4-1	30	111	6,503.86	111
S5-1	203	118	6,503.85	118
S6-1	9	110	6,503.87	110
S7-1	59	116	6,503.88	116
S8-1	5	110	6,503.89	110
S9-1	126	111	6,503.84	111

20% MDD

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% PHD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	285	PVC	120.0	0.81	0.000	0.0
EX-2	16	12.0	-294	PVC	120.0	0.83	0.000	0.0
P-1	1,723	16.0	579	PVC	120.0	0.92	0.000	0.2
P-2	657	16.0	460	PVC	120.0	0.73	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	119	PVC	120.0	0.76	0.000	0.0
P-5	98	8.0	119	PVC	120.0	0.76	0.000	0.0
P-6	6	8.0	-10	PVC	120.0	0.06	0.000	0.0
P-7	117	8.0	-10	PVC	120.0	0.06	0.000	0.0
P-8	46	8.0	-10	PVC	120.0	0.06	0.000	0.0
P-9	61	8.0	-61	PVC	120.0	0.39	0.000	0.0
P-10	80	8.0	61	PVC	120.0	0.39	0.000	0.0
P-11	186	8.0	-59	PVC	120.0	0.38	0.000	0.0
P-12	15	8.0	-59	PVC	120.0	0.38	0.000	0.0
P-13	20	12.0	-59	PVC	120.0	0.17	0.000	0.0
P-14	34	12.0	195	PVC	120.0	0.55	0.000	0.0
P-15	248	12.0	-195	PVC	120.0	0.55	0.000	0.0
P-16	185	12.0	-195	PVC	120.0	0.55	0.000	0.0
P-17	73	12.0	370	PVC	120.0	1.05	0.000	0.0
P-18	140	12.0	370	PVC	120.0	1.05	0.000	0.0
P-19	5	12.0	334	PVC	120.0	0.95	0.000	0.0
P-20	125	12.0	334	PVC	120.0	0.95	0.000	0.0
P-21	53	12.0	334	PVC	120.0	0.95	0.000	0.0
P-22	164	12.0	208	PVC	120.0	0.59	0.000	0.0
P-23	163	12.0	208	PVC	120.0	0.59	0.000	0.0
P-24	51	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-25	176	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-26	6	12.0	-460	PVC	120.0	1.30	0.001	0.0
P-27	30	12.0	-460	PVC	120.0	1.30	0.001	0.0
P-28	59	12.0	-460	PVC	120.0	1.30	0.001	0.0
P-29	154	12.0	126	PVC	120.0	0.36	0.000	0.0
P-30	340	12.0	-126	PVC	120.0	0.36	0.000	0.0
P-31	279	12.0	-126	PVC	120.0	0.36	0.000	0.0
P-32	300	12.0	-126	PVC	120.0	0.36	0.000	0.0
P-33	108	12.0	-126	PVC	120.0	0.36	0.000	0.0
P-34	7	12.0	152	PVC	120.0	0.43	0.000	0.0
P-35	263	12.0	152	PVC	120.0	0.43	0.000	0.0
P-36	96	8.0	-69	PVC	120.0	0.44	0.000	0.0
P-37	7	8.0	88	PVC	120.0	0.56	0.000	0.0
P-38	184	8.0	88	PVC	120.0	0.56	0.000	0.0
P-39	28	8.0	88	PVC	120.0	0.56	0.000	0.0
P-40	342	8.0	89	PVC	120.0	0.57	0.000	0.0
P-41	107	8.0	0	PVC	120.0	0.00	0.000	0.0
P-42	4	8.0	-65	PVC	120.0	0.42	0.000	0.0
P-43	132	8.0	-65	PVC	120.0	0.42	0.000	0.0
P-44	273	8.0	-65	PVC	120.0	0.42	0.000	0.0

20% PHD

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-65	PVC	120.0	0.42	0.000	0.0
P-46	7	6.0	-65	PVC	120.0	0.74	0.001	0.0
P-47	62	6.0	-85	PVC	120.0	0.96	0.001	0.0
P-48	48	8.0	51	PVC	120.0	0.33	0.000	0.0
P-49	6	8.0	51	PVC	120.0	0.33	0.000	0.0
P-50	78	8.0	40	PVC	120.0	0.25	0.000	0.0
P-51	248	8.0	40	PVC	120.0	0.25	0.000	0.0
P-52	28	6.0	2	PVC	120.0	0.02	0.000	0.0
P-53	139	8.0	-2	PVC	120.0	0.01	0.000	0.0
P-54	121	8.0	-37	PVC	120.0	0.24	0.000	0.0
P-55	188	8.0	37	PVC	120.0	0.24	0.000	0.0
P-56	381	12.0	-565	PVC	120.0	1.60	0.001	0.2
P-57	78	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-58	275	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-59	64	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-60	42	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-61	408	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-62	89	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-63	390	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-64	66	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-65	22	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-66	26	16.0	-25	PVC	120.0	0.04	0.000	0.0
P-67	19	16.0	-29	PVC	120.0	0.05	0.000	0.0
P-68	34	12.0	-499	PVC	120.0	1.41	0.001	0.0

20% PHD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.34	113
F2-1	0	103	6,503.48	103
F3-1	0	110	6,503.52	110
F4-1	0	111	6,503.39	111
F5-1	0	118	6,503.36	118
F6-1	0	109	6,503.45	109
F7-1	0	115	6,503.47	115
F8-1	0	110	6,503.51	110
F9-1	0	110	6,503.33	110
H-1	0	122	6,503.51	122
H-2	0	116	6,503.47	116
H-3	0	115	6,503.48	115
H-4	0	111	6,503.51	111
H-5	0	105	6,503.56	105
H-6	0	101	6,503.55	101
H-7	0	106	6,503.43	106
H-8	0	111	6,503.38	111
H-9	0	118	6,503.38	118
H-10	0	106	6,503.40	106
H-11	0	103	6,503.37	103
H-12	0	105	6,503.36	105
H-13	0	109	6,503.34	109
H-14	0	113	6,503.35	113
H-15	0	113	6,503.38	113
H-16	0	109	6,503.41	109
H-17	0	109	6,503.45	109
H-18	0	111	6,503.50	111
H-19	0	114	6,503.49	114
H-20	0	115	6,503.48	115
H-21	0	90	6,503.98	90
H-22	0	95	6,503.99	95
H-23	0	98	6,504.00	98
J-1	0	128	6,504.00	128
J-2	0	122	6,503.54	122
J-3	0	119	6,503.42	119
J-4	0	119	6,503.42	119
J-5	0	115	6,503.47	115
J-6	0	114	6,503.49	114
J-7	0	110	6,503.51	110
J-8	0	110	6,503.51	110
J-9	0	101	6,503.58	101
J-10	0	107	6,503.41	107
J-11	0	114	6,503.35	114
J-12	0	115	6,503.39	115
J-13	0	114	6,503.49	114
J-14	0	94	6,503.97	94

20% PHD

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.97	93
J-16	0	90	6,503.98	90
J-17	0	90	6,503.98	90
J-18	0	96	6,503.99	96
J-19	0	98	6,504.00	98
S1-1	157	113	6,503.34	113
S2-1	35	103	6,503.48	103
S4-1	66	111	6,503.39	111
S5-1	447	118	6,503.35	118
S6-1	20	109	6,503.46	109
S7-1	129	115	6,503.47	115
S8-1	11	110	6,503.51	110
S9-1	278	110	6,503.33	110

20% PHD

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 1

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	607	PVC	120.0	1.72	0.001	0.0
EX-2	16	12.0	-628	PVC	120.0	1.78	0.001	0.0
P-1	1,723	16.0	1,235	PVC	120.0	1.97	0.001	0.8
P-2	657	16.0	1,050	PVC	120.0	1.68	0.001	0.2
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	185	PVC	120.0	1.18	0.001	0.0
P-5	98	8.0	185	PVC	120.0	1.18	0.001	0.0
P-6	6	8.0	126	PVC	120.0	0.80	0.000	0.0
P-7	117	8.0	126	PVC	120.0	0.80	0.000	0.0
P-8	46	8.0	126	PVC	120.0	0.80	0.000	0.0
P-9	61	8.0	-72	PVC	120.0	0.46	0.000	0.0
P-10	80	8.0	72	PVC	120.0	0.46	0.000	0.0
P-11	186	8.0	-68	PVC	120.0	0.44	0.000	0.0
P-12	15	8.0	-68	PVC	120.0	0.44	0.000	0.0
P-13	20	12.0	-68	PVC	120.0	0.19	0.000	0.0
P-14	34	12.0	286	PVC	120.0	0.81	0.000	0.0
P-15	248	12.0	-286	PVC	120.0	0.81	0.000	0.0
P-16	185	12.0	-286	PVC	120.0	0.81	0.000	0.0
P-17	73	12.0	999	PVC	120.0	2.83	0.003	0.1
P-18	140	12.0	999	PVC	120.0	2.83	0.003	0.2
P-19	5	12.0	983	PVC	120.0	2.79	0.003	0.0
P-20	125	12.0	983	PVC	120.0	2.79	0.003	0.2
P-21	53	12.0	983	PVC	120.0	2.79	0.004	0.1
P-22	164	12.0	830	PVC	120.0	2.35	0.002	0.1
P-23	163	12.0	-670	PVC	120.0	1.90	0.001	0.1
P-24	51	12.0	-847	PVC	120.0	2.40	0.002	0.0
P-25	176	12.0	-847	PVC	120.0	2.40	0.002	0.2
P-26	6	12.0	-1,050	PVC	120.0	2.98	0.003	0.0
P-27	30	12.0	-1,050	PVC	120.0	2.98	0.003	0.0
P-28	59	12.0	-1,050	PVC	120.0	2.98	0.003	0.1
P-29	154	12.0	154	PVC	120.0	0.44	0.000	0.0
P-30	340	12.0	-154	PVC	120.0	0.44	0.000	0.0
P-31	279	12.0	-154	PVC	120.0	0.44	0.000	0.0
P-32	300	12.0	-154	PVC	120.0	0.44	0.000	0.0
P-33	108	12.0	-154	PVC	120.0	0.44	0.000	0.0
P-34	7	12.0	-27	PVC	120.0	0.08	0.000	0.0
P-35	263	12.0	-27	PVC	120.0	0.08	0.000	0.0
P-36	96	8.0	-204	PVC	120.0	1.30	0.001	0.0
P-37	7	8.0	-132	PVC	120.0	0.85	0.001	0.0
P-38	184	8.0	368	PVC	120.0	2.35	0.003	0.3
P-39	28	8.0	368	PVC	120.0	2.35	0.003	0.0
P-40	342	8.0	241	PVC	120.0	1.54	0.002	0.2
P-41	107	8.0	-126	PVC	120.0	0.81	0.000	0.0
P-42	4	8.0	-156	PVC	120.0	1.00	0.001	0.0
P-43	132	8.0	-156	PVC	120.0	1.00	0.001	0.0
P-44	273	8.0	-156	PVC	120.0	1.00	0.001	0.1

20% MDD+FF BLDG 1

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-156	PVC	120.0	1.00	0.001	0.0
P-46	7	6.0	-156	PVC	120.0	1.77	0.003	0.0
P-47	62	6.0	-165	PVC	120.0	1.87	0.003	0.1
P-48	48	8.0	52	PVC	120.0	0.33	0.000	0.0
P-49	6	8.0	52	PVC	120.0	0.33	0.000	0.0
P-50	78	8.0	47	PVC	120.0	0.30	0.000	0.0
P-51	248	8.0	47	PVC	120.0	0.30	0.000	0.0
P-52	28	6.0	3	PVC	120.0	0.04	0.000	0.0
P-53	139	8.0	-3	PVC	120.0	0.02	0.000	0.0
P-54	121	8.0	-44	PVC	120.0	0.28	0.000	0.0
P-55	188	8.0	44	PVC	120.0	0.28	0.000	0.0
P-56	381	12.0	-1,285	PVC	120.0	3.64	0.005	0.8
P-57	78	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-58	275	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-59	64	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-60	42	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-61	408	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-62	89	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-63	390	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-64	66	12.0	-150	PVC	120.0	0.43	0.000	0.0
P-65	22	12.0	-29	PVC	120.0	0.08	0.000	0.0
P-66	26	16.0	-56	PVC	120.0	0.09	0.000	0.0
P-67	19	16.0	-65	PVC	120.0	0.10	0.000	0.0
P-68	34	12.0	-1,135	PVC	120.0	3.22	0.004	0.1

20% MDD+FF BLDG 1

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	500	112	6,500.66	112
F2-1	0	102	6,501.44	102
F3-1	0	109	6,501.95	109
F4-1	0	110	6,501.42	110
F5-1	0	117	6,501.29	117
F6-1	0	109	6,501.73	109
F7-1	0	115	6,501.96	115
F8-1	0	109	6,501.94	109
F9-1	0	109	6,500.78	109
H-1	0	121	6,502.06	121
H-2	0	115	6,501.91	115
H-3	0	114	6,501.90	114
H-4	0	110	6,501.94	110
H-5	0	104	6,502.03	104
H-6	0	100	6,501.87	100
H-7	0	105	6,501.09	105
H-8	1,500	110	6,500.55	110
H-9	0	117	6,501.38	117
H-10	0	105	6,500.87	105
H-11	0	102	6,500.84	102
H-12	0	103	6,500.81	103
H-13	0	108	6,500.79	108
H-14	0	112	6,500.88	112
H-15	0	112	6,501.28	112
H-16	0	108	6,501.51	108
H-17	0	108	6,501.70	108
H-18	0	110	6,501.93	110
H-19	0	113	6,501.91	113
H-20	0	115	6,501.90	115
H-21	0	90	6,503.91	90
H-22	0	95	6,503.95	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.11	121
J-3	0	118	6,501.57	118
J-4	0	118	6,501.57	118
J-5	0	115	6,501.89	115
J-6	0	113	6,501.91	113
J-7	0	110	6,501.94	110
J-8	0	109	6,501.94	109
J-9	0	100	6,502.08	100
J-10	0	106	6,500.89	106
J-11	0	112	6,500.77	112
J-12	0	114	6,501.37	114
J-13	0	113	6,501.91	113
J-14	0	94	6,503.88	94

20% MDD+FF BLDG 1

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.88	93
J-16	0	90	6,503.91	90
J-17	0	90	6,503.92	90
J-18	0	96	6,503.96	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,500.67	112
S2-1	16	102	6,501.46	102
S4-1	30	110	6,501.42	110
S5-1	203	117	6,501.27	117
S6-1	9	109	6,501.75	109
S7-1	59	115	6,501.97	115
S8-1	5	110	6,501.94	110
S9-1	126	109	6,500.78	109

20% MDD+FF BLDG 1

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 2

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	632	PVC	120.0	1.79	0.001	0.0
EX-2	16	12.0	-653	PVC	120.0	1.85	0.001	0.0
P-1	1,723	16.0	1,285	PVC	120.0	2.05	0.001	0.9
P-2	657	16.0	1,017	PVC	120.0	1.62	0.001	0.2
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	269	PVC	120.0	1.71	0.002	0.0
P-5	98	8.0	269	PVC	120.0	1.71	0.002	0.1
P-6	6	8.0	210	PVC	120.0	1.34	0.001	0.0
P-7	117	8.0	210	PVC	120.0	1.34	0.001	0.1
P-8	46	8.0	210	PVC	120.0	1.34	0.001	0.0
P-9	61	8.0	19	PVC	120.0	0.12	0.000	0.0
P-10	80	8.0	-19	PVC	120.0	0.12	0.000	0.0
P-11	186	8.0	18	PVC	120.0	0.12	0.000	0.0
P-12	15	8.0	18	PVC	120.0	0.12	0.000	0.0
P-13	20	12.0	18	PVC	120.0	0.05	0.000	0.0
P-14	34	12.0	92	PVC	120.0	0.26	0.000	0.0
P-15	248	12.0	-92	PVC	120.0	0.26	0.000	0.0
P-16	185	12.0	-92	PVC	120.0	0.26	0.000	0.0
P-17	73	12.0	1,393	PVC	120.0	3.95	0.005	0.2
P-18	140	12.0	1,393	PVC	120.0	3.95	0.005	0.3
P-19	5	12.0	1,377	PVC	120.0	3.91	0.005	0.0
P-20	125	12.0	627	PVC	120.0	1.78	0.001	0.1
P-21	53	12.0	-873	PVC	120.0	2.48	0.003	0.1
P-22	164	12.0	-624	PVC	120.0	1.77	0.001	0.1
P-23	163	12.0	-624	PVC	120.0	1.77	0.001	0.1
P-24	51	12.0	-813	PVC	120.0	2.31	0.002	0.0
P-25	176	12.0	-813	PVC	120.0	2.31	0.002	0.2
P-26	6	12.0	-1,017	PVC	120.0	2.88	0.003	0.0
P-27	30	12.0	-1,017	PVC	120.0	2.88	0.003	0.0
P-28	59	12.0	-1,017	PVC	120.0	2.88	0.003	0.1
P-29	154	12.0	-249	PVC	120.0	0.71	0.000	0.0
P-30	340	12.0	249	PVC	120.0	0.71	0.000	0.0
P-31	279	12.0	249	PVC	120.0	0.71	0.000	0.0
P-32	300	12.0	249	PVC	120.0	0.71	0.000	0.0
P-33	108	12.0	249	PVC	120.0	0.71	0.000	0.0
P-34	7	12.0	375	PVC	120.0	1.06	0.000	0.0
P-35	263	12.0	375	PVC	120.0	1.06	0.000	0.1
P-36	96	8.0	186	PVC	120.0	1.19	0.001	0.0
P-37	7	8.0	257	PVC	120.0	1.64	0.002	0.0
P-38	184	8.0	257	PVC	120.0	1.64	0.002	0.1
P-39	28	8.0	257	PVC	120.0	1.64	0.002	0.0
P-40	342	8.0	178	PVC	120.0	1.14	0.001	0.1
P-41	107	8.0	-79	PVC	120.0	0.50	0.000	0.0
P-42	4	8.0	-109	PVC	120.0	0.69	0.000	0.0
P-43	132	8.0	-109	PVC	120.0	0.69	0.000	0.0
P-44	273	8.0	-109	PVC	120.0	0.69	0.000	0.0

20% MDD+FF BLDG 2

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-109	PVC	120.0	0.69	0.000	0.0
P-46	7	6.0	-109	PVC	120.0	1.23	0.001	0.0
P-47	62	6.0	-118	PVC	120.0	1.34	0.002	0.0
P-48	48	8.0	-8	PVC	120.0	0.05	0.000	0.0
P-49	6	8.0	-8	PVC	120.0	0.05	0.000	0.0
P-50	78	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-51	248	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-52	28	6.0	-1	PVC	120.0	0.01	0.000	0.0
P-53	139	8.0	1	PVC	120.0	0.01	0.000	0.0
P-54	121	8.0	12	PVC	120.0	0.08	0.000	0.0
P-55	188	8.0	-12	PVC	120.0	0.08	0.000	0.0
P-56	381	12.0	-1,485	PVC	120.0	4.21	0.006	1.0
P-57	78	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-58	275	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-59	64	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-60	42	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-61	408	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-62	89	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-63	390	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-64	66	12.0	-173	PVC	120.0	0.49	0.000	0.0
P-65	22	12.0	-33	PVC	120.0	0.09	0.000	0.0
P-66	26	16.0	-65	PVC	120.0	0.10	0.000	0.0
P-67	19	16.0	-76	PVC	120.0	0.12	0.000	0.0
P-68	34	12.0	-1,311	PVC	120.0	3.72	0.005	0.1

20% MDD+FF BLDG 2

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,500.82	112
F2-1	750	102	6,500.31	102
F3-1	0	109	6,501.48	109
F4-1	0	110	6,501.20	110
F5-1	0	117	6,501.19	117
F6-1	0	108	6,501.36	108
F7-1	0	115	6,501.67	115
F8-1	0	109	6,501.48	109
F9-1	0	109	6,500.59	109
H-1	0	121	6,501.86	121
H-2	0	115	6,501.53	115
H-3	0	114	6,501.48	114
H-4	0	110	6,501.48	110
H-5	0	104	6,501.49	104
H-6	0	100	6,501.10	100
H-7	1,500	105	6,500.15	105
H-8	0	110	6,500.52	110
H-9	0	117	6,501.28	117
H-10	0	105	6,500.35	105
H-11	0	102	6,500.43	102
H-12	0	103	6,500.49	103
H-13	0	108	6,500.56	108
H-14	0	112	6,500.82	112
H-15	0	112	6,501.13	112
H-16	0	108	6,501.25	108
H-17	0	108	6,501.35	108
H-18	0	110	6,501.48	110
H-19	0	113	6,501.48	113
H-20	0	115	6,501.48	115
H-21	0	90	6,503.89	90
H-22	0	95	6,503.94	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,501.97	121
J-3	0	118	6,501.46	118
J-4	0	118	6,501.46	118
J-5	0	114	6,501.48	114
J-6	0	113	6,501.48	113
J-7	0	109	6,501.48	109
J-8	0	109	6,501.47	109
J-9	0	100	6,501.49	100
J-10	0	106	6,500.31	106
J-11	0	112	6,500.72	112
J-12	0	114	6,501.18	114
J-13	0	113	6,501.48	113
J-14	0	94	6,503.84	94

20% MDD+FF BLDG 2

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.85	93
J-16	0	90	6,503.88	90
J-17	0	90	6,503.89	90
J-18	0	96	6,503.95	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,500.81	112
S2-1	16	102	6,500.34	102
S4-1	30	110	6,501.20	110
S5-1	203	117	6,501.17	117
S6-1	9	108	6,501.37	108
S7-1	59	115	6,501.68	115
S8-1	5	109	6,501.48	109
S9-1	126	109	6,500.59	109

20% MDD+FF BLDG 2

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 3

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	554	PVC	120.0	1.57	0.001	0.0
EX-2	16	12.0	-573	PVC	120.0	1.63	0.001	0.0
P-1	1,723	16.0	1,128	PVC	120.0	1.80	0.001	0.7
P-2	657	16.0	715	PVC	120.0	1.14	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	412	PVC	120.0	2.63	0.004	0.1
P-5	98	8.0	412	PVC	120.0	2.63	0.004	0.2
P-6	6	8.0	354	PVC	120.0	2.26	0.003	0.0
P-7	117	8.0	354	PVC	120.0	2.26	0.003	0.2
P-8	46	8.0	354	PVC	120.0	2.26	0.003	0.1
P-9	61	8.0	251	PVC	120.0	1.60	0.002	0.0
P-10	80	8.0	-251	PVC	120.0	1.60	0.002	0.1
P-11	186	8.0	237	PVC	120.0	1.51	0.001	0.1
P-12	15	8.0	237	PVC	120.0	1.51	0.001	0.0
P-13	20	12.0	237	PVC	120.0	0.67	0.000	0.0
P-14	34	12.0	-540	PVC	120.0	1.53	0.001	0.0
P-15	248	12.0	40	PVC	120.0	0.11	0.000	0.0
P-16	185	12.0	-1,460	PVC	120.0	4.14	0.006	0.5
P-17	73	12.0	-68	PVC	120.0	0.19	0.000	0.0
P-18	140	12.0	-68	PVC	120.0	0.19	0.000	0.0
P-19	5	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-20	125	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-21	53	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-22	164	12.0	-97	PVC	120.0	0.28	0.000	0.0
P-23	163	12.0	-97	PVC	120.0	0.28	0.000	0.0
P-24	51	12.0	-512	PVC	120.0	1.45	0.001	0.0
P-25	176	12.0	-512	PVC	120.0	1.45	0.001	0.1
P-26	6	12.0	-715	PVC	120.0	2.03	0.002	0.0
P-27	30	12.0	-715	PVC	120.0	2.03	0.002	0.0
P-28	59	12.0	-715	PVC	120.0	2.03	0.002	0.0
P-29	154	12.0	13	PVC	120.0	0.04	0.000	0.0
P-30	340	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-31	279	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-32	300	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-33	108	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-34	7	12.0	113	PVC	120.0	0.32	0.000	0.0
P-35	263	12.0	113	PVC	120.0	0.32	0.000	0.0
P-36	96	8.0	-302	PVC	120.0	1.93	0.002	0.1
P-37	7	8.0	-231	PVC	120.0	1.47	0.001	0.0
P-38	184	8.0	-231	PVC	120.0	1.47	0.001	0.1
P-39	28	8.0	-231	PVC	120.0	1.47	0.001	0.0
P-40	342	8.0	-49	PVC	120.0	0.31	0.000	0.0
P-41	107	8.0	182	PVC	120.0	1.16	0.001	0.0
P-42	4	8.0	152	PVC	120.0	0.97	0.001	0.0
P-43	132	8.0	152	PVC	120.0	0.97	0.001	0.0
P-44	273	8.0	152	PVC	120.0	0.97	0.001	0.1

20% MDD+FF BLDG 3

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	152	PVC	120.0	0.97	0.001	0.0
P-46	7	6.0	152	PVC	120.0	1.72	0.003	0.0
P-47	62	6.0	143	PVC	120.0	1.62	0.002	0.1
P-48	48	8.0	-160	PVC	120.0	1.02	0.001	0.0
P-49	6	8.0	-160	PVC	120.0	1.02	0.001	0.0
P-50	78	8.0	-165	PVC	120.0	1.06	0.001	0.0
P-51	248	8.0	-165	PVC	120.0	1.06	0.001	0.1
P-52	28	6.0	-14	PVC	120.0	0.16	0.000	0.0
P-53	139	8.0	14	PVC	120.0	0.09	0.000	0.0
P-54	121	8.0	151	PVC	120.0	0.97	0.001	0.0
P-55	188	8.0	-151	PVC	120.0	0.97	0.001	0.1
P-56	381	12.0	-1,392	PVC	120.0	3.95	0.005	0.9
P-57	78	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-58	275	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-59	64	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-60	42	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-61	408	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-62	89	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-63	390	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-64	66	12.0	-163	PVC	120.0	0.46	0.000	0.0
P-65	22	12.0	-31	PVC	120.0	0.09	0.000	0.0
P-66	26	16.0	-61	PVC	120.0	0.10	0.000	0.0
P-67	19	16.0	-71	PVC	120.0	0.11	0.000	0.0
P-68	34	12.0	-1,230	PVC	120.0	3.49	0.004	0.1

20% MDD+FF BLDG 3

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,501.57	112
F2-1	0	102	6,501.78	102
F3-1	500	109	6,500.68	109
F4-1	0	110	6,501.17	110
F5-1	0	118	6,502.00	118
F6-1	0	108	6,500.87	108
F7-1	0	115	6,501.75	115
F8-1	0	109	6,500.74	109
F9-1	0	110	6,501.78	110
H-1	0	121	6,502.17	121
H-2	0	115	6,501.38	115
H-3	0	114	6,501.14	114
H-4	0	109	6,500.74	109
H-5	1,500	104	6,500.68	104
H-6	0	100	6,501.77	100
H-7	0	106	6,501.78	106
H-8	0	110	6,501.79	110
H-9	0	118	6,502.05	118
H-10	0	106	6,501.78	106
H-11	0	102	6,501.78	102
H-12	0	104	6,501.78	104
H-13	0	108	6,501.78	108
H-14	0	113	6,501.84	113
H-15	0	112	6,501.31	112
H-16	0	108	6,501.08	108
H-17	0	108	6,500.91	108
H-18	0	109	6,500.81	109
H-19	0	113	6,501.01	113
H-20	0	114	6,501.12	114
H-21	0	90	6,503.90	90
H-22	0	95	6,503.94	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.41	121
J-3	0	119	6,502.14	119
J-4	0	119	6,502.14	119
J-5	0	114	6,501.24	114
J-6	0	113	6,501.01	113
J-7	0	109	6,500.71	109
J-8	0	109	6,500.71	109
J-9	0	100	6,501.77	100
J-10	0	106	6,501.78	106
J-11	0	113	6,501.80	113
J-12	0	114	6,501.27	114
J-13	0	113	6,501.01	113
J-14	0	94	6,503.85	94

20% MDD+FF BLDG 3

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.86	93
J-16	0	90	6,503.89	90
J-17	0	90	6,503.90	90
J-18	0	96	6,503.95	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,501.58	112
S2-1	16	102	6,501.78	102
S4-1	30	110	6,501.17	110
S5-1	203	118	6,501.99	118
S6-1	9	108	6,500.86	108
S7-1	59	115	6,501.76	115
S8-1	5	109	6,500.75	109
S9-1	126	110	6,501.78	110

20% MDD+FF BLDG 3

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 4

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	584	PVC	120.0	1.66	0.001	0.0
EX-2	16	12.0	-604	PVC	120.0	1.71	0.001	0.0
P-1	1,723	16.0	1,189	PVC	120.0	1.90	0.001	0.8
P-2	657	16.0	704	PVC	120.0	1.12	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	485	PVC	120.0	3.09	0.006	0.1
P-5	98	8.0	485	PVC	120.0	3.09	0.006	0.2
P-6	6	8.0	426	PVC	120.0	2.72	0.004	0.0
P-7	117	8.0	426	PVC	120.0	2.72	0.004	0.2
P-8	46	8.0	426	PVC	120.0	2.72	0.004	0.1
P-9	61	8.0	-91	PVC	120.0	0.58	0.000	0.0
P-10	80	8.0	91	PVC	120.0	0.58	0.000	0.0
P-11	186	8.0	-87	PVC	120.0	0.56	0.000	0.0
P-12	15	8.0	-87	PVC	120.0	0.56	0.000	0.0
P-13	20	12.0	-87	PVC	120.0	0.25	0.000	0.0
P-14	34	12.0	925	PVC	120.0	2.62	0.003	0.0
P-15	248	12.0	-925	PVC	120.0	2.62	0.003	0.3
P-16	185	12.0	-925	PVC	120.0	2.62	0.003	0.2
P-17	73	12.0	406	PVC	120.0	1.15	0.001	0.0
P-18	140	12.0	406	PVC	120.0	1.15	0.001	0.0
P-19	5	12.0	390	PVC	120.0	1.11	0.001	0.0
P-20	125	12.0	390	PVC	120.0	1.11	0.001	0.0
P-21	53	12.0	390	PVC	120.0	1.11	0.001	0.0
P-22	164	12.0	262	PVC	120.0	0.74	0.000	0.0
P-23	163	12.0	262	PVC	120.0	0.74	0.000	0.0
P-24	51	12.0	-501	PVC	120.0	1.42	0.001	0.0
P-25	176	12.0	-501	PVC	120.0	1.42	0.001	0.1
P-26	6	12.0	-704	PVC	120.0	2.00	0.002	0.0
P-27	30	12.0	-704	PVC	120.0	2.00	0.002	0.0
P-28	59	12.0	-704	PVC	120.0	2.00	0.002	0.0
P-29	154	12.0	129	PVC	120.0	0.37	0.000	0.0
P-30	340	12.0	-129	PVC	120.0	0.37	0.000	0.0
P-31	279	12.0	-129	PVC	120.0	0.37	0.000	0.0
P-32	300	12.0	-129	PVC	120.0	0.37	0.000	0.0
P-33	108	12.0	-129	PVC	120.0	0.37	0.000	0.0
P-34	7	12.0	-2	PVC	120.0	0.01	0.000	0.0
P-35	263	12.0	-2	PVC	120.0	0.01	0.000	0.0
P-36	96	8.0	-765	PVC	120.0	4.88	0.013	0.5
P-37	7	8.0	-694	PVC	120.0	4.43	0.011	0.0
P-38	184	8.0	-694	PVC	120.0	4.43	0.011	0.9
P-39	28	8.0	-694	PVC	120.0	4.43	0.011	0.1
P-40	342	8.0	573	PVC	120.0	3.66	0.008	1.1
P-41	107	8.0	1,266	PVC	120.0	8.08	0.033	1.5
P-42	4	8.0	1,237	PVC	120.0	7.89	0.031	0.1
P-43	132	8.0	737	PVC	120.0	4.70	0.012	0.7
P-44	273	8.0	-763	PVC	120.0	4.87	0.013	1.6

20% MDD+FF BLDG 4

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-763	PVC	120.0	4.87	0.013	0.3
P-46	7	6.0	-763	PVC	120.0	8.66	0.052	0.2
P-47	62	6.0	-772	PVC	120.0	8.77	0.053	1.4
P-48	48	8.0	65	PVC	120.0	0.42	0.000	0.0
P-49	6	8.0	65	PVC	120.0	0.42	0.000	0.0
P-50	78	8.0	60	PVC	120.0	0.38	0.000	0.0
P-51	248	8.0	60	PVC	120.0	0.38	0.000	0.0
P-52	28	6.0	4	PVC	120.0	0.05	0.000	0.0
P-53	139	8.0	-4	PVC	120.0	0.03	0.000	0.0
P-54	121	8.0	-56	PVC	120.0	0.35	0.000	0.0
P-55	188	8.0	56	PVC	120.0	0.35	0.000	0.0
P-56	381	12.0	-1,331	PVC	120.0	3.78	0.005	0.8
P-57	78	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-58	275	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-59	64	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-60	42	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-61	408	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-62	89	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-63	390	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-64	66	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-65	22	12.0	-30	PVC	120.0	0.08	0.000	0.0
P-66	26	16.0	-58	PVC	120.0	0.09	0.000	0.0
P-67	19	16.0	-68	PVC	120.0	0.11	0.000	0.0
P-68	34	12.0	-1,175	PVC	120.0	3.33	0.004	0.1

20% MDD+FF BLDG 4

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,500.35	112
F2-1	0	102	6,501.83	102
F3-1	0	109	6,500.81	109
F4-1	500	107	6,494.41	107
F5-1	0	117	6,501.85	117
F6-1	0	107	6,497.04	107
F7-1	0	115	6,501.35	115
F8-1	0	109	6,500.71	109
F9-1	0	110	6,501.65	110
H-1	0	121	6,501.92	121
H-2	0	115	6,500.84	115
H-3	0	114	6,500.65	114
H-4	0	109	6,500.72	109
H-5	0	104	6,501.48	104
H-6	0	100	6,501.91	100
H-7	0	106	6,501.77	106
H-8	0	110	6,501.69	110
H-9	0	118	6,501.89	118
H-10	0	106	6,501.72	106
H-11	0	102	6,501.70	102
H-12	0	104	6,501.68	104
H-13	0	108	6,501.66	108
H-14	0	113	6,501.69	113
H-15	0	110	6,498.36	110
H-16	1,500	104	6,492.83	104
H-17	0	106	6,496.43	106
H-18	0	109	6,500.71	109
H-19	0	112	6,500.67	112
H-20	0	114	6,500.66	114
H-21	0	90	6,503.91	90
H-22	0	95	6,503.95	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.24	121
J-3	0	119	6,501.98	119
J-4	0	119	6,501.98	119
J-5	0	114	6,500.64	114
J-6	0	113	6,500.67	113
J-7	0	109	6,500.72	109
J-8	0	109	6,500.72	109
J-9	0	100	6,501.95	100
J-10	0	106	6,501.73	106
J-11	0	113	6,501.65	113
J-12	0	112	6,498.06	112
J-13	0	112	6,500.67	112
J-14	0	94	6,503.87	94

20% MDD+FF BLDG 4

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.87	93
J-16	0	90	6,503.90	90
J-17	0	90	6,503.91	90
J-18	0	96	6,503.96	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,500.42	112
S2-1	16	102	6,501.83	102
S4-1	30	107	6,494.55	107
S5-1	203	117	6,501.84	117
S6-1	9	107	6,497.42	107
S7-1	59	115	6,501.38	115
S8-1	5	109	6,500.71	109
S9-1	126	110	6,501.65	110

20% MDD+FF BLDG 4

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 5

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	737	PVC	120.0	2.09	0.002	0.0
EX-2	16	12.0	-762	PVC	120.0	2.16	0.002	0.0
P-1	1,723	16.0	1,499	PVC	120.0	2.39	0.002	1.2
P-2	657	16.0	773	PVC	120.0	1.23	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	726	PVC	120.0	4.64	0.012	0.3
P-5	98	8.0	726	PVC	120.0	4.64	0.012	0.5
P-6	6	8.0	668	PVC	120.0	4.26	0.010	0.0
P-7	117	8.0	668	PVC	120.0	4.26	0.010	0.5
P-8	46	8.0	-1,017	PVC	120.0	6.49	0.022	0.4
P-9	61	8.0	-420	PVC	120.0	2.68	0.004	0.1
P-10	80	8.0	420	PVC	120.0	2.68	0.004	0.1
P-11	186	8.0	-397	PVC	120.0	2.54	0.004	0.3
P-12	15	8.0	-397	PVC	120.0	2.54	0.004	0.0
P-13	20	12.0	-397	PVC	120.0	1.13	0.001	0.0
P-14	34	12.0	810	PVC	120.0	2.30	0.002	0.0
P-15	248	12.0	-810	PVC	120.0	2.30	0.002	0.2
P-16	185	12.0	-810	PVC	120.0	2.30	0.002	0.2
P-17	73	12.0	646	PVC	120.0	1.83	0.001	0.0
P-18	140	12.0	646	PVC	120.0	1.83	0.001	0.1
P-19	5	12.0	630	PVC	120.0	1.79	0.001	0.0
P-20	125	12.0	630	PVC	120.0	1.79	0.001	0.1
P-21	53	12.0	630	PVC	120.0	1.79	0.002	0.0
P-22	164	12.0	425	PVC	120.0	1.21	0.001	0.0
P-23	163	12.0	425	PVC	120.0	1.21	0.001	0.0
P-24	51	12.0	181	PVC	120.0	0.51	0.000	0.0
P-25	176	12.0	181	PVC	120.0	0.51	0.000	0.0
P-26	6	12.0	-23	PVC	120.0	0.06	0.000	0.0
P-27	30	12.0	-773	PVC	120.0	2.19	0.002	0.0
P-28	59	12.0	-773	PVC	120.0	2.19	0.002	0.0
P-29	154	12.0	205	PVC	120.0	0.58	0.000	0.0
P-30	340	12.0	-205	PVC	120.0	0.58	0.000	0.0
P-31	279	12.0	-205	PVC	120.0	0.58	0.000	0.0
P-32	300	12.0	-205	PVC	120.0	0.58	0.000	0.0
P-33	108	12.0	-205	PVC	120.0	0.58	0.000	0.0
P-34	7	12.0	-79	PVC	120.0	0.22	0.000	0.0
P-35	263	12.0	-79	PVC	120.0	0.22	0.000	0.0
P-36	96	8.0	-323	PVC	120.0	2.06	0.003	0.1
P-37	7	8.0	-251	PVC	120.0	1.60	0.002	0.0
P-38	184	8.0	-251	PVC	120.0	1.60	0.002	0.1
P-39	28	8.0	-251	PVC	120.0	1.60	0.002	0.0
P-40	342	8.0	-345	PVC	120.0	2.20	0.003	0.4
P-41	107	8.0	-94	PVC	120.0	0.60	0.000	0.0
P-42	4	8.0	-124	PVC	120.0	0.79	0.000	0.0
P-43	132	8.0	-124	PVC	120.0	0.79	0.000	0.0
P-44	273	8.0	-124	PVC	120.0	0.79	0.000	0.1

20% MDD+FF BLDG 5

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-124	PVC	120.0	0.79	0.000	0.0
P-46	7	6.0	-124	PVC	120.0	1.40	0.002	0.0
P-47	62	6.0	-133	PVC	120.0	1.50	0.002	0.1
P-48	48	8.0	280	PVC	120.0	1.79	0.002	0.0
P-49	6	8.0	280	PVC	120.0	1.79	0.002	0.0
P-50	78	8.0	275	PVC	120.0	1.75	0.002	0.1
P-51	248	8.0	275	PVC	120.0	1.75	0.002	0.2
P-52	28	6.0	23	PVC	120.0	0.26	0.000	0.0
P-53	139	8.0	-23	PVC	120.0	0.15	0.000	0.0
P-54	121	8.0	-252	PVC	120.0	1.61	0.002	0.1
P-55	188	8.0	252	PVC	120.0	1.61	0.002	0.1
P-56	381	12.0	-1,456	PVC	120.0	4.13	0.006	1.0
P-57	78	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-58	275	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-59	64	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-60	42	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-61	408	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-62	89	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-63	390	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-64	66	12.0	-170	PVC	120.0	0.48	0.000	0.0
P-65	22	12.0	-33	PVC	120.0	0.09	0.000	0.0
P-66	26	16.0	-63	PVC	120.0	0.10	0.000	0.0
P-67	19	16.0	-74	PVC	120.0	0.12	0.000	0.0
P-68	34	12.0	-1,286	PVC	120.0	3.65	0.005	0.1

20% MDD+FF BLDG 5

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,500.60	112
F2-1	0	102	6,501.30	102
F3-1	0	109	6,500.69	109
F4-1	0	109	6,500.28	109
F5-1	750	117	6,500.83	117
F6-1	0	108	6,500.48	108
F7-1	0	114	6,499.41	114
F8-1	0	109	6,500.52	109
F9-1	0	109	6,500.86	109
H-1	0	120	6,500.62	120
H-2	1,685	113	6,498.23	113
H-3	0	113	6,499.50	113
H-4	0	109	6,500.55	109
H-5	0	104	6,501.21	104
H-6	0	100	6,501.49	100
H-7	0	105	6,501.14	105
H-8	0	110	6,500.96	110
H-9	0	117	6,500.88	117
H-10	0	105	6,501.03	105
H-11	0	102	6,500.98	102
H-12	0	104	6,500.93	104
H-13	0	108	6,500.88	108
H-14	0	112	6,500.85	112
H-15	0	111	6,500.29	111
H-16	0	107	6,500.34	107
H-17	0	108	6,500.46	108
H-18	0	109	6,500.36	109
H-19	0	112	6,499.84	112
H-20	0	114	6,499.55	114
H-21	0	90	6,503.89	90
H-22	0	95	6,503.94	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.97	128
J-2	0	121	6,501.30	121
J-3	0	118	6,500.99	118
J-4	0	118	6,500.99	118
J-5	0	114	6,499.24	114
J-6	0	112	6,499.84	112
J-7	0	109	6,500.61	109
J-8	0	109	6,500.62	109
J-9	0	100	6,501.58	100
J-10	0	106	6,501.05	106
J-11	0	112	6,500.86	112
J-12	0	113	6,500.25	113
J-13	0	112	6,499.84	112
J-14	0	94	6,503.84	94

20% MDD+FF BLDG 5

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.85	93
J-16	0	90	6,503.88	90
J-17	0	90	6,503.89	90
J-18	0	96	6,503.95	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,500.61	112
S2-1	16	102	6,501.30	102
S4-1	30	110	6,500.28	110
S5-1	203	117	6,500.83	117
S6-1	9	108	6,500.49	108
S7-1	59	114	6,499.47	114
S8-1	5	109	6,500.51	109
S9-1	126	109	6,500.86	109

20% MDD+FF BLDG 5

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 6

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	588	PVC	120.0	1.67	0.001	0.0
EX-2	16	12.0	-608	PVC	120.0	1.73	0.001	0.0
P-1	1,723	16.0	1,196	PVC	120.0	1.91	0.001	0.8
P-2	657	16.0	583	PVC	120.0	0.93	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	613	PVC	120.0	3.91	0.009	0.2
P-5	98	8.0	613	PVC	120.0	3.91	0.009	0.4
P-6	6	8.0	555	PVC	120.0	3.54	0.007	0.0
P-7	117	8.0	555	PVC	120.0	3.54	0.007	0.4
P-8	46	8.0	555	PVC	120.0	3.54	0.007	0.1
P-9	61	8.0	855	PVC	120.0	5.46	0.016	0.4
P-10	80	8.0	645	PVC	120.0	4.11	0.009	0.3
P-11	186	8.0	-447	PVC	120.0	2.85	0.005	0.4
P-12	15	8.0	-447	PVC	120.0	2.85	0.005	0.0
P-13	20	12.0	-447	PVC	120.0	1.27	0.001	0.0
P-14	34	12.0	1,044	PVC	120.0	2.96	0.003	0.0
P-15	248	12.0	-1,044	PVC	120.0	2.96	0.003	0.4
P-16	185	12.0	-1,044	PVC	120.0	2.96	0.003	0.3
P-17	73	12.0	280	PVC	120.0	0.79	0.000	0.0
P-18	140	12.0	280	PVC	120.0	0.79	0.000	0.0
P-19	5	12.0	264	PVC	120.0	0.75	0.000	0.0
P-20	125	12.0	264	PVC	120.0	0.75	0.000	0.0
P-21	53	12.0	264	PVC	120.0	0.75	0.000	0.0
P-22	164	12.0	175	PVC	120.0	0.50	0.000	0.0
P-23	163	12.0	175	PVC	120.0	0.50	0.000	0.0
P-24	51	12.0	-380	PVC	120.0	1.08	0.000	0.0
P-25	176	12.0	-380	PVC	120.0	1.08	0.000	0.0
P-26	6	12.0	-583	PVC	120.0	1.65	0.001	0.0
P-27	30	12.0	-583	PVC	120.0	1.65	0.001	0.0
P-28	59	12.0	-583	PVC	120.0	1.65	0.001	0.0
P-29	154	12.0	89	PVC	120.0	0.25	0.000	0.0
P-30	340	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-31	279	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-32	300	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-33	108	12.0	-89	PVC	120.0	0.25	0.000	0.0
P-34	7	12.0	38	PVC	120.0	0.11	0.000	0.0
P-35	263	12.0	38	PVC	120.0	0.11	0.000	0.0
P-36	96	8.0	-517	PVC	120.0	3.30	0.006	0.3
P-37	7	8.0	-446	PVC	120.0	2.84	0.005	0.0
P-38	184	8.0	-446	PVC	120.0	2.84	0.005	0.4
P-39	28	8.0	-446	PVC	120.0	2.84	0.005	0.1
P-40	342	8.0	-238	PVC	120.0	1.52	0.001	0.2
P-41	107	8.0	208	PVC	120.0	1.32	0.001	0.1
P-42	4	8.0	178	PVC	120.0	1.13	0.001	0.0
P-43	132	8.0	178	PVC	120.0	1.13	0.001	0.0
P-44	273	8.0	178	PVC	120.0	1.13	0.001	0.1

20% MDD+FF BLDG 6

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	178	PVC	120.0	1.13	0.001	0.0
P-46	7	6.0	-322	PVC	120.0	3.66	0.011	0.0
P-47	62	6.0	-331	PVC	120.0	3.76	0.011	0.3
P-48	48	8.0	266	PVC	120.0	1.70	0.002	0.0
P-49	6	8.0	266	PVC	120.0	1.70	0.002	0.0
P-50	78	8.0	260	PVC	120.0	1.66	0.002	0.1
P-51	248	8.0	260	PVC	120.0	1.66	0.002	0.2
P-52	28	6.0	198	PVC	120.0	2.24	0.004	0.1
P-53	139	8.0	-198	PVC	120.0	1.26	0.001	0.1
P-54	121	8.0	-63	PVC	120.0	0.40	0.000	0.0
P-55	188	8.0	63	PVC	120.0	0.40	0.000	0.0
P-56	381	12.0	-1,324	PVC	120.0	3.76	0.005	0.8
P-57	78	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-58	275	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-59	64	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-60	42	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-61	408	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-62	89	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-63	390	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-64	66	12.0	-155	PVC	120.0	0.44	0.000	0.0
P-65	22	12.0	-30	PVC	120.0	0.08	0.000	0.0
P-66	26	16.0	-58	PVC	120.0	0.09	0.000	0.0
P-67	19	16.0	-67	PVC	120.0	0.11	0.000	0.0
P-68	34	12.0	-1,169	PVC	120.0	3.32	0.004	0.1

20% MDD+FF BLDG 6

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,501.20	112
F2-1	0	102	6,501.91	102
F3-1	0	109	6,500.54	109
F4-1	0	109	6,500.06	109
F5-1	0	118	6,501.94	118
F6-1	500	108	6,499.67	108
F7-1	0	114	6,500.84	114
F8-1	0	109	6,500.34	109
F9-1	0	110	6,501.82	110
H-1	0	121	6,501.73	121
H-2	0	114	6,500.01	114
H-3	1,500	113	6,498.71	113
H-4	0	109	6,500.35	109
H-5	0	104	6,501.38	104
H-6	0	100	6,501.95	100
H-7	0	106	6,501.88	106
H-8	0	110	6,501.84	110
H-9	0	118	6,501.98	118
H-10	0	106	6,501.86	106
H-11	0	102	6,501.85	102
H-12	0	104	6,501.84	104
H-13	0	108	6,501.83	108
H-14	0	113	6,501.85	113
H-15	0	111	6,500.32	111
H-16	0	107	6,499.95	107
H-17	0	108	6,499.71	108
H-18	0	109	6,500.20	109
H-19	0	112	6,499.60	112
H-20	0	114	6,499.71	114
H-21	0	90	6,503.91	90
H-22	0	95	6,503.95	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.22	121
J-3	0	119	6,502.04	119
J-4	0	119	6,502.04	119
J-5	0	114	6,499.68	114
J-6	0	112	6,499.46	112
J-7	0	109	6,500.42	109
J-8	0	109	6,500.43	109
J-9	0	100	6,501.97	100
J-10	0	106	6,501.86	106
J-11	0	113	6,501.83	113
J-12	0	113	6,500.19	113
J-13	0	112	6,499.73	112
J-14	0	94	6,503.87	94

20% MDD+FF BLDG 6

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.88	93
J-16	0	90	6,503.90	90
J-17	0	90	6,503.91	90
J-18	0	96	6,503.96	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,501.23	112
S2-1	16	102	6,501.91	102
S4-1	30	110	6,500.07	110
S5-1	203	118	6,501.94	118
S6-1	9	108	6,499.74	108
S7-1	59	114	6,500.88	114
S8-1	5	109	6,500.33	109
S9-1	126	110	6,501.82	110

20% MDD+FF BLDG 6

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 7

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	609	PVC	120.0	1.73	0.001	0.0
EX-2	16	12.0	-630	PVC	120.0	1.79	0.001	0.0
P-1	1,723	16.0	1,239	PVC	120.0	1.98	0.001	0.8
P-2	657	16.0	441	PVC	120.0	0.70	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	799	PVC	120.0	5.10	0.014	0.3
P-5	98	8.0	799	PVC	120.0	5.10	0.014	0.6
P-6	6	8.0	740	PVC	120.0	4.72	0.012	0.0
P-7	117	8.0	240	PVC	120.0	1.53	0.002	0.1
P-8	46	8.0	240	PVC	120.0	1.53	0.002	0.0
P-9	61	8.0	-178	PVC	120.0	1.14	0.001	0.0
P-10	80	8.0	178	PVC	120.0	1.14	0.001	0.0
P-11	186	8.0	-475	PVC	120.0	3.03	0.005	0.4
P-12	15	8.0	-475	PVC	120.0	3.03	0.005	0.0
P-13	20	12.0	-475	PVC	120.0	1.35	0.001	0.0
P-14	34	12.0	945	PVC	120.0	2.68	0.003	0.0
P-15	248	12.0	-945	PVC	120.0	2.68	0.003	0.3
P-16	185	12.0	-945	PVC	120.0	2.68	0.003	0.2
P-17	73	12.0	336	PVC	120.0	0.95	0.000	0.0
P-18	140	12.0	336	PVC	120.0	0.95	0.000	0.0
P-19	5	12.0	320	PVC	120.0	0.91	0.000	0.0
P-20	125	12.0	320	PVC	120.0	0.91	0.000	0.0
P-21	53	12.0	320	PVC	120.0	0.91	0.000	0.0
P-22	164	12.0	214	PVC	120.0	0.61	0.000	0.0
P-23	163	12.0	214	PVC	120.0	0.61	0.000	0.0
P-24	51	12.0	-237	PVC	120.0	0.67	0.000	0.0
P-25	176	12.0	-237	PVC	120.0	0.67	0.000	0.0
P-26	6	12.0	-441	PVC	120.0	1.25	0.001	0.0
P-27	30	12.0	-441	PVC	120.0	1.25	0.001	0.0
P-28	59	12.0	-441	PVC	120.0	1.25	0.001	0.0
P-29	154	12.0	106	PVC	120.0	0.30	0.000	0.0
P-30	340	12.0	-106	PVC	120.0	0.30	0.000	0.0
P-31	279	12.0	-106	PVC	120.0	0.30	0.000	0.0
P-32	300	12.0	-106	PVC	120.0	0.30	0.000	0.0
P-33	108	12.0	-106	PVC	120.0	0.30	0.000	0.0
P-34	7	12.0	20	PVC	120.0	0.06	0.000	0.0
P-35	263	12.0	20	PVC	120.0	0.06	0.000	0.0
P-36	96	8.0	-431	PVC	120.0	2.75	0.004	0.2
P-37	7	8.0	-359	PVC	120.0	2.29	0.003	0.0
P-38	184	8.0	-359	PVC	120.0	2.29	0.003	0.3
P-39	28	8.0	-359	PVC	120.0	2.29	0.003	0.0
P-40	342	8.0	-372	PVC	120.0	2.37	0.003	0.5
P-41	107	8.0	-12	PVC	120.0	0.08	0.000	0.0
P-42	4	8.0	-42	PVC	120.0	0.27	0.000	0.0
P-43	132	8.0	-42	PVC	120.0	0.27	0.000	0.0
P-44	273	8.0	-42	PVC	120.0	0.27	0.000	0.0

20% MDD+FF BLDG 7

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-42	PVC	120.0	0.27	0.000	0.0
P-46	7	6.0	-42	PVC	120.0	0.48	0.000	0.0
P-47	62	6.0	-51	PVC	120.0	0.58	0.000	0.0
P-48	48	8.0	418	PVC	120.0	2.67	0.004	0.1
P-49	6	8.0	418	PVC	120.0	2.67	0.004	0.0
P-50	78	8.0	413	PVC	120.0	2.64	0.004	0.1
P-51	248	8.0	413	PVC	120.0	2.64	0.004	0.5
P-52	28	6.0	-297	PVC	120.0	3.37	0.009	0.1
P-53	139	8.0	297	PVC	120.0	1.90	0.002	0.1
P-54	121	8.0	-710	PVC	120.0	4.53	0.018	0.9
P-55	188	8.0	-790	PVC	120.0	5.04	0.014	1.1
P-56	381	12.0	-1,281	PVC	120.0	3.63	0.005	0.8
P-57	78	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-58	275	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-59	64	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-60	42	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-61	408	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-62	89	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-63	390	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-64	66	12.0	-150	PVC	120.0	0.42	0.000	0.0
P-65	22	12.0	-29	PVC	120.0	0.08	0.000	0.0
P-66	26	16.0	-56	PVC	120.0	0.09	0.000	0.0
P-67	19	16.0	-65	PVC	120.0	0.10	0.000	0.0
P-68	34	12.0	-1,131	PVC	120.0	3.21	0.004	0.1

20% MDD+FF BLDG 7

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,501.44	112
F2-1	0	103	6,502.01	103
F3-1	0	109	6,500.90	109
F4-1	0	110	6,500.76	110
F5-1	0	118	6,501.94	118
F6-1	0	108	6,500.79	108
F7-1	500	114	6,499.85	114
F8-1	0	109	6,500.61	109
F9-1	0	110	6,501.88	110
H-1	0	121	6,501.29	121
H-2	0	114	6,499.67	114
H-3	0	113	6,499.65	113
H-4	0	109	6,500.72	109
H-5	0	104	6,501.60	104
H-6	0	100	6,502.06	100
H-7	0	106	6,501.96	106
H-8	0	110	6,501.91	110
H-9	0	118	6,501.95	118
H-10	0	106	6,501.93	106
H-11	0	102	6,501.92	102
H-12	0	104	6,501.90	104
H-13	0	108	6,501.89	108
H-14	0	113	6,501.90	113
H-15	0	111	6,500.85	111
H-16	0	107	6,500.77	107
H-17	0	108	6,500.79	108
H-18	0	109	6,500.26	109
H-19	0	112	6,499.41	112
H-20	1,500	113	6,497.03	113
H-21	0	90	6,503.91	90
H-22	0	95	6,503.95	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.10	121
J-3	0	119	6,501.99	119
J-4	0	119	6,501.99	119
J-5	0	114	6,499.60	114
J-6	0	112	6,499.72	112
J-7	0	109	6,500.80	109
J-8	0	109	6,500.81	109
J-9	0	100	6,502.09	100
J-10	0	106	6,501.94	106
J-11	0	113	6,501.88	113
J-12	0	114	6,500.76	114
J-13	0	112	6,499.15	112
J-14	0	94	6,503.88	94

20% MDD+FF BLDG 7

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.88	93
J-16	0	90	6,503.91	90
J-17	0	90	6,503.92	90
J-18	0	96	6,503.96	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,501.46	112
S2-1	16	102	6,502.01	102
S4-1	30	110	6,500.76	110
S5-1	203	118	6,501.93	118
S6-1	9	108	6,500.79	108
S7-1	59	114	6,499.92	114
S8-1	5	109	6,500.58	109
S9-1	126	110	6,501.88	110

20% MDD+FF BLDG 7

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 8

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	574	PVC	120.0	1.63	0.001	0.0
EX-2	16	12.0	-593	PVC	120.0	1.68	0.001	0.0
P-1	1,723	16.0	1,167	PVC	120.0	1.86	0.001	0.7
P-2	657	16.0	627	PVC	120.0	1.00	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	540	PVC	120.0	3.45	0.007	0.2
P-5	98	8.0	540	PVC	120.0	3.45	0.007	0.3
P-6	6	8.0	481	PVC	120.0	3.07	0.005	0.0
P-7	117	8.0	481	PVC	120.0	3.07	0.005	0.3
P-8	46	8.0	481	PVC	120.0	3.07	0.005	0.1
P-9	61	8.0	329	PVC	120.0	2.10	0.003	0.1
P-10	80	8.0	-329	PVC	120.0	2.10	0.003	0.1
P-11	186	8.0	17	PVC	120.0	0.11	0.000	0.0
P-12	15	8.0	17	PVC	120.0	0.11	0.000	0.0
P-13	20	12.0	17	PVC	120.0	0.05	0.000	0.0
P-14	34	12.0	1,186	PVC	120.0	3.36	0.004	0.1
P-15	248	12.0	-1,186	PVC	120.0	3.36	0.004	0.5
P-16	185	12.0	-1,186	PVC	120.0	3.36	0.004	0.3
P-17	73	12.0	167	PVC	120.0	0.47	0.000	0.0
P-18	140	12.0	167	PVC	120.0	0.47	0.000	0.0
P-19	5	12.0	151	PVC	120.0	0.43	0.000	0.0
P-20	125	12.0	151	PVC	120.0	0.43	0.000	0.0
P-21	53	12.0	151	PVC	120.0	0.43	0.000	0.0
P-22	164	12.0	94	PVC	120.0	0.27	0.000	0.0
P-23	163	12.0	94	PVC	120.0	0.27	0.000	0.0
P-24	51	12.0	-424	PVC	120.0	1.20	0.001	0.0
P-25	176	12.0	-424	PVC	120.0	1.20	0.001	0.0
P-26	6	12.0	-627	PVC	120.0	1.78	0.001	0.0
P-27	30	12.0	-627	PVC	120.0	1.78	0.001	0.0
P-28	59	12.0	-627	PVC	120.0	1.78	0.001	0.0
P-29	154	12.0	57	PVC	120.0	0.16	0.000	0.0
P-30	340	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-31	279	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-32	300	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-33	108	12.0	-57	PVC	120.0	0.16	0.000	0.0
P-34	7	12.0	69	PVC	120.0	0.20	0.000	0.0
P-35	263	12.0	69	PVC	120.0	0.20	0.000	0.0
P-36	96	8.0	-449	PVC	120.0	2.86	0.005	0.2
P-37	7	8.0	-377	PVC	120.0	2.41	0.004	0.0
P-38	184	8.0	-377	PVC	120.0	2.41	0.003	0.3
P-39	28	8.0	-377	PVC	120.0	2.41	0.003	0.0
P-40	342	8.0	-178	PVC	120.0	1.14	0.001	0.1
P-41	107	8.0	199	PVC	120.0	1.27	0.001	0.0
P-42	4	8.0	169	PVC	120.0	1.08	0.001	0.0
P-43	132	8.0	169	PVC	120.0	1.08	0.001	0.0
P-44	273	8.0	169	PVC	120.0	1.08	0.001	0.1

20% MDD+FF BLDG 8

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	169	PVC	120.0	1.08	0.001	0.0
P-46	7	6.0	169	PVC	120.0	1.92	0.003	0.0
P-47	62	6.0	160	PVC	120.0	1.82	0.003	0.1
P-48	48	8.0	1,363	PVC	120.0	8.70	0.038	0.8
P-49	6	8.0	863	PVC	120.0	5.51	0.016	0.0
P-50	78	8.0	858	PVC	120.0	5.48	0.016	0.5
P-51	248	8.0	-642	PVC	120.0	4.10	0.010	1.1
P-52	28	6.0	-312	PVC	120.0	3.54	0.010	0.1
P-53	139	8.0	312	PVC	120.0	1.99	0.002	0.1
P-54	121	8.0	330	PVC	120.0	2.11	0.004	0.2
P-55	188	8.0	-330	PVC	120.0	2.11	0.003	0.2
P-56	381	12.0	-1,353	PVC	120.0	3.84	0.005	0.9
P-57	78	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-58	275	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-59	64	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-60	42	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-61	408	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-62	89	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-63	390	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-64	66	12.0	-158	PVC	120.0	0.45	0.000	0.0
P-65	22	12.0	-30	PVC	120.0	0.09	0.000	0.0
P-66	26	16.0	-59	PVC	120.0	0.09	0.000	0.0
P-67	19	16.0	-69	PVC	120.0	0.11	0.000	0.0
P-68	34	12.0	-1,195	PVC	120.0	3.39	0.004	0.1

20% MDD+FF BLDG 8

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	112	6,501.36	112
F2-1	0	102	6,501.87	102
F3-1	0	108	6,500.07	108
F4-1	0	109	6,500.50	109
F5-1	0	118	6,501.98	118
F6-1	0	108	6,500.14	108
F7-1	0	114	6,501.21	114
F8-1	500	108	6,498.13	108
F9-1	0	110	6,501.83	110
H-1	0	121	6,501.91	121
H-2	0	114	6,500.57	114
H-3	0	114	6,500.15	114
H-4	0	109	6,499.94	109
H-5	0	104	6,501.14	104
H-6	0	100	6,501.88	100
H-7	0	106	6,501.86	106
H-8	0	110	6,501.84	110
H-9	0	118	6,502.02	118
H-10	0	106	6,501.85	106
H-11	0	102	6,501.84	102
H-12	0	104	6,501.84	104
H-13	0	108	6,501.83	108
H-14	0	113	6,501.87	113
H-15	0	111	6,500.71	111
H-16	0	107	6,500.40	107
H-17	0	108	6,500.18	108
H-18	1,500	108	6,496.79	108
H-19	0	112	6,499.60	112
H-20	0	114	6,499.81	114
H-21	0	90	6,503.90	90
H-22	0	95	6,503.95	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.98	128
J-2	0	121	6,502.30	121
J-3	0	119	6,502.09	119
J-4	0	119	6,502.09	119
J-5	0	114	6,500.32	114
J-6	0	113	6,499.94	113
J-7	0	109	6,499.94	109
J-8	0	109	6,499.94	109
J-9	0	100	6,501.89	100
J-10	0	106	6,501.85	106
J-11	0	113	6,501.84	113
J-12	0	113	6,500.62	113
J-13	0	112	6,499.31	112
J-14	0	94	6,503.86	94

20% MDD+FF BLDG 8

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.87	93
J-16	0	90	6,503.90	90
J-17	0	90	6,503.91	90
J-18	0	96	6,503.96	96
J-19	0	98	6,504.00	98
S1-1	71	112	6,501.38	112
S2-1	16	102	6,501.87	102
S4-1	30	110	6,500.50	110
S5-1	203	118	6,501.97	118
S6-1	9	108	6,500.11	108
S7-1	59	115	6,501.24	115
S8-1	5	108	6,498.03	108
S9-1	126	110	6,501.83	110

20% MDD+FF BLDG 8

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 9

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	764	PVC	120.0	2.17	0.002	0.0
EX-2	16	12.0	-790	PVC	120.0	2.24	0.002	0.0
P-1	1,723	16.0	1,553	PVC	120.0	2.48	0.002	1.2
P-2	657	16.0	1,335	PVC	120.0	2.13	0.001	0.4
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	219	PVC	120.0	1.40	0.001	0.0
P-5	98	8.0	219	PVC	120.0	1.40	0.001	0.1
P-6	6	8.0	160	PVC	120.0	1.02	0.001	0.0
P-7	117	8.0	160	PVC	120.0	1.02	0.001	0.0
P-8	46	8.0	160	PVC	120.0	1.02	0.001	0.0
P-9	61	8.0	-69	PVC	120.0	0.44	0.000	0.0
P-10	80	8.0	69	PVC	120.0	0.44	0.000	0.0
P-11	186	8.0	-66	PVC	120.0	0.42	0.000	0.0
P-12	15	8.0	-66	PVC	120.0	0.42	0.000	0.0
P-13	20	12.0	-66	PVC	120.0	0.19	0.000	0.0
P-14	34	12.0	300	PVC	120.0	0.85	0.000	0.0
P-15	248	12.0	-300	PVC	120.0	0.85	0.000	0.0
P-16	185	12.0	-300	PVC	120.0	0.85	0.000	0.0
P-17	73	12.0	1,337	PVC	120.0	3.79	0.005	0.2
P-18	140	12.0	1,337	PVC	120.0	3.79	0.005	0.3
P-19	5	12.0	1,321	PVC	120.0	3.75	0.005	0.0
P-20	125	12.0	1,321	PVC	120.0	3.75	0.005	0.3
P-21	53	12.0	1,321	PVC	120.0	3.75	0.007	0.2
P-22	164	12.0	-107	PVC	120.0	0.30	0.000	0.0
P-23	163	12.0	-107	PVC	120.0	0.30	0.000	0.0
P-24	51	12.0	-1,131	PVC	120.0	3.21	0.004	0.1
P-25	176	12.0	-1,131	PVC	120.0	3.21	0.004	0.3
P-26	6	12.0	-1,335	PVC	120.0	3.79	0.005	0.0
P-27	30	12.0	-1,335	PVC	120.0	3.79	0.005	0.1
P-28	59	12.0	-1,335	PVC	120.0	3.79	0.005	0.1
P-29	154	12.0	1,428	PVC	120.0	4.05	0.006	0.4
P-30	340	12.0	-428	PVC	120.0	1.22	0.001	0.1
P-31	279	12.0	-428	PVC	120.0	1.22	0.001	0.1
P-32	300	12.0	-428	PVC	120.0	1.22	0.001	0.1
P-33	108	12.0	572	PVC	120.0	1.62	0.001	0.0
P-34	7	12.0	698	PVC	120.0	1.98	0.001	0.0
P-35	263	12.0	1,368	PVC	120.0	3.88	0.005	0.6
P-36	96	8.0	344	PVC	120.0	2.20	0.003	0.1
P-37	7	8.0	416	PVC	120.0	2.65	0.004	0.0
P-38	184	8.0	416	PVC	120.0	2.65	0.004	0.3
P-39	28	8.0	416	PVC	120.0	2.65	0.004	0.1
P-40	342	8.0	272	PVC	120.0	1.73	0.002	0.3
P-41	107	8.0	-144	PVC	120.0	0.92	0.001	0.0
P-42	4	8.0	-174	PVC	120.0	1.11	0.001	0.0
P-43	132	8.0	-174	PVC	120.0	1.11	0.001	0.0
P-44	273	8.0	-174	PVC	120.0	1.11	0.001	0.1

20% MDD+FF BLDG 9

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-174	PVC	120.0	1.11	0.001	0.0
P-46	7	6.0	-174	PVC	120.0	1.97	0.003	0.0
P-47	62	6.0	-183	PVC	120.0	2.07	0.004	0.1
P-48	48	8.0	51	PVC	120.0	0.32	0.000	0.0
P-49	6	8.0	51	PVC	120.0	0.32	0.000	0.0
P-50	78	8.0	46	PVC	120.0	0.29	0.000	0.0
P-51	248	8.0	46	PVC	120.0	0.29	0.000	0.0
P-52	28	6.0	3	PVC	120.0	0.04	0.000	0.0
P-53	139	8.0	-3	PVC	120.0	0.02	0.000	0.0
P-54	121	8.0	-42	PVC	120.0	0.27	0.000	0.0
P-55	188	8.0	42	PVC	120.0	0.27	0.000	0.0
P-56	381	12.0	-1,637	PVC	120.0	4.64	0.007	1.2
P-57	78	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-58	275	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-59	64	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-60	42	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-61	408	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-62	89	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-63	390	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-64	66	12.0	-191	PVC	120.0	0.54	0.000	0.0
P-65	22	12.0	-37	PVC	120.0	0.11	0.000	0.0
P-66	26	16.0	-71	PVC	120.0	0.11	0.000	0.0
P-67	19	16.0	-83	PVC	120.0	0.13	0.000	0.0
P-68	34	12.0	-1,445	PVC	120.0	4.10	0.006	0.1

20% MDD+FF BLDG 9

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	111	6,499.26	111
F2-1	0	102	6,499.90	102
F3-1	0	109	6,500.85	109
F4-1	0	109	6,500.21	109
F5-1	0	117	6,499.82	117
F6-1	0	108	6,500.59	108
F7-1	0	114	6,500.91	114
F8-1	0	109	6,500.84	109
F9-1	670	108	6,497.57	108
H-1	0	121	6,501.04	121
H-2	0	115	6,500.83	115
H-3	0	114	6,500.80	114
H-4	0	109	6,500.84	109
H-5	0	104	6,500.94	104
H-6	0	99	6,500.63	99
H-7	0	105	6,499.29	105
H-8	0	109	6,498.94	109
H-9	0	117	6,499.98	117
H-10	1,000	104	6,498.03	104
H-11	0	101	6,497.82	101
H-12	0	102	6,497.64	102
H-13	1,000	107	6,497.45	107
H-14	0	112	6,499.14	112
H-15	0	111	6,500.03	111
H-16	0	107	6,500.32	107
H-17	0	108	6,500.55	108
H-18	0	109	6,500.83	109
H-19	0	112	6,500.82	112
H-20	0	114	6,500.81	114
H-21	0	90	6,503.86	90
H-22	0	95	6,503.92	95
H-23	0	98	6,503.99	98
J-1	0	128	6,503.97	128
J-2	0	121	6,501.11	121
J-3	0	118	6,500.27	118
J-4	0	118	6,500.27	118
J-5	0	114	6,500.79	114
J-6	0	113	6,500.82	113
J-7	0	109	6,500.84	109
J-8	0	109	6,500.84	109
J-9	0	100	6,501.00	100
J-10	0	105	6,498.94	105
J-11	0	112	6,498.95	112
J-12	0	113	6,500.15	113
J-13	0	112	6,500.82	112
J-14	0	94	6,503.80	94

20% MDD+FF BLDG 9

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.81	93
J-16	0	90	6,503.85	90
J-17	0	90	6,503.87	90
J-18	0	96	6,503.94	96
J-19	0	98	6,504.00	98
S1-1	71	111	6,499.23	111
S2-1	16	101	6,499.93	101
S4-1	30	110	6,500.21	110
S5-1	203	117	6,499.79	117
S6-1	9	108	6,500.62	108
S7-1	59	114	6,500.91	114
S8-1	5	109	6,500.84	109
S9-1	126	108	6,497.56	108

20% MDD+FF BLDG 9

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+FF BLDG 9 LOOP OUT @ J9

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	1,568	PVC	120.0	4.45	0.007	0.1
EX-2	16	12.0	-1,622	PVC	120.0	4.60	0.007	0.1
P-1	1,723	16.0	3,190	PVC	120.0	5.09	0.006	4.7
P-2	657	16.0	2,306	PVC	120.0	3.68	0.004	1.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	884	PVC	120.0	5.64	0.017	0.4
P-5	98	8.0	884	PVC	120.0	5.64	0.017	0.7
P-6	6	8.0	825	PVC	120.0	5.27	0.015	0.0
P-7	117	8.0	825	PVC	120.0	5.27	0.015	0.8
P-8	46	8.0	825	PVC	120.0	5.27	0.015	0.3
P-9	61	8.0	327	PVC	120.0	2.09	0.003	0.1
P-10	80	8.0	-327	PVC	120.0	2.09	0.003	0.1
P-11	186	8.0	309	PVC	120.0	1.97	0.002	0.2
P-12	15	8.0	309	PVC	120.0	1.97	0.002	0.0
P-13	20	12.0	309	PVC	120.0	0.88	0.000	0.0
P-14	34	12.0	-559	PVC	120.0	1.58	0.001	0.0
P-15	248	12.0	559	PVC	120.0	1.58	0.001	0.1
P-16	185	12.0	559	PVC	120.0	1.58	0.001	0.1
P-17	73	12.0	559	PVC	120.0	1.58	0.001	0.0
P-18	140	12.0	559	PVC	120.0	1.58	0.001	0.1
P-19	5	12.0	543	PVC	120.0	1.54	0.001	0.0
P-20	125	12.0	543	PVC	120.0	1.54	0.001	0.1
P-21	53	12.0	543	PVC	120.0	1.54	0.001	0.0
P-22	164	12.0	-782	PVC	120.0	2.22	0.002	0.1
P-23	163	12.0	-782	PVC	120.0	2.22	0.002	0.1
P-24	51	12.0	-2,102	PVC	120.0	5.96	0.012	0.3
P-25	176	12.0	-2,102	PVC	120.0	5.96	0.012	0.9
P-26	6	12.0	-2,306	PVC	120.0	6.54	0.014	0.0
P-27	30	12.0	-2,306	PVC	120.0	6.54	0.014	0.2
P-28	59	12.0	-2,306	PVC	120.0	6.54	0.014	0.4
P-29	154	12.0	1,325	PVC	120.0	3.76	0.005	0.3
P-30	340	12.0	-325	PVC	120.0	0.92	0.000	0.1
P-31	279	12.0	-325	PVC	120.0	0.92	0.000	0.0
P-32	300	12.0	-325	PVC	120.0	0.92	0.000	0.0
P-33	108	12.0	675	PVC	120.0	1.91	0.001	0.1
P-34	7	12.0	801	PVC	120.0	2.27	0.002	0.0
P-35	263	12.0	1,471	PVC	120.0	4.17	0.006	0.7
P-36	96	8.0	151	PVC	120.0	0.97	0.001	0.0
P-37	7	8.0	223	PVC	120.0	1.42	0.001	0.0
P-38	184	8.0	223	PVC	120.0	1.42	0.001	0.1
P-39	28	8.0	223	PVC	120.0	1.42	0.001	0.0
P-40	342	8.0	302	PVC	120.0	1.93	0.002	0.3
P-41	107	8.0	80	PVC	120.0	0.51	0.000	0.0
P-42	4	8.0	50	PVC	120.0	0.32	0.000	0.0
P-43	132	8.0	50	PVC	120.0	0.32	0.000	0.0
P-44	273	8.0	50	PVC	120.0	0.32	0.000	0.0

20% MDD+FF BLDG 9 LOOP OUT @ J9

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	50	PVC	120.0	0.32	0.000	0.0
P-46	7	6.0	50	PVC	120.0	0.57	0.000	0.0
P-47	62	6.0	41	PVC	120.0	0.46	0.000	0.0
P-48	48	8.0	-209	PVC	120.0	1.34	0.001	0.0
P-49	6	8.0	-209	PVC	120.0	1.34	0.001	0.0
P-50	78	8.0	-215	PVC	120.0	1.37	0.001	0.0
P-51	248	8.0	-215	PVC	120.0	1.37	0.001	0.1
P-52	28	6.0	-18	PVC	120.0	0.21	0.000	0.0
P-53	139	8.0	18	PVC	120.0	0.12	0.000	0.0
P-54	121	8.0	196	PVC	120.0	1.25	0.002	0.1
P-55	188	8.0	-196	PVC	120.0	1.25	0.001	0.1
P-56	381	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-57	78	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-58	275	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-59	64	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-60	42	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-61	408	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-62	89	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-63	390	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-64	66	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-65	22	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-66	26	16.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-67	19	16.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-68	34	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)

20% MDD+FF BLDG 9 LOOP OUT @ J9

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	106	6,486.82	106
F2-1	0	96	6,486.32	96
F3-1	0	103	6,486.99	103
F4-1	0	104	6,487.08	104
F5-1	0	112	6,489.48	112
F6-1	0	102	6,487.04	102
F7-1	0	110	6,490.31	110
F8-1	0	103	6,487.08	103
F9-1	670	103	6,485.17	103
H-1	0	117	6,492.06	117
H-2	0	109	6,488.57	109
H-3	0	108	6,487.73	108
H-4	0	103	6,487.07	103
H-5	0	98	6,486.73	98
H-6	0	93	6,486.47	93
H-7	0	99	6,486.21	99
H-8	0	104	6,486.45	104
H-9	0	112	6,489.90	112
H-10	1,000	98	6,485.35	98
H-11	0	95	6,485.23	95
H-12	0	97	6,485.12	97
H-13	1,000	101	6,485.00	101
H-14	0	107	6,487.34	107
H-15	0	106	6,487.06	106
H-16	0	101	6,487.07	101
H-17	0	102	6,487.04	102
H-18	0	103	6,487.18	103
H-19	0	107	6,487.51	107
H-20	0	109	6,487.69	109
H-21	(N/A)	(N/A)	(N/A)	(N/A)
H-22	(N/A)	(N/A)	(N/A)	(N/A)
H-23	(N/A)	(N/A)	(N/A)	(N/A)
J-1	0	128	6,503.88	128
J-2	0	117	6,493.04	117
J-3	0	114	6,490.72	114
J-4	0	114	6,490.72	114
J-5	0	109	6,487.89	109
J-6	0	107	6,487.51	107
J-7	0	103	6,487.03	103
J-8	0	103	6,487.02	103
J-9	0	93	6,486.54	93
J-10	0	100	6,486.14	100
J-11	0	106	6,486.75	106
J-12	0	108	6,487.10	108
J-13	0	107	6,487.51	107
J-14	(N/A)	(N/A)	(N/A)	(N/A)

20% MDD+FF BLDG 9 LOOP OUT @ J9

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	(N/A)	(N/A)	(N/A)	(N/A)
J-16	(N/A)	(N/A)	(N/A)	(N/A)
J-17	(N/A)	(N/A)	(N/A)	(N/A)
J-18	(N/A)	(N/A)	(N/A)	(N/A)
J-19	(N/A)	(N/A)	(N/A)	(N/A)
S1-1	71	106	6,486.81	106
S2-1	16	96	6,486.33	96
S4-1	30	104	6,487.08	104
S5-1	203	112	6,489.40	112
S6-1	9	102	6,487.04	102
S7-1	59	110	6,490.40	110
S8-1	5	103	6,487.09	103
S9-1	126	103	6,485.16	103

20% MDD+FF BLDG 9 LOOP OUT @ J9

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	(N/A)
R-4	6,504.00	(N/A)
R-5	6,504.00	(N/A)
R-6	6,504.00	(N/A)

20% MDD+FF BLDG 9 LOOP OUT @ J2

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
EX-2	16	12.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-1	1,723	16.0	(N/A)	PVC	120.0	(N/A)	(N/A)	(N/A)
P-2	657	16.0	461	PVC	120.0	0.74	0.000	0.1
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	-461	PVC	120.0	2.94	0.005	0.1
P-5	98	8.0	-461	PVC	120.0	2.94	0.005	0.2
P-6	6	8.0	-520	PVC	120.0	3.32	0.006	0.0
P-7	117	8.0	-520	PVC	120.0	3.32	0.006	0.3
P-8	46	8.0	-520	PVC	120.0	3.32	0.006	0.1
P-9	61	8.0	-460	PVC	120.0	2.93	0.005	0.1
P-10	80	8.0	460	PVC	120.0	2.93	0.005	0.2
P-11	186	8.0	-435	PVC	120.0	2.77	0.005	0.4
P-12	15	8.0	-435	PVC	120.0	2.77	0.005	0.0
P-13	20	12.0	-435	PVC	120.0	1.23	0.001	0.0
P-14	34	12.0	1,059	PVC	120.0	3.00	0.003	0.0
P-15	248	12.0	-1,059	PVC	120.0	3.00	0.003	0.4
P-16	185	12.0	-1,059	PVC	120.0	3.00	0.003	0.3
P-17	73	12.0	2,131	PVC	120.0	6.04	0.012	0.4
P-18	140	12.0	2,131	PVC	120.0	6.04	0.012	0.7
P-19	5	12.0	2,115	PVC	120.0	6.00	0.012	0.0
P-20	125	12.0	2,115	PVC	120.0	6.00	0.012	0.6
P-21	53	12.0	2,115	PVC	120.0	6.00	0.016	0.4
P-22	164	12.0	619	PVC	120.0	1.76	0.001	0.1
P-23	163	12.0	619	PVC	120.0	1.76	0.001	0.1
P-24	51	12.0	-258	PVC	120.0	0.73	0.000	0.0
P-25	176	12.0	-258	PVC	120.0	0.73	0.000	0.0
P-26	6	12.0	-461	PVC	120.0	1.31	0.001	0.0
P-27	30	12.0	-461	PVC	120.0	1.31	0.001	0.0
P-28	59	12.0	-461	PVC	120.0	1.31	0.001	0.0
P-29	154	12.0	1,496	PVC	120.0	4.24	0.006	0.4
P-30	340	12.0	-496	PVC	120.0	1.41	0.001	0.1
P-31	279	12.0	-496	PVC	120.0	1.41	0.001	0.1
P-32	300	12.0	-496	PVC	120.0	1.41	0.001	0.1
P-33	108	12.0	504	PVC	120.0	1.43	0.001	0.0
P-34	7	12.0	631	PVC	120.0	1.79	0.001	0.0
P-35	263	12.0	1,301	PVC	120.0	3.69	0.005	0.5
P-36	96	8.0	424	PVC	120.0	2.70	0.004	0.2
P-37	7	8.0	495	PVC	120.0	3.16	0.006	0.0
P-38	184	8.0	495	PVC	120.0	3.16	0.006	0.5
P-39	28	8.0	495	PVC	120.0	3.16	0.006	0.1
P-40	342	8.0	215	PVC	120.0	1.37	0.001	0.2
P-41	107	8.0	-280	PVC	120.0	1.79	0.002	0.1
P-42	4	8.0	-310	PVC	120.0	1.98	0.002	0.0
P-43	132	8.0	-310	PVC	120.0	1.98	0.002	0.1
P-44	273	8.0	-310	PVC	120.0	1.98	0.002	0.3

20% MDD+FF BLDG 9 LOOP OUT @ J2

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-310	PVC	120.0	1.98	0.002	0.1
P-46	7	6.0	-310	PVC	120.0	3.52	0.010	0.0
P-47	62	6.0	-319	PVC	120.0	3.62	0.010	0.3
P-48	48	8.0	305	PVC	120.0	1.95	0.002	0.0
P-49	6	8.0	305	PVC	120.0	1.95	0.002	0.0
P-50	78	8.0	300	PVC	120.0	1.92	0.002	0.1
P-51	248	8.0	300	PVC	120.0	1.92	0.002	0.3
P-52	28	6.0	25	PVC	120.0	0.28	0.000	0.0
P-53	139	8.0	-25	PVC	120.0	0.16	0.000	0.0
P-54	121	8.0	-275	PVC	120.0	1.76	0.003	0.2
P-55	188	8.0	275	PVC	120.0	1.76	0.002	0.2
P-56	381	12.0	-3,190	PVC	120.0	9.05	0.025	4.2
P-57	78	12.0	-372	PVC	120.0	1.06	0.000	0.0
P-58	275	12.0	-372	PVC	120.0	1.06	0.000	0.1
P-59	64	12.0	-372	PVC	120.0	1.06	0.000	0.0
P-60	42	12.0	-372	PVC	120.0	1.06	0.000	0.0
P-61	408	12.0	-372	PVC	120.0	1.06	0.000	0.1
P-62	89	12.0	-372	PVC	120.0	1.06	0.000	0.0
P-63	390	12.0	-372	PVC	120.0	1.06	0.000	0.1
P-64	66	12.0	-372	PVC	120.0	1.06	0.000	0.0
P-65	22	12.0	-71	PVC	120.0	0.20	0.000	0.0
P-66	26	16.0	-139	PVC	120.0	0.22	0.000	0.0
P-67	19	16.0	-162	PVC	120.0	0.26	0.000	0.0
P-68	34	12.0	-2,818	PVC	120.0	7.99	0.020	0.3

20% MDD+FF BLDG 9 LOOP OUT @ J2

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	107	6,488.80	107
F2-1	0	98	6,491.06	98
F3-1	0	105	6,492.18	105
F4-1	0	105	6,490.25	105
F5-1	0	112	6,488.40	112
F6-1	0	104	6,491.36	104
F7-1	0	109	6,489.41	109
F8-1	0	105	6,491.96	105
F9-1	670	103	6,487.09	103
H-1	0	115	6,488.88	115
H-2	0	110	6,490.15	110
H-3	0	110	6,490.75	110
H-4	0	106	6,491.99	106
H-5	0	100	6,493.05	100
H-6	0	96	6,492.79	96
H-7	0	100	6,489.59	100
H-8	0	105	6,488.54	105
H-9	0	112	6,488.42	112
H-10	1,000	100	6,487.75	100
H-11	0	96	6,487.48	96
H-12	0	98	6,487.24	98
H-13	1,000	102	6,486.99	102
H-14	0	107	6,488.36	107
H-15	0	107	6,489.86	107
H-16	0	103	6,490.56	103
H-17	0	104	6,491.24	104
H-18	0	105	6,491.77	105
H-19	0	108	6,491.15	108
H-20	0	110	6,490.80	110
H-21	0	90	6,503.53	90
H-22	0	95	6,503.74	95
H-23	0	98	6,503.97	98
J-1	(N/A)	(N/A)	(N/A)	(N/A)
J-2	0	115	6,488.58	115
J-3	0	113	6,488.47	113
J-4	0	113	6,488.47	113
J-5	0	110	6,490.44	110
J-6	0	109	6,491.15	109
J-7	0	105	6,492.06	105
J-8	0	105	6,492.07	105
J-9	0	96	6,493.65	96
J-10	0	101	6,488.74	101
J-11	0	107	6,488.34	107
J-12	0	109	6,490.02	109
J-13	0	108	6,491.15	108
J-14	0	94	6,503.33	94

20% MDD+FF BLDG 9 LOOP OUT @ J2

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.36	93
J-16	0	90	6,503.50	90
J-17	0	90	6,503.55	90
J-18	0	95	6,503.78	95
J-19	0	98	6,504.00	98
S1-1	71	107	6,488.76	107
S2-1	16	98	6,491.12	98
S4-1	30	106	6,490.24	106
S5-1	203	112	6,488.40	112
S6-1	9	104	6,491.43	104
S7-1	59	109	6,489.37	109
S8-1	5	105	6,491.94	105
S9-1	126	103	6,487.08	103

20% MDD+FF BLDG 9 LOOP OUT @ J2

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	(N/A)
R-2	6,504.00	(N/A)
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+H-21

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	157	PVC	120.0	0.45	0.000	0.0
EX-2	16	12.0	-162	PVC	120.0	0.46	0.000	0.0
P-1	1,723	16.0	320	PVC	120.0	0.51	0.000	0.1
P-2	657	16.0	242	PVC	120.0	0.39	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	78	PVC	120.0	0.50	0.000	0.0
P-5	98	8.0	78	PVC	120.0	0.50	0.000	0.0
P-6	6	8.0	19	PVC	120.0	0.12	0.000	0.0
P-7	117	8.0	19	PVC	120.0	0.12	0.000	0.0
P-8	46	8.0	19	PVC	120.0	0.12	0.000	0.0
P-9	61	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-10	80	8.0	13	PVC	120.0	0.08	0.000	0.0
P-11	186	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-12	15	8.0	-13	PVC	120.0	0.08	0.000	0.0
P-13	20	12.0	-13	PVC	120.0	0.04	0.000	0.0
P-14	34	12.0	61	PVC	120.0	0.17	0.000	0.0
P-15	248	12.0	-61	PVC	120.0	0.17	0.000	0.0
P-16	185	12.0	-61	PVC	120.0	0.17	0.000	0.0
P-17	73	12.0	139	PVC	120.0	0.40	0.000	0.0
P-18	140	12.0	139	PVC	120.0	0.40	0.000	0.0
P-19	5	12.0	123	PVC	120.0	0.35	0.000	0.0
P-20	125	12.0	123	PVC	120.0	0.35	0.000	0.0
P-21	53	12.0	123	PVC	120.0	0.35	0.000	0.0
P-22	164	12.0	73	PVC	120.0	0.21	0.000	0.0
P-23	163	12.0	73	PVC	120.0	0.21	0.000	0.0
P-24	51	12.0	-38	PVC	120.0	0.11	0.000	0.0
P-25	176	12.0	-38	PVC	120.0	0.11	0.000	0.0
P-26	6	12.0	-242	PVC	120.0	0.69	0.000	0.0
P-27	30	12.0	-242	PVC	120.0	0.69	0.000	0.0
P-28	59	12.0	-242	PVC	120.0	0.69	0.000	0.0
P-29	154	12.0	51	PVC	120.0	0.14	0.000	0.0
P-30	340	12.0	-51	PVC	120.0	0.14	0.000	0.0
P-31	279	12.0	-51	PVC	120.0	0.14	0.000	0.0
P-32	300	12.0	-51	PVC	120.0	0.14	0.000	0.0
P-33	108	12.0	-51	PVC	120.0	0.14	0.000	0.0
P-34	7	12.0	76	PVC	120.0	0.21	0.000	0.0
P-35	263	12.0	76	PVC	120.0	0.21	0.000	0.0
P-36	96	8.0	-35	PVC	120.0	0.22	0.000	0.0
P-37	7	8.0	36	PVC	120.0	0.23	0.000	0.0
P-38	184	8.0	36	PVC	120.0	0.23	0.000	0.0
P-39	28	8.0	36	PVC	120.0	0.23	0.000	0.0
P-40	342	8.0	41	PVC	120.0	0.26	0.000	0.0
P-41	107	8.0	4	PVC	120.0	0.03	0.000	0.0
P-42	4	8.0	-25	PVC	120.0	0.16	0.000	0.0
P-43	132	8.0	-25	PVC	120.0	0.16	0.000	0.0
P-44	273	8.0	-25	PVC	120.0	0.16	0.000	0.0

20% MDD+H-21

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-25	PVC	120.0	0.16	0.000	0.0
P-46	7	6.0	-25	PVC	120.0	0.29	0.000	0.0
P-47	62	6.0	-34	PVC	120.0	0.39	0.000	0.0
P-48	48	8.0	14	PVC	120.0	0.09	0.000	0.0
P-49	6	8.0	14	PVC	120.0	0.09	0.000	0.0
P-50	78	8.0	8	PVC	120.0	0.05	0.000	0.0
P-51	248	8.0	8	PVC	120.0	0.05	0.000	0.0
P-52	28	6.0	0	PVC	120.0	0.00	0.000	0.0
P-53	139	8.0	0	PVC	120.0	0.00	0.000	0.0
P-54	121	8.0	-8	PVC	120.0	0.05	0.000	0.0
P-55	188	8.0	8	PVC	120.0	0.05	0.000	0.0
P-56	381	12.0	-200	PVC	120.0	0.57	0.000	0.0
P-57	78	12.0	899	PVC	120.0	2.55	0.003	0.1
P-58	275	12.0	899	PVC	120.0	2.55	0.002	0.3
P-59	64	12.0	899	PVC	120.0	2.55	0.002	0.1
P-60	42	12.0	-601	PVC	120.0	1.70	0.001	0.0
P-61	408	12.0	-601	PVC	120.0	1.70	0.001	0.2
P-62	89	12.0	-601	PVC	120.0	1.70	0.001	0.0
P-63	390	12.0	-601	PVC	120.0	1.70	0.001	0.2
P-64	66	12.0	-601	PVC	120.0	1.70	0.001	0.0
P-65	22	12.0	-115	PVC	120.0	0.33	0.000	0.0
P-66	26	16.0	-224	PVC	120.0	0.36	0.000	0.0
P-67	19	16.0	-262	PVC	120.0	0.42	0.000	0.0
P-68	34	12.0	-1,099	PVC	120.0	3.12	0.004	0.1

20% MDD+H-21

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.79	113
F2-1	0	103	6,503.81	103
F3-1	0	110	6,503.82	110
F4-1	0	111	6,503.79	111
F5-1	0	118	6,503.79	118
F6-1	0	109	6,503.81	109
F7-1	0	116	6,503.82	116
F8-1	0	110	6,503.82	110
F9-1	0	111	6,503.78	111
H-1	0	122	6,503.83	122
H-2	0	116	6,503.81	116
H-3	0	115	6,503.81	115
H-4	0	111	6,503.82	111
H-5	0	105	6,503.82	105
H-6	0	101	6,503.82	101
H-7	0	107	6,503.80	107
H-8	0	111	6,503.79	111
H-9	0	118	6,503.80	118
H-10	0	106	6,503.79	106
H-11	0	103	6,503.79	103
H-12	0	105	6,503.79	105
H-13	0	109	6,503.78	109
H-14	0	114	6,503.79	114
H-15	0	113	6,503.79	113
H-16	0	109	6,503.80	109
H-17	0	109	6,503.80	109
H-18	0	111	6,503.82	111
H-19	0	114	6,503.82	114
H-20	0	116	6,503.81	116
H-21	1,500	90	6,502.85	90
H-22	0	94	6,503.37	94
H-23	0	98	6,503.92	98
J-1	0	128	6,504.00	128
J-2	0	122	6,503.85	122
J-3	0	119	6,503.81	119
J-4	0	119	6,503.81	119
J-5	0	115	6,503.81	115
J-6	0	114	6,503.82	114
J-7	0	110	6,503.82	110
J-8	0	110	6,503.82	110
J-9	0	101	6,503.82	101
J-10	0	107	6,503.80	107
J-11	0	114	6,503.79	114
J-12	0	115	6,503.79	115
J-13	0	114	6,503.82	114
J-14	0	94	6,503.88	94

20% MDD+H-21

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.68	93
J-16	0	90	6,503.00	90
J-17	0	90	6,502.90	90
J-18	0	95	6,503.47	95
J-19	0	98	6,504.00	98
S1-1	71	113	6,503.78	113
S2-1	16	103	6,503.81	103
S4-1	30	111	6,503.79	111
S5-1	203	118	6,503.79	118
S6-1	9	109	6,503.81	109
S7-1	59	116	6,503.82	116
S8-1	5	110	6,503.82	110
S9-1	126	111	6,503.78	111

20% MDD+H-21

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+H-22

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	147	PVC	120.0	0.42	0.000	0.0
EX-2	16	12.0	-152	PVC	120.0	0.43	0.000	0.0
P-1	1,723	16.0	298	PVC	120.0	0.48	0.000	0.1
P-2	657	16.0	229	PVC	120.0	0.37	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	69	PVC	120.0	0.44	0.000	0.0
P-5	98	8.0	69	PVC	120.0	0.44	0.000	0.0
P-6	6	8.0	11	PVC	120.0	0.07	0.000	0.0
P-7	117	8.0	11	PVC	120.0	0.07	0.000	0.0
P-8	46	8.0	11	PVC	120.0	0.07	0.000	0.0
P-9	61	8.0	-19	PVC	120.0	0.12	0.000	0.0
P-10	80	8.0	19	PVC	120.0	0.12	0.000	0.0
P-11	186	8.0	-18	PVC	120.0	0.12	0.000	0.0
P-12	15	8.0	-18	PVC	120.0	0.12	0.000	0.0
P-13	20	12.0	-18	PVC	120.0	0.05	0.000	0.0
P-14	34	12.0	71	PVC	120.0	0.20	0.000	0.0
P-15	248	12.0	-71	PVC	120.0	0.20	0.000	0.0
P-16	185	12.0	-71	PVC	120.0	0.20	0.000	0.0
P-17	73	12.0	150	PVC	120.0	0.43	0.000	0.0
P-18	140	12.0	150	PVC	120.0	0.43	0.000	0.0
P-19	5	12.0	134	PVC	120.0	0.38	0.000	0.0
P-20	125	12.0	134	PVC	120.0	0.38	0.000	0.0
P-21	53	12.0	134	PVC	120.0	0.38	0.000	0.0
P-22	164	12.0	81	PVC	120.0	0.23	0.000	0.0
P-23	163	12.0	81	PVC	120.0	0.23	0.000	0.0
P-24	51	12.0	-26	PVC	120.0	0.07	0.000	0.0
P-25	176	12.0	-26	PVC	120.0	0.07	0.000	0.0
P-26	6	12.0	-229	PVC	120.0	0.65	0.000	0.0
P-27	30	12.0	-229	PVC	120.0	0.65	0.000	0.0
P-28	59	12.0	-229	PVC	120.0	0.65	0.000	0.0
P-29	154	12.0	53	PVC	120.0	0.15	0.000	0.0
P-30	340	12.0	-53	PVC	120.0	0.15	0.000	0.0
P-31	279	12.0	-53	PVC	120.0	0.15	0.000	0.0
P-32	300	12.0	-53	PVC	120.0	0.15	0.000	0.0
P-33	108	12.0	-53	PVC	120.0	0.15	0.000	0.0
P-34	7	12.0	73	PVC	120.0	0.21	0.000	0.0
P-35	263	12.0	73	PVC	120.0	0.21	0.000	0.0
P-36	96	8.0	-33	PVC	120.0	0.21	0.000	0.0
P-37	7	8.0	38	PVC	120.0	0.24	0.000	0.0
P-38	184	8.0	38	PVC	120.0	0.24	0.000	0.0
P-39	28	8.0	38	PVC	120.0	0.24	0.000	0.0
P-40	342	8.0	41	PVC	120.0	0.26	0.000	0.0
P-41	107	8.0	3	PVC	120.0	0.02	0.000	0.0
P-42	4	8.0	-27	PVC	120.0	0.17	0.000	0.0
P-43	132	8.0	-27	PVC	120.0	0.17	0.000	0.0
P-44	273	8.0	-27	PVC	120.0	0.17	0.000	0.0

20% MDD+H-22

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-27	PVC	120.0	0.17	0.000	0.0
P-46	7	6.0	-27	PVC	120.0	0.30	0.000	0.0
P-47	62	6.0	-36	PVC	120.0	0.41	0.000	0.0
P-48	48	8.0	17	PVC	120.0	0.11	0.000	0.0
P-49	6	8.0	17	PVC	120.0	0.11	0.000	0.0
P-50	78	8.0	12	PVC	120.0	0.08	0.000	0.0
P-51	248	8.0	12	PVC	120.0	0.08	0.000	0.0
P-52	28	6.0	0	PVC	120.0	0.01	0.000	0.0
P-53	139	8.0	0	PVC	120.0	0.00	0.000	0.0
P-54	121	8.0	-12	PVC	120.0	0.07	0.000	0.0
P-55	188	8.0	12	PVC	120.0	0.07	0.000	0.0
P-56	381	12.0	-222	PVC	120.0	0.63	0.000	0.0
P-57	78	12.0	642	PVC	120.0	1.82	0.001	0.0
P-58	275	12.0	642	PVC	120.0	1.82	0.001	0.2
P-59	64	12.0	642	PVC	120.0	1.82	0.001	0.0
P-60	42	12.0	642	PVC	120.0	1.82	0.001	0.0
P-61	408	12.0	642	PVC	120.0	1.82	0.001	0.2
P-62	89	12.0	-858	PVC	120.0	2.43	0.002	0.1
P-63	390	12.0	-858	PVC	120.0	2.43	0.002	0.4
P-64	66	12.0	-858	PVC	120.0	2.43	0.002	0.1
P-65	22	12.0	-164	PVC	120.0	0.47	0.000	0.0
P-66	26	16.0	-320	PVC	120.0	0.51	0.000	0.0
P-67	19	16.0	-374	PVC	120.0	0.60	0.000	0.0
P-68	34	12.0	-864	PVC	120.0	2.45	0.002	0.0

20% MDD+H-22

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.81	113
F2-1	0	103	6,503.84	103
F3-1	0	110	6,503.85	110
F4-1	0	111	6,503.82	111
F5-1	0	118	6,503.82	118
F6-1	0	109	6,503.83	109
F7-1	0	116	6,503.84	116
F8-1	0	110	6,503.84	110
F9-1	0	111	6,503.81	111
H-1	0	122	6,503.86	122
H-2	0	116	6,503.84	116
H-3	0	115	6,503.84	115
H-4	0	111	6,503.84	111
H-5	0	105	6,503.85	105
H-6	0	101	6,503.85	101
H-7	0	107	6,503.83	107
H-8	0	111	6,503.82	111
H-9	0	118	6,503.82	118
H-10	0	106	6,503.82	106
H-11	0	103	6,503.82	103
H-12	0	105	6,503.81	105
H-13	0	109	6,503.81	109
H-14	0	114	6,503.81	114
H-15	0	113	6,503.82	113
H-16	0	109	6,503.82	109
H-17	0	109	6,503.83	109
H-18	0	111	6,503.84	111
H-19	0	114	6,503.84	114
H-20	0	116	6,503.84	116
H-21	0	90	6,503.37	90
H-22	1,500	94	6,502.78	94
H-23	0	98	6,503.85	98
J-1	0	128	6,504.00	128
J-2	0	122	6,503.86	122
J-3	0	119	6,503.83	119
J-4	0	119	6,503.83	119
J-5	0	115	6,503.84	115
J-6	0	114	6,503.84	114
J-7	0	110	6,503.84	110
J-8	0	110	6,503.84	110
J-9	0	101	6,503.86	101
J-10	0	107	6,503.82	107
J-11	0	114	6,503.81	114
J-12	0	115	6,503.82	115
J-13	0	114	6,503.84	114
J-14	0	94	6,503.92	94

20% MDD+H-22

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.82	93
J-16	0	90	6,503.46	90
J-17	0	90	6,503.32	90
J-18	0	95	6,502.98	95
J-19	0	98	6,504.00	98
S1-1	71	113	6,503.81	113
S2-1	16	103	6,503.84	103
S4-1	30	111	6,503.82	111
S5-1	203	118	6,503.81	118
S6-1	9	110	6,503.83	110
S7-1	59	116	6,503.84	116
S8-1	5	110	6,503.84	110
S9-1	126	111	6,503.81	111

20% MDD+H-22

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

20% MDD+H-23

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
EX-1	17	12.0	134	PVC	120.0	0.38	0.000	0.0
EX-2	16	12.0	-139	PVC	120.0	0.39	0.000	0.0
P-1	1,723	16.0	273	PVC	120.0	0.44	0.000	0.0
P-2	657	16.0	215	PVC	120.0	0.34	0.000	0.0
P-3	125	16.0	0	PVC	120.0	0.00	0.000	0.0
P-4	58	8.0	59	PVC	120.0	0.37	0.000	0.0
P-5	98	8.0	59	PVC	120.0	0.37	0.000	0.0
P-6	6	8.0	0	PVC	120.0	0.00	0.000	0.0
P-7	117	8.0	0	PVC	120.0	0.00	0.000	0.0
P-8	46	8.0	0	PVC	120.0	0.00	0.000	0.0
P-9	61	8.0	-25	PVC	120.0	0.16	0.000	0.0
P-10	80	8.0	25	PVC	120.0	0.16	0.000	0.0
P-11	186	8.0	-24	PVC	120.0	0.16	0.000	0.0
P-12	15	8.0	-24	PVC	120.0	0.16	0.000	0.0
P-13	20	12.0	-24	PVC	120.0	0.07	0.000	0.0
P-14	34	12.0	84	PVC	120.0	0.24	0.000	0.0
P-15	248	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-16	185	12.0	-84	PVC	120.0	0.24	0.000	0.0
P-17	73	12.0	163	PVC	120.0	0.46	0.000	0.0
P-18	140	12.0	163	PVC	120.0	0.46	0.000	0.0
P-19	5	12.0	147	PVC	120.0	0.42	0.000	0.0
P-20	125	12.0	147	PVC	120.0	0.42	0.000	0.0
P-21	53	12.0	147	PVC	120.0	0.42	0.000	0.0
P-22	164	12.0	91	PVC	120.0	0.26	0.000	0.0
P-23	163	12.0	91	PVC	120.0	0.26	0.000	0.0
P-24	51	12.0	-11	PVC	120.0	0.03	0.000	0.0
P-25	176	12.0	-11	PVC	120.0	0.03	0.000	0.0
P-26	6	12.0	-215	PVC	120.0	0.61	0.000	0.0
P-27	30	12.0	-215	PVC	120.0	0.61	0.000	0.0
P-28	59	12.0	-215	PVC	120.0	0.61	0.000	0.0
P-29	154	12.0	56	PVC	120.0	0.16	0.000	0.0
P-30	340	12.0	-56	PVC	120.0	0.16	0.000	0.0
P-31	279	12.0	-56	PVC	120.0	0.16	0.000	0.0
P-32	300	12.0	-56	PVC	120.0	0.16	0.000	0.0
P-33	108	12.0	-56	PVC	120.0	0.16	0.000	0.0
P-34	7	12.0	70	PVC	120.0	0.20	0.000	0.0
P-35	263	12.0	70	PVC	120.0	0.20	0.000	0.0
P-36	96	8.0	-32	PVC	120.0	0.20	0.000	0.0
P-37	7	8.0	40	PVC	120.0	0.25	0.000	0.0
P-38	184	8.0	40	PVC	120.0	0.25	0.000	0.0
P-39	28	8.0	40	PVC	120.0	0.25	0.000	0.0
P-40	342	8.0	41	PVC	120.0	0.26	0.000	0.0
P-41	107	8.0	1	PVC	120.0	0.01	0.000	0.0
P-42	4	8.0	-29	PVC	120.0	0.18	0.000	0.0
P-43	132	8.0	-29	PVC	120.0	0.18	0.000	0.0
P-44	273	8.0	-29	PVC	120.0	0.18	0.000	0.0

20% MDD+H-23

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Flow (gpm)	Material	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss Gradient (ft/ft)	Pressure Loss (psi)
P-45	48	8.0	-29	PVC	120.0	0.18	0.000	0.0
P-46	7	6.0	-29	PVC	120.0	0.33	0.000	0.0
P-47	62	6.0	-38	PVC	120.0	0.43	0.000	0.0
P-48	48	8.0	22	PVC	120.0	0.14	0.000	0.0
P-49	6	8.0	22	PVC	120.0	0.14	0.000	0.0
P-50	78	8.0	16	PVC	120.0	0.10	0.000	0.0
P-51	248	8.0	16	PVC	120.0	0.10	0.000	0.0
P-52	28	6.0	1	PVC	120.0	0.01	0.000	0.0
P-53	139	8.0	-1	PVC	120.0	0.01	0.000	0.0
P-54	121	8.0	-16	PVC	120.0	0.10	0.000	0.0
P-55	188	8.0	16	PVC	120.0	0.10	0.000	0.0
P-56	381	12.0	-247	PVC	120.0	0.70	0.000	0.0
P-57	78	12.0	240	PVC	120.0	0.68	0.000	0.0
P-58	275	12.0	240	PVC	120.0	0.68	0.000	0.0
P-59	64	12.0	240	PVC	120.0	0.68	0.000	0.0
P-60	42	12.0	240	PVC	120.0	0.68	0.000	0.0
P-61	408	12.0	240	PVC	120.0	0.68	0.000	0.0
P-62	89	12.0	240	PVC	120.0	0.68	0.000	0.0
P-63	390	12.0	240	PVC	120.0	0.68	0.000	0.0
P-64	66	12.0	-1,260	PVC	120.0	3.57	0.005	0.1
P-65	22	12.0	-241	PVC	120.0	0.68	0.000	0.0
P-66	26	16.0	-470	PVC	120.0	0.75	0.000	0.0
P-67	19	16.0	-549	PVC	120.0	0.88	0.000	0.0
P-68	34	12.0	-487	PVC	120.0	1.38	0.001	0.0

20% MDD+H-23

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
F1-1	0	113	6,503.84	113
F2-1	0	103	6,503.87	103
F3-1	0	110	6,503.88	110
F4-1	0	111	6,503.85	111
F5-1	0	118	6,503.84	118
F6-1	0	109	6,503.86	109
F7-1	0	116	6,503.87	116
F8-1	0	110	6,503.87	110
F9-1	0	111	6,503.83	111
H-1	0	122	6,503.88	122
H-2	0	116	6,503.87	116
H-3	0	115	6,503.87	115
H-4	0	111	6,503.88	111
H-5	0	105	6,503.88	105
H-6	0	101	6,503.88	101
H-7	0	107	6,503.86	107
H-8	0	111	6,503.85	111
H-9	0	118	6,503.85	118
H-10	0	106	6,503.85	106
H-11	0	103	6,503.84	103
H-12	0	105	6,503.84	105
H-13	0	109	6,503.84	109
H-14	0	114	6,503.84	114
H-15	0	113	6,503.85	113
H-16	0	109	6,503.85	109
H-17	0	109	6,503.86	109
H-18	0	111	6,503.87	111
H-19	0	114	6,503.87	114
H-20	0	116	6,503.87	116
H-21	0	90	6,503.88	90
H-22	0	95	6,503.79	95
H-23	1,500	97	6,503.69	97
J-1	0	128	6,504.00	128
J-2	0	122	6,503.88	122
J-3	0	119	6,503.86	119
J-4	0	119	6,503.86	119
J-5	0	116	6,503.87	116
J-6	0	114	6,503.87	114
J-7	0	110	6,503.88	110
J-8	0	110	6,503.88	110
J-9	0	101	6,503.89	101
J-10	0	107	6,503.85	107
J-11	0	114	6,503.84	114
J-12	0	115	6,503.85	115
J-13	0	114	6,503.87	114
J-14	0	94	6,503.97	94

20% MDD+H-23

Junction Table - Time: 0.00 hours

Label	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (Maximum) (psi)
J-15	0	93	6,503.96	93
J-16	0	90	6,503.90	90
J-17	0	90	6,503.88	90
J-18	0	95	6,503.77	95
J-19	0	98	6,504.00	98
S1-1	71	113	6,503.84	113
S2-1	16	103	6,503.87	103
S4-1	30	111	6,503.85	111
S5-1	203	118	6,503.84	118
S6-1	9	110	6,503.86	110
S7-1	59	116	6,503.87	116
S8-1	5	110	6,503.87	110
S9-1	126	111	6,503.83	111

20% MDD+H-23

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Hydraulic Grade (ft)
R-1	6,504.00	6,504.00
R-2	6,504.00	6,504.00
R-3	6,504.00	6,504.00
R-4	6,504.00	6,504.00
R-5	6,504.00	6,504.00
R-6	6,504.00	6,504.00

Fire Flow Node FlexTable: Fire Flow Report

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated Zone Lower Limit) (psi)	Velocity of Maximum Pipe (ft/s)	Pipe w/ Maximum Velocity
H-1	True	1,500	1,501	105	H-11	87	14.24	P-56
H-2	True	1,500	1,501	100	H-11	88	14.24	P-56
H-3	True	1,500	1,501	100	H-11	88	14.24	P-56
H-4	True	1,500	1,501	97	H-11	89	14.24	P-56
H-5	True	1,500	1,501	93	H-11	89	14.24	P-56
H-6	True	1,500	1,501	89	H-11	89	14.24	P-56
H-7	True	1,500	1,501	92	H-11	88	14.24	P-56
H-8	True	1,500	1,501	95	H-11	87	14.24	P-56
H-9	True	1,500	1,501	102	H-11	87	14.24	P-56
H-10	True	1,500	1,501	90	H-11	87	14.24	P-56
H-11	True	1,500	1,501	86	H-12	88	14.24	P-56
H-12	True	1,500	1,501	87	H-11	86	14.24	P-56
H-13	True	1,500	1,501	91	H-11	87	14.24	P-56
H-14	True	1,500	1,501	98	H-11	87	14.24	P-56
H-15	True	1,500	1,501	97	H-11	88	14.24	P-56
H-16	True	1,500	1,501	92	H-11	88	14.24	P-56
H-17	True	1,500	1,501	93	H-11	88	14.24	P-56
H-18	True	1,500	1,501	96	H-11	89	14.24	P-56
H-19	True	1,500	1,501	99	H-11	88	14.24	P-56
H-20	True	1,500	1,501	100	H-11	88	14.24	P-56
H-21	True	1,500	1,501	89	J-17	89	11.92	P-68
H-22	True	1,500	1,501	94	J-17	90	11.22	P-68
H-23	True	1,500	1,501	97	H-21	90	9.99	P-56

APPENDIX D – WASTEWATER FLOWS

Brickyard at Castle Rock

Land Use & SFE Calculations

Design Point	**Land Use**						Wastewater SFE
	Residential (MF) (DU)	*Retail/Office (SF)*	*Resturaunts (SF)*	*Other Commercial (AC)*	*Hotel (DU)*	*Gym/Fitness (SF)*	
Rec Center	-	-	-	-	-	145,000.00	181.25
Plan Area 1	-	53,400.00	14,100.00	-	123.00	-	178.58
Plan Area 2	66.00	-	-	-	-	-	42.90
Plan Area 3	20.00	-	-	1.87	-	-	18.61
Plan Area 4	-	-	-	1.55	-	-	4.65
Plan Area 5	298.00	30,000.00	11,200.00	-	-	-	292.70
Total	384.00	83,400.00	25,300.00	3.42	123.00	145,000.00	718.69

APPENDIX E – WASTEWATER HYDRAULIC MODELING

Brickyard at Castle Rock

Sanitary Sewer - Summary Table

Sanitary Sewer Pipe Tabulation - OS to DP7											
Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity [1] (cfs)*	*PDF/Max Capacity (%)*	*Notes*
EX	24	1.49%	-	-	-	-	0.034	-	35.90	26.92	0.13%	Per ToCR (Topeka & Prairie Hawk)
OS	24	1.50%	-	-	-	-	13.22	-	36.02	27.01	48.94%	Future development flow per Miller's Landing Phase 1 Utility Report (1.33 cfs) + Dawson Trail Estimate (11.89 cfs)
1	8	1.65%	-	359.83	0.11	5.00	0.86	5.09	2.02	1.51	56.52%	Rec Center & Plan Area 1
1.5	8	1.65%	1, 33% of PA-5	457.39	0.13	5.00	0.86	5.15	2.02	1.51	56.52%	Rec Center & Plan Area 1 & 33% of PA-5 (Building 5)
2	24	0.52%	OS, EX, 1, 1.5	457.39	0.13	5.00	14.11	6.65	21.21	15.91	88.71%	Rec Center + Existing Prairie Hawk+Miller's Landing
3	8	3.00%	-	42.90	0.01	5.00	0.07	2.89	2.72	2.04	3.32%	Plan area 5
4	8	1.10%	-	18.61	0.00	5.00	0.02	2.31	1.65	1.24	1.66%	Plan area 2
5	8	1.86%	3, 4	61.51	0.01	5.00	0.09	2.72	2.14	1.61	5.50%	Plan area 2, 3
6	8	1.86%	67% of PA-5	261.29	0.05	5.00	0.40	4.22	2.14	1.61	25.16%	Plan area 2, 3, 4, and 67% of PA-5 (Building 5)
7	24	0.80%	2, 6	718.69	-	-	14.51	7.9	26.30	19.73	73.57%	Site Total + Existing Prairie Hawk+Miller's Landing

Sanitary Sewer Pipe Tabulation - DP7 to DP-D8											
Design Point	*Pipe Size (inches)*	*Pipe Slope (%)*	*Tributary Design Point*	*Tributary SFEs*	*Average Daily Flow (ADF) (MGPD)*	*Peaking Factor*	*Peak Design Flow (PDF) (cfs)*	*PDF Velocity (f/s)*	*Full Pipe Flow (Q_{full}) (cfs)*	*Max Capacity [1] (cfs)*	*PDF/Max Capacity (%)*	*Notes*
D1	24	0.50%	2, 6	718.69	-	-	14.51	4.5	20.80	15.60	93.06%	
D2	24	0.50%	2, 6	718.69	-	-	14.51	4.5	20.80	15.60	93.06%	
D3	24	2.72%	2, 6	718.69	-	-	14.51	4.5	48.50	36.38	39.90%	
D4	24	0.53%	2, 6	718.69	-	-	14.51	4.5	21.41	16.06	90.38%	
D5	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D6	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D7	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	
D8	24	1.80%	2, 6	718.69	-	-	14.51	4.5	39.46	29.59	49.05%	

Notes:

1. Maximum capacity is defined as 75% of Q_{full}

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP1 Peak Design Flow)

Circular

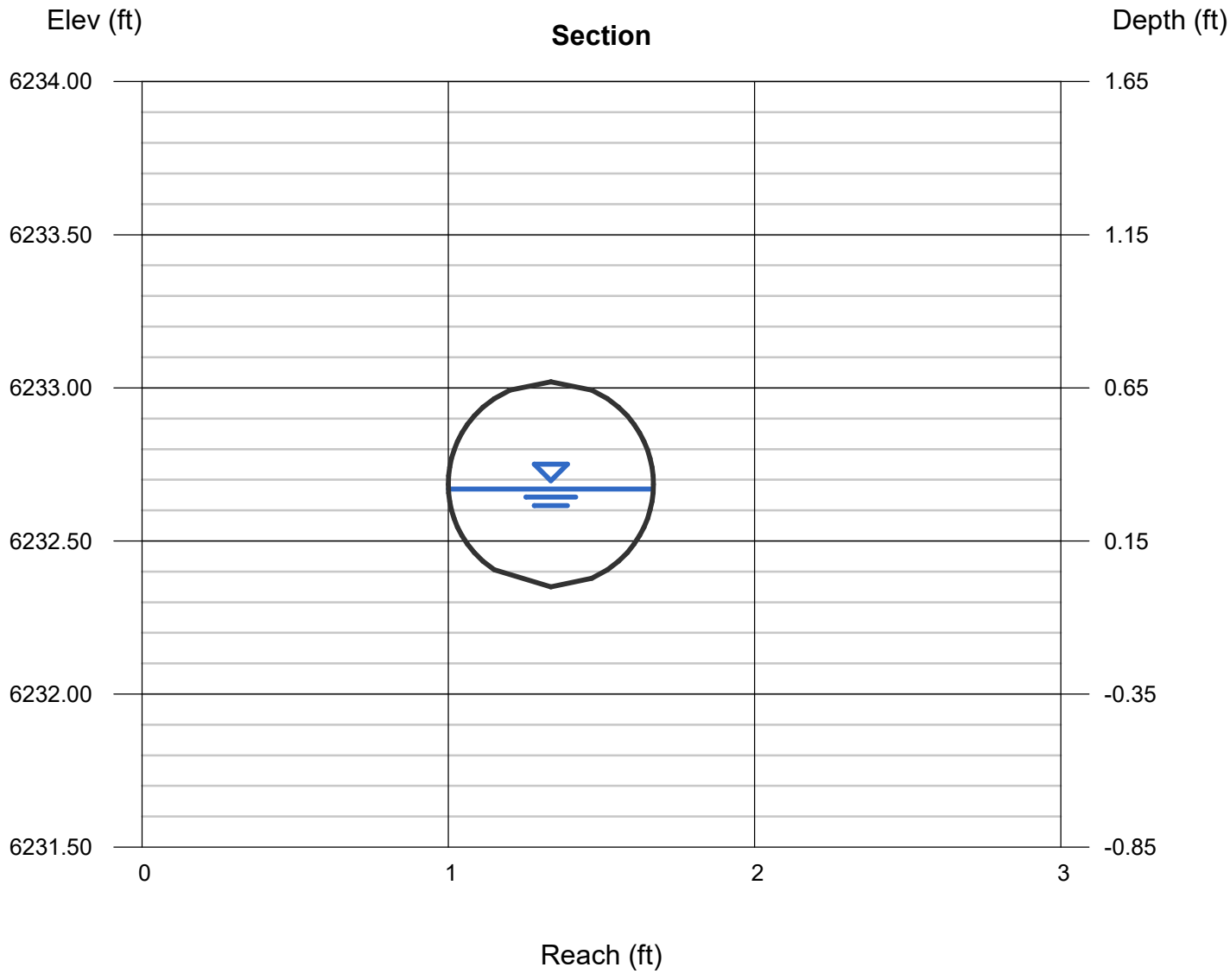
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6232.35
Slope (%)	= 1.65
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.85

Highlighted

Depth (ft)	= 0.32
Q (cfs)	= 0.850
Area (sqft)	= 0.17
Velocity (ft/s)	= 5.09
Wetted Perim (ft)	= 1.03
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 0.67
EGL (ft)	= 0.72



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jun 30 2025

Proposed - 8in Sanitary Sewer (DP1.5 Peak Design Flow)

Circular

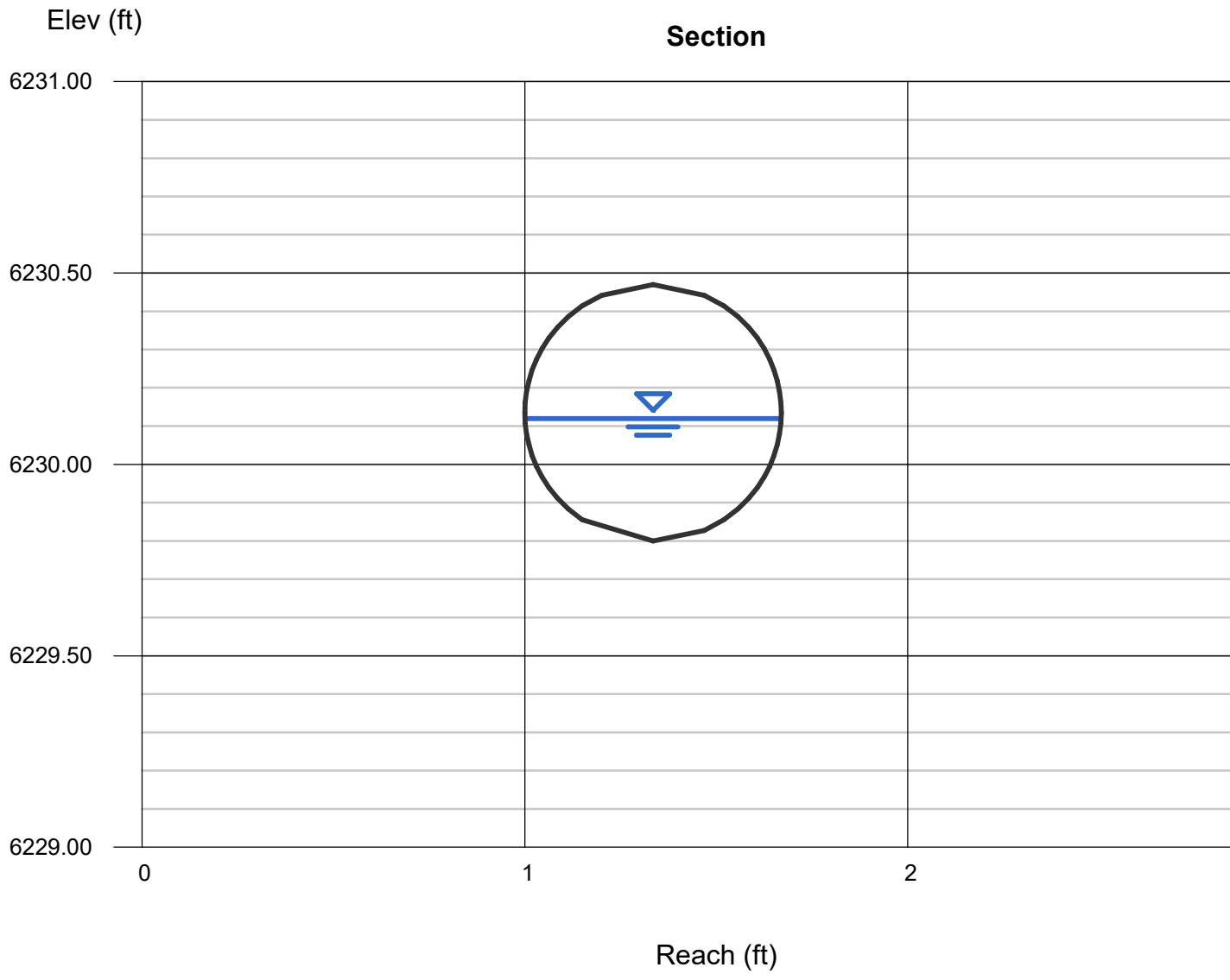
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6229.80
Slope (%)	= 1.65
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.86

Highlighted

Depth (ft)	= 0.32
Q (cfs)	= 0.860
Area (sqft)	= 0.17
Velocity (ft/s)	= 5.15
Wetted Perim (ft)	= 1.03
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 0.67
EGL (ft)	= 0.73



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP2 Peak Design Flow)

Circular

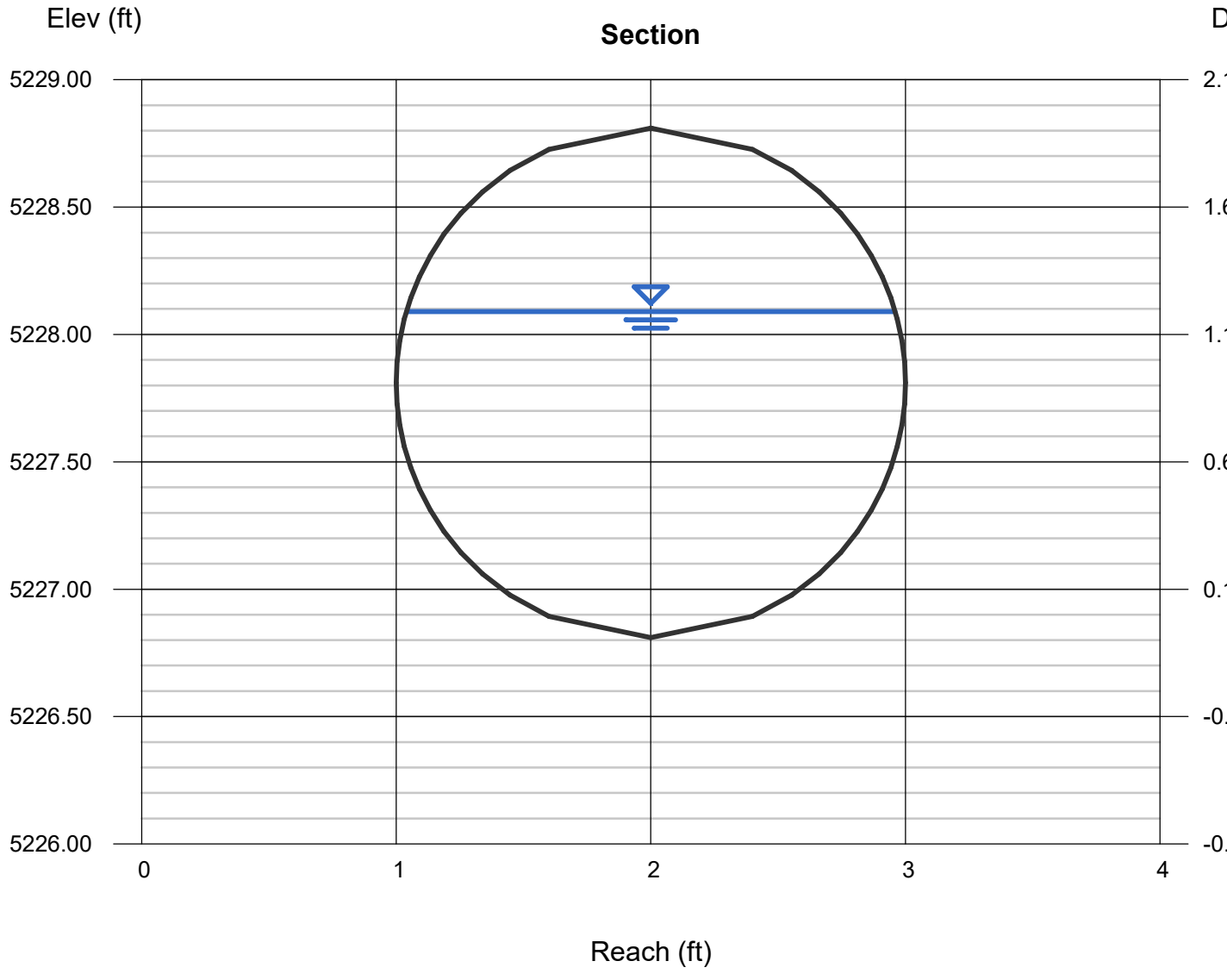
Diameter (ft)	= 2.00
Invert Elev (ft)	= 5226.81
Slope (%)	= 0.52
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 14.12

Highlighted

Depth (ft)	= 1.28
Q (cfs)	= 14.12
Area (sqft)	= 2.12
Velocity (ft/s)	= 6.65
Wetted Perim (ft)	= 3.71
Crit Depth, Yc (ft)	= 1.36
Top Width (ft)	= 1.92
EGL (ft)	= 1.97



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP3 Peak Design Flow)

Circular

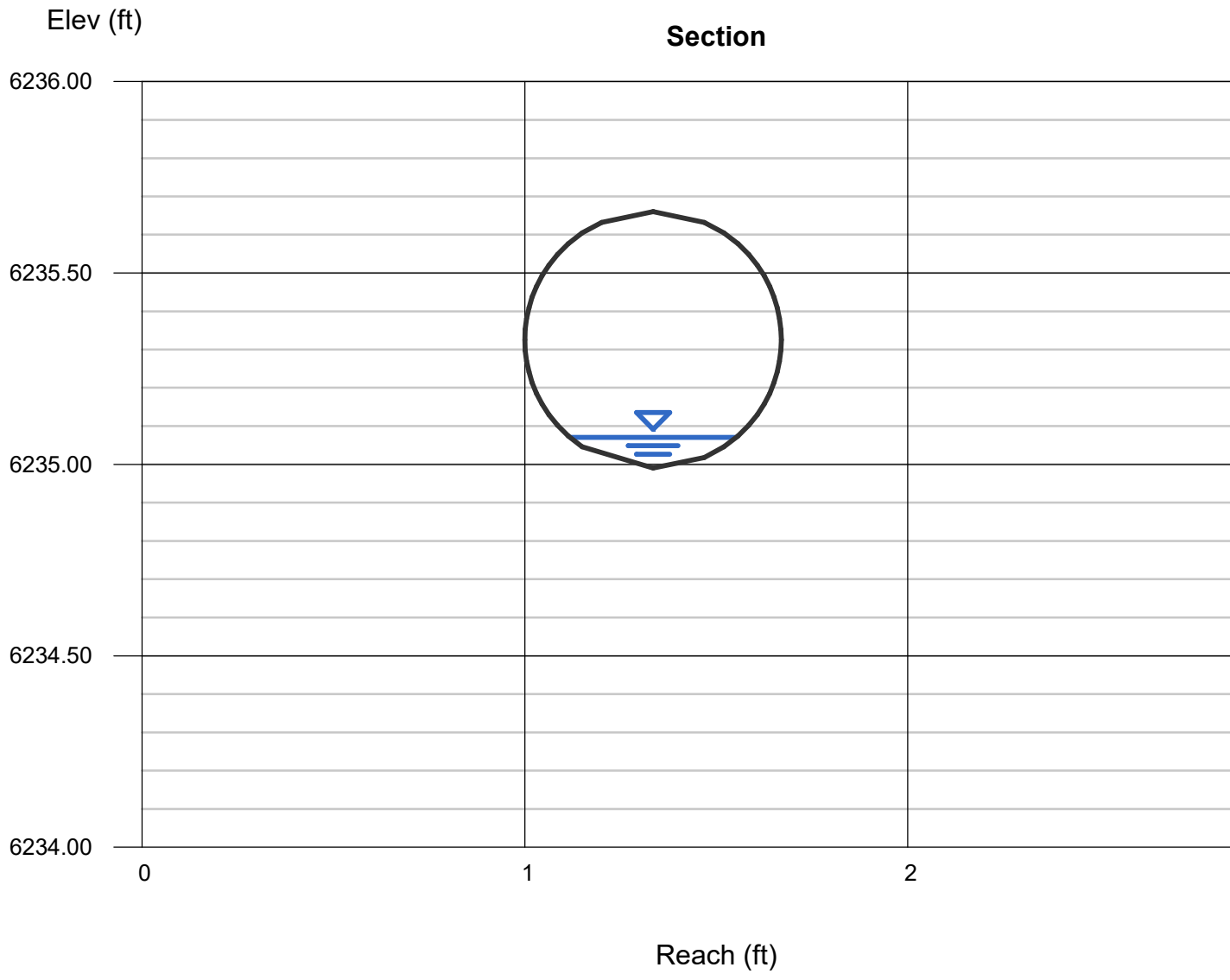
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6234.99
Slope (%)	= 3.00
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.07

Highlighted

Depth (ft)	= 0.08
Q (cfs)	= 0.070
Area (sqft)	= 0.02
Velocity (ft/s)	= 2.89
Wetted Perim (ft)	= 0.48
Crit Depth, Yc (ft)	= 0.12
Top Width (ft)	= 0.44
EGL (ft)	= 0.21



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP4 Peak Design Flow)

Circular

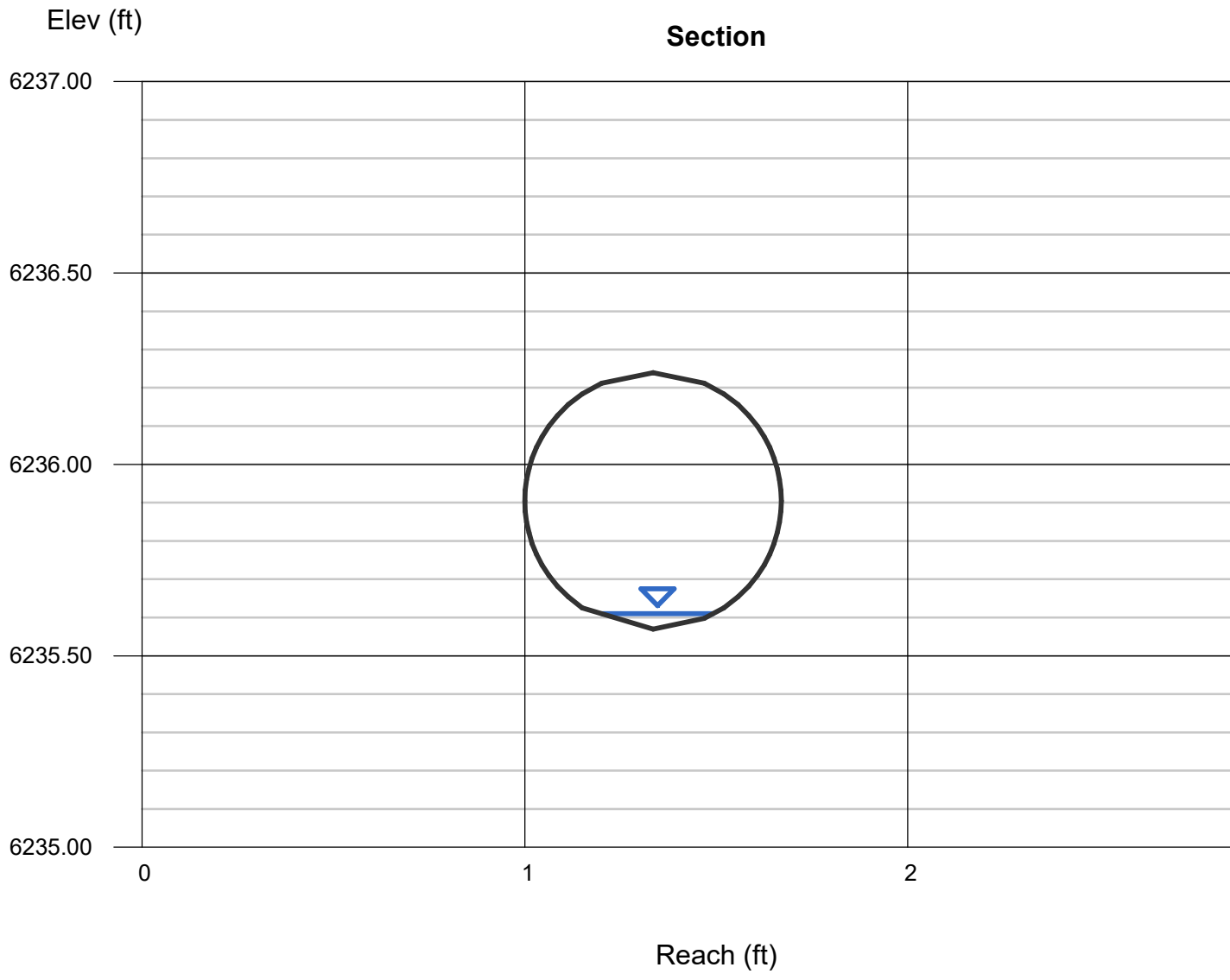
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6235.57
Slope (%)	= 5.71
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.02

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 0.020
Area (sqft)	= 0.01
Velocity (ft/s)	= 2.31
Wetted Perim (ft)	= 0.33
Crit Depth, Yc (ft)	= 0.07
Top Width (ft)	= 0.32
EGL (ft)	= 0.12



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP5 Peak Design Flow)

Circular

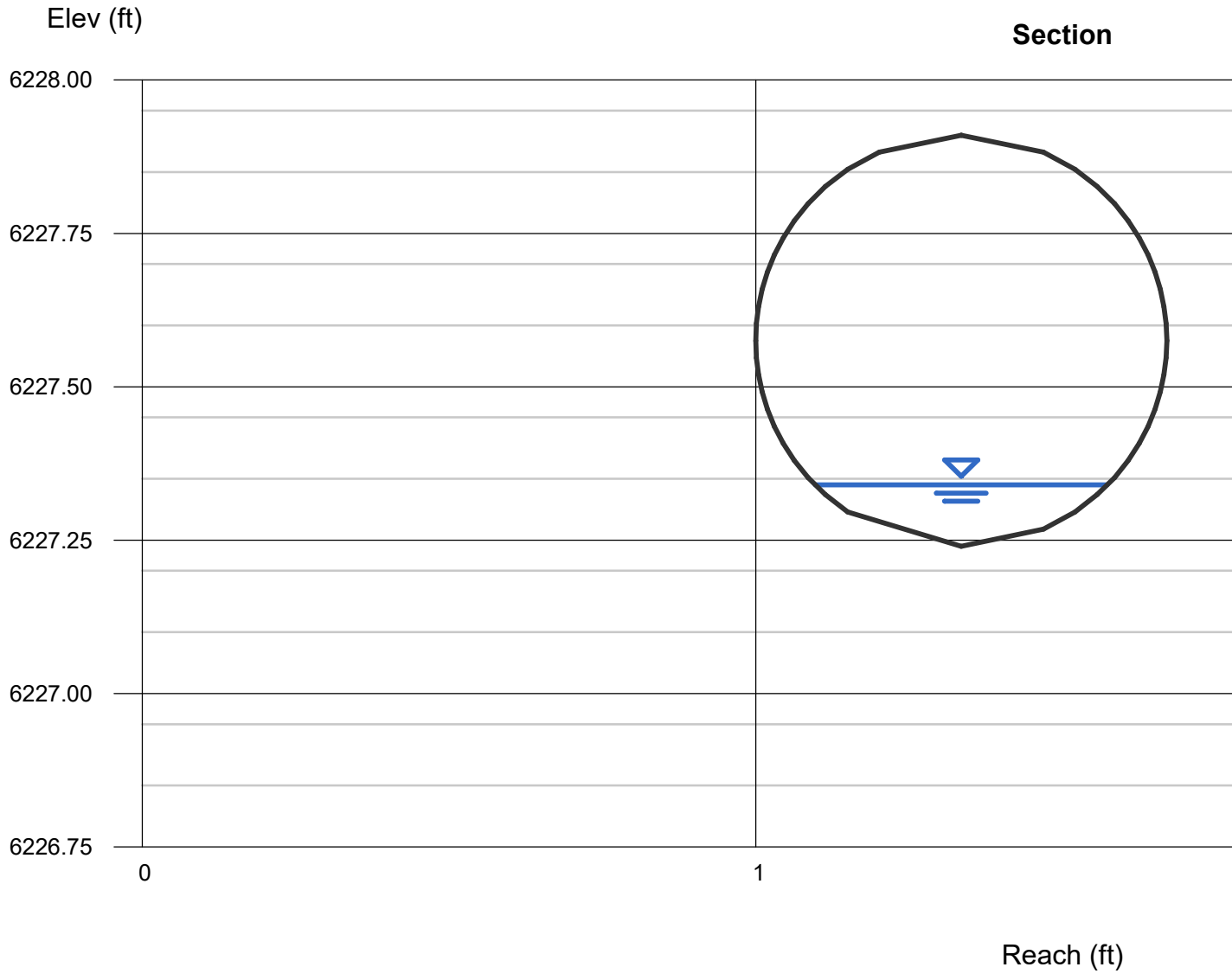
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6227.24
Slope (%)	= 1.84
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.09

Highlighted

Depth (ft)	= 0.10
Q (cfs)	= 0.090
Area (sqft)	= 0.03
Velocity (ft/s)	= 2.72
Wetted Perim (ft)	= 0.53
Crit Depth, Yc (ft)	= 0.14
Top Width (ft)	= 0.48
EGL (ft)	= 0.21



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP6 Peak Design Flow)

Circular

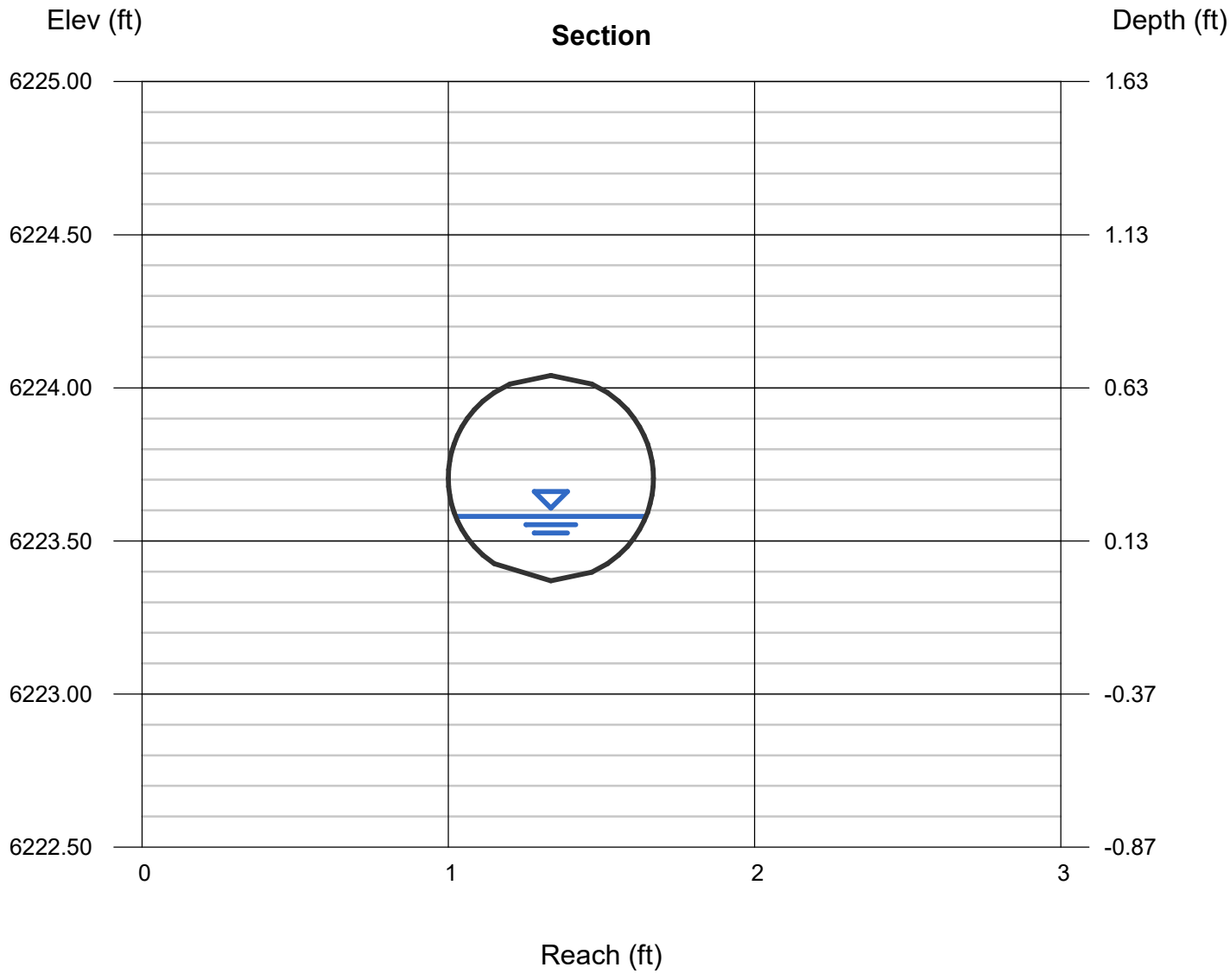
Diameter (ft)	= 0.67
Invert Elev (ft)	= 6223.37
Slope (%)	= 1.86
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.40

Highlighted

Depth (ft)	= 0.21
Q (cfs)	= 0.400
Area (sqft)	= 0.09
Velocity (ft/s)	= 4.22
Wetted Perim (ft)	= 0.80
Crit Depth, Yc (ft)	= 0.30
Top Width (ft)	= 0.62
EGL (ft)	= 0.49



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 8 2025

Proposed - 8in Sanitary Sewer (DP7 Peak Design Flow)

Circular

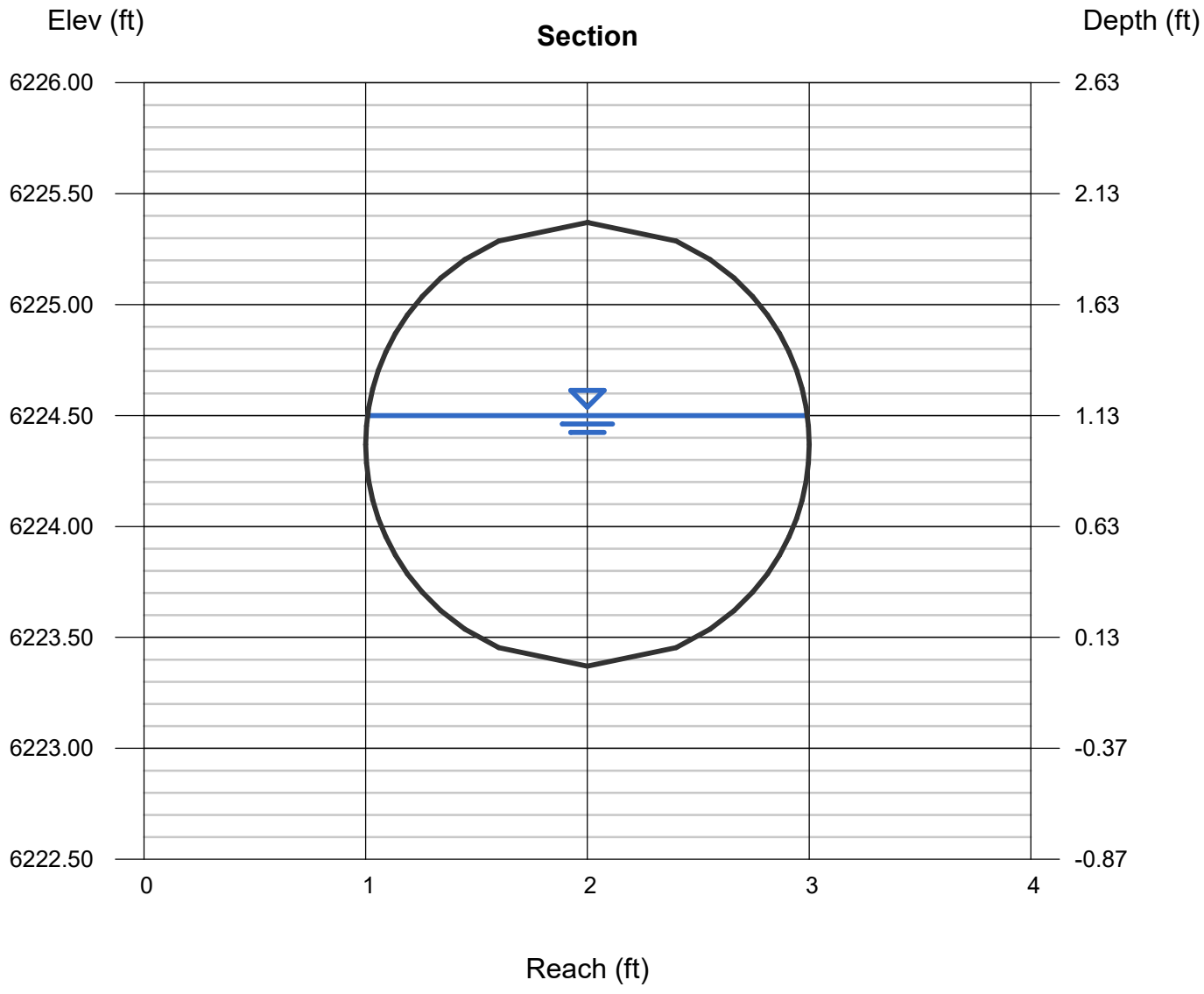
Diameter (ft)	= 2.00
Invert Elev (ft)	= 6223.37
Slope (%)	= 0.80
N-Value	= 0.011

Calculations

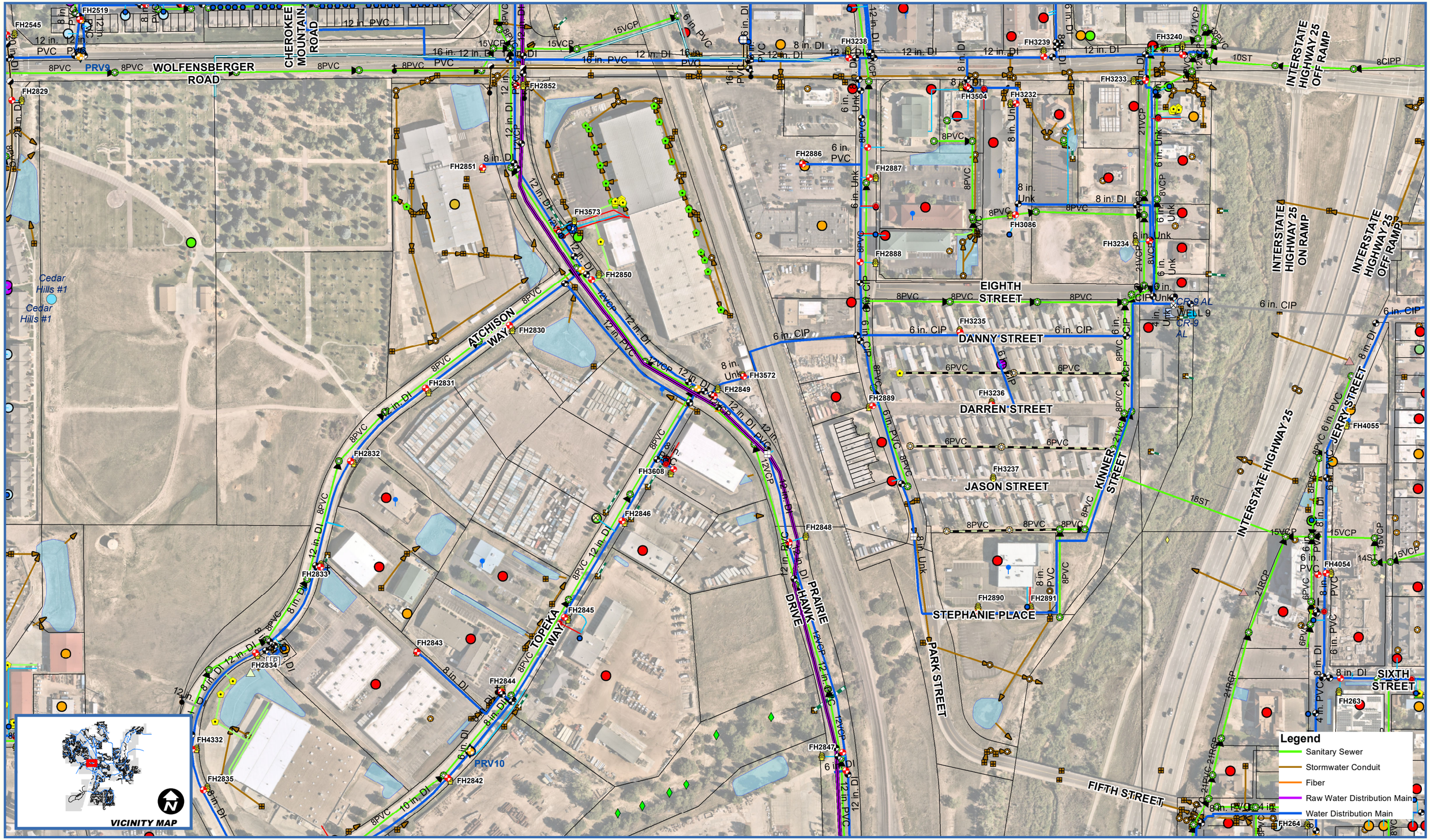
Compute by:	Known Q
Known Q (cfs)	= 14.51

Highlighted

Depth (ft)	= 1.13
Q (cfs)	= 14.51
Area (sqft)	= 1.84
Velocity (ft/s)	= 7.90
Wetted Perim (ft)	= 3.41
Crit Depth, Yc (ft)	= 1.38
Top Width (ft)	= 1.98
EGL (ft)	= 2.10



APPENDIX F – MAPS AND PLANS



CASTLE ROCK Qwater
Securing our future drop by drop

0 125 250 500 750 Feet

1 inch = 250 feet

Date: 12/8/2022

Document Path: J:\GIS\Standard Maps\10.6\11x17 LndScp10.6.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 it's 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 UTILITIES MAP (INTERNAL USE ONLY)

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

LEGEND

	EX
MANHOLE	
HYDRANT	
STREET LIGHT	
UNDERGROUND ELECTRIC	UE
WATER	W
IRRIGATION WATER	IR
GAS	G
STORM SEWER	ST
SANITARY SEWER	SS
UNDERGROUND ELECTRIC	UE

	PR
TRANSFORMER	
SWITCH CABINET	
UNDERGROUND ELECTRIC	UE
GAS MAIN	G
JOINT TRENCH	JT
MANHOLE	
HYDRANT	
INLET	
WATER	BW
STORM SEWER	ST
SANITARY SEWER	SS

BASIN REC — AREA 10.29 AC

BASIN PA-1 — AREA 2.26 AC

BASIN PA-2 — AREA 1.27 AC

BASIN PA-3 — AREA 2.16 AC

BASIN PA-4 — AREA 1.66 AC

BASIN PA-5 — AREA 3.11 AC

BLDG 1 · BLDG 2 · BLDG 3 · BLDG 4 · BLDG 5 · BLDG 6 · BLDG 7 · BLDG 8

PR 8" SANITARY SEWER (TYP)

EX 18" SANITARY SEWER

PR 18" SANITARY SEWER (EXISTING REPLACEMENT)

MATCH LINE - SEE SHEET 2

SANITARY SEWER BASIN EXHIBIT

(SHEET 1)

SCALE: 1"=70'

70 0 70 140

SCALE: 1" = 70'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

File path: P:\2020\20126\ENGINEERING\UTILITIES\SANITARY\SANITARY BASIN MAP.DWG Layout: LAYOUT1
Model: C:\Users\tmcmurtrie\AppData\Local\Temp\AcPublish_6424\Data set #1.dst Data set #2: P:\2020\20126\ENGINEERING\UTILITIES\SANITARY\SANITARY BASIN MAP.DWG
Plotted: TUE 07/08/25 12:12:43P By: Theresa McMurtrie



CASTLE ROCK Qwater
Securing our future drop by drop

0 210 420 840 Feet

Date: 2/24/2021 1 inch = 417 feet

Document Path: J:\GIS\Standard Maps\10.6\Letter Portrait_10.6.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 it's 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 2020, Town of Castle Rock Utilities Mapping.

CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

TOWN OF CASTLE ROCK
FIRE FLOW TEST FORM

5/24/2023 **F10-2023**

Brickyard Project - Topeka and Atchison

see attached map for location

Test Conducted By: Fire flow is estimated with hydraulic model

Pressure Hydrant

Hydrant ID FH	**2836**	
Pre-test Static Pressure (Ps1)	103.8	psi
Residual Pressure (Pr)	95	psi
Post-test Static Pressure (Ps2)		psi
Flowing Hydrant		
Hydrant ID FH	**2841**	
Orifice Side (D)		in
Main Size (Dp)		in
Calculated Flowrate (Qr)	1500	gpm
Estimated Volume Discharged (Q)		gallons



CASTLE ROCK Qwater
Securing our future drop by drop

VICINITY MAP

0 40 80 160 240 Feet

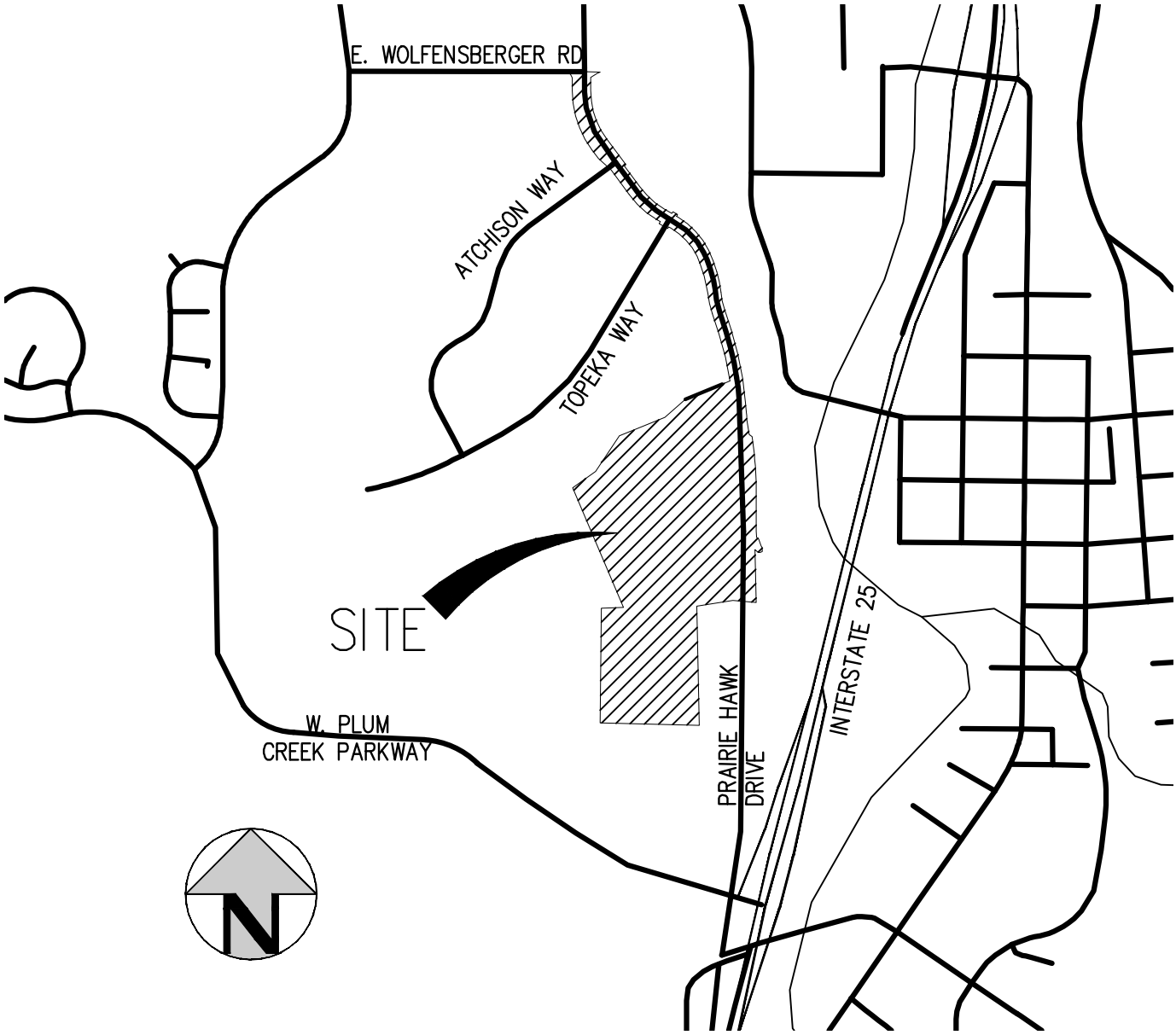
Date: 5/24/2023

1 inch = 96 feet

Document Path: \\CRSAN1\UTUsers\jwells\Desktop\Julia ArcMap - Letter.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 it's 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 2020, Town of Castle Rock Utilities Mapping.

CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)



1000 0 1000 2000

SCALE: 1" = 1000'

Plotted: WED 11/20/24 9:09:33A By: JT Robbins Filepath: p:\2020\200726\engineering\xref\vicinity map.dwg Layout: layout1

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

CONFLUENCE COMPANIES, L.L.C.

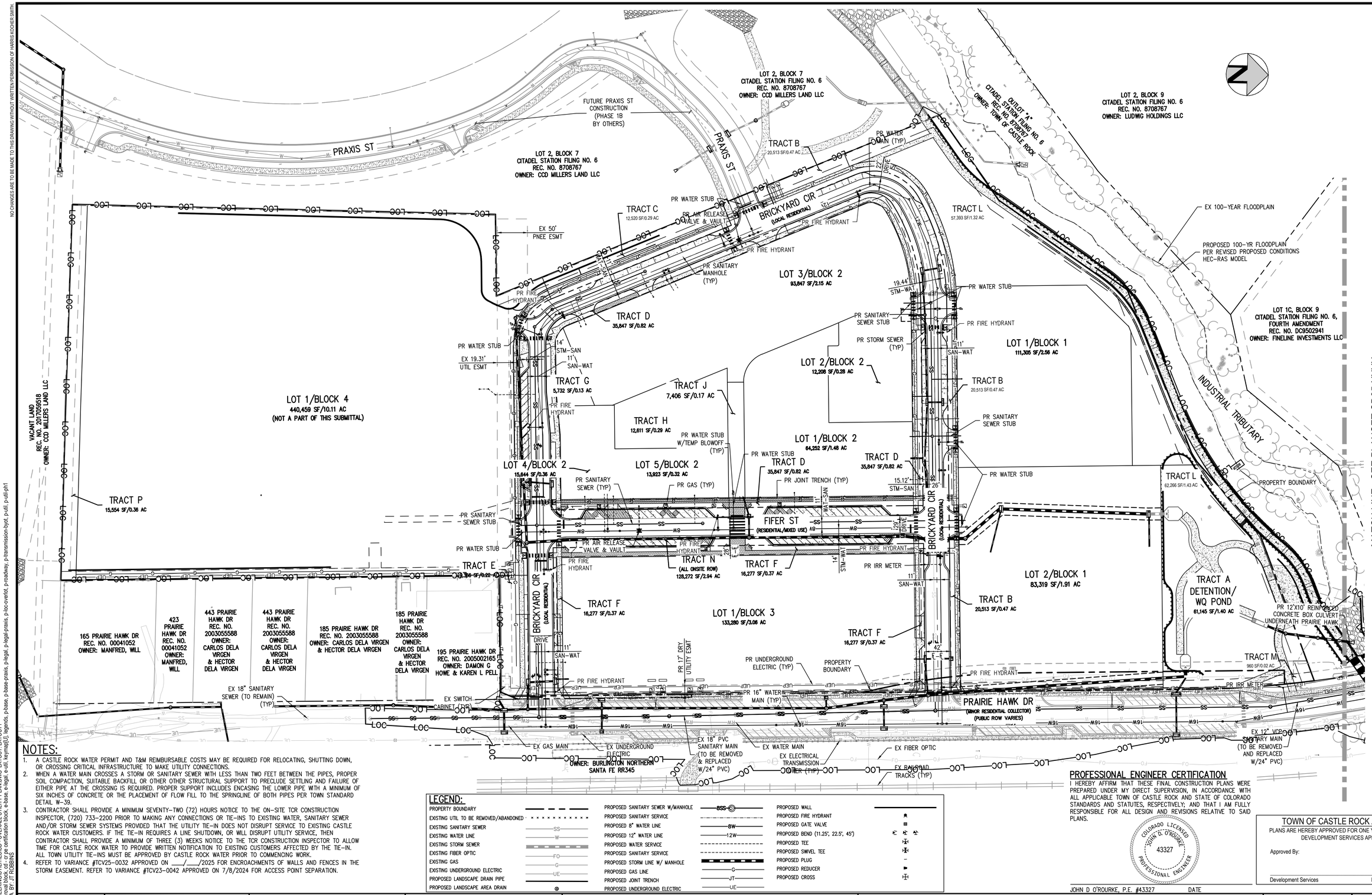
THE BRICKYARD VICINITY MAP

PROJECT #: 200726

SHEET NUMBER

1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



NOTES:

1. A CASTLE ROCK WATER PERMIT AND T&M REIMBURSABLE COSTS MAY BE REQUIRED FOR RELOCATING, SHUTTING DOWN, OR CROSSING CRITICAL INFRASTRUCTURE TO MAKE UTILITY CONNECTIONS.
2. WHEN A WATER MAIN CROSSES A STORM OR SANITARY SEWER WITH LESS THAN TWO FEET BETWEEN THE PIPES, PROPER SOIL COMPACTION, SUITABLE BACKFILL OR OTHER OTHER STRUCTURAL SUPPORT TO PRECLUDE SETTLING AND FAILURE OF EITHER PIPE AT THE CROSSING IS REQUIRED. PROPER SUPPORT INCLUDES ENCASING THE LOWER PIPE WITH A MINIMUM OF SIX INCHES OF CONCRETE OR THE PLACEMENT OF FLOW FILL TO THE SPRINGLINE OF BOTH PIPES PER TOWN STANDARD DETAIL W-39.
3. CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY-TWO (72) HOURS NOTICE TO THE ON-SITE TCR CONSTRUCTION INSPECTOR, (720) 733-2200 PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS. IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS NOTICE TO THE TCR CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN. ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.
4. REFER TO VARIANCE #TCV25-0032 APPROVED ON ____/____/2025 FOR ENCROACHMENTS OF WALLS AND FENCES IN THE STORM EASEMENT. REFER TO VARIANCE #TCV23-0042 APPROVED ON 7/8/2024 FOR ACCESS POINT SEPARATION.

LEGEND:

PROPERTY BOUNDARY	PROPOSED SANITARY SEWER W/MANHOLE (8SS)	PROPOSED WALL
EXISTING UTIL TO BE REMOVED/ABANDONED	PROPOSED SANITARY SERVICE	PROPOSED FIRE HYDRANT
EXISTING SANITARY SEWER (SS)	PROPOSED 8" WATER LINE (8W)	PROPOSED GATE VALVE
EXISTING WATER LINE (W)	PROPOSED 12" WATER LINE (12W)	PROPOSED BEND (11.25°, 22.5°, 45°)
EXISTING STORM SEWER	PROPOSED WATER SERVICE	PROPOSED TEE
EXISTING FIBER OPTIC (FO)	PROPOSED SANITARY SERVICE	PROPOSED SWIVEL TEE
EXISTING GAS (G)	PROPOSED STORM LINE W/ MANHOLE	PROPOSED PLUG
EXISTING UNDERGROUND ELECTRIC (UE)	PROPOSED GAS LINE (G)	PROPOSED REDUCER
PROPOSED LANDSCAPE DRAIN PIPE	PROPOSED JOINT TRENCH (JT)	PROPOSED CROSS
PROPOSED LANDSCAPE AREA DRAIN	PROPOSED UNDERGROUND ELECTRIC (UE)	

PROFESSIONAL ENGINEER CERTIFICATION

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

COLORADO LICENSED JOHN D. O'ROURKE 43327 PROFESSIONAL ENGINEER

JOHN D O'ROURKE, P.E. #43327 DATE

TOWN OF CASTLE ROCK APPROVAL

PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

Approved By:

Development Services Date

Know what's below. Call before you dig.

70 0 70 140
SCALE: 1" = 70'

DESIGNED BY: EEM
CHECKED BY: JDO
DRAWN BY: EEM

ISSUE DATE: 08-07-2024

DATE	REVISION COMMENTS
10-22-2024	PRICING SET
12-06-2024	PER TOWN COMMENTS
03-21-2025	PER TOWN COMMENTS
05-22-2025	UTILITY SUBMITTAL - PER TOWN COMMENTS
06-23-2025	UTILITY SUBMITTAL - PER TOWN COMMENTS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

CONFLUENCE COMPANIES, LLC

THE BRICKYARD - INFRASTRUCTURE (PHASE IA)
OVERALL UTILITY PLAN

PROJECT #: 200726
SHEET NUMBER
5
5 OF 206

FILEPATH: P:\2020\200726\ENGINEERING\UTILITIES\CD - OVERALL UTILITY PLAN.DWG LAYOUT: LAYOUT1
17 XREFS: cd-storm[U], cd - cr approval block, cd - cr pw certification block, e-base, e-legal, e-util, keymap[U], legends, p-base, p-base-gravis, p-legal, p-legal-gravis, p-loc-overlot, p-roadway, p-transmission-bypvt, p-util, p-util-ph1
PLOTTED: TUE 07/08/25 11:54:50A BY: JTROBBINS

APPENDIX G – REFERENCE MATERIALS

Ethan Rogers

From: Ethan Rogers
Sent: Wednesday, June 12, 2024 9:34 AM
To: Ethan Rogers
Subject: FW: Brickyard (401 Prairie Hawk Drive) - Existing Utility Flow/Pressure Data

---

From: Matthew Hayes <MHayes@crgov.com>
Sent: Wednesday, May 10, 2023 3:11 PM
To: Julia Wells <JWells@crgov.com>; Ethan Marks <emarks@hkseng.com>
Subject: RE: Brickyard (401 Prairie Hawk Drive) - Existing Utility Flow/Pressure Data

Ethan,

The hydraulic grade line for the Town's blue zone is shown below:

20% - 6303'
100% - 6523'

We estimate that the peak sewer flow at the intersection of Prairie Hawk and Topeka is 15 gpm.

Thanks,
Matt

Matthew B. Hayes, PE
Project Manager
Castle Rock Water
303-210-1678

From: Julia Wells <JWells@crgov.com>
Sent: Wednesday, May 10, 2023 2:19 PM
To: Matthew Hayes <MHayes@crgov.com>
Subject: FW: Brickyard (401 Prairie Hawk Drive) - Existing Utility Flow/Pressure Data

Hi Matt,
Please see the attachements and below.
This request is for the new Brickyard development area where we do not have infrastructure currently. Do you want me to write anything up on this on our forms? Or would it be easier if you worked with Ethan directly on this one?

Let me know!
Thanks,
Julia

Julia Wells
Water Operations - Office Assistant II
Castle Rock Water
Town of Castle Rock

175 Kellogg Ct.
Castle Rock, CO 80109
720-733-6015 Direct | 720-688-0804 Fax
jwells@crgov.com

From: Dawn Tiffany <DTiffany@crgov.com>
Sent: Wednesday, May 10, 2023 1:34 PM
To: Julia Wells <JWells@crgov.com>
Cc: erogers@hkseng.com; jorourke@hkseng.com
Subject: FW: Brickyard (401 Prairie Hawk Drive) - Existing Utility Flow/Pressure Data

Hi Julia,
Can you work with Matt Hayes to get the pressure information that Ethan is requesting?

Dawn M. Tiffany, CWP
Operations Support Supervisor
Castle Rock Water
Town of Castle Rock
175 Kellogg Ct.
Castle Rock, CO 80109
720-733-6009 Fax 303-688-0804

From: Ethan Marks <emarks@hkseng.com>
Sent: Wednesday, May 10, 2023 1:01 PM
To: Dawn Tiffany <DTiffany@crgov.com>
Cc: John O'Rourke <jorourke@hkseng.com>; Ethan Rogers <erogers@hkseng.com>
Subject: Brickyard (401 Prairie Hawk Drive) - Existing Utility Flow/Pressure Data

Hello Dawn:

I'm following up on our phone conversation last week requesting the sanitary flow rate and water flow/pressure data for The Brickyard development at 401 Prairie Hawk Drive. Please see the attached maps for where we are looking for the pressure and flow information to move forward with our analysis in the utility study. Let us know if you have any questions or if you need any additional information.

Thank you!

Ethan Marks, PE
Project Engineer

1120 Lincoln St, STE 1000 • Denver, Colorado 80203
P: 303.623.6300
emarks@hkseng.com • www.harriskochersmith.com

This email has been scanned for spam and viruses by Proofpoint Essentials. Click here to report this email as spam.

FINAL WATER & SANITARY SEWER UTILITY REPORT
FOR
MILLER'S LANDING PHASE 1
CASTLE ROCK, CO
PROJECT NO. CD19-0019

DEVELOPER:

CCD Miller's Landing, LLC
115 Wilcox St., #1624
Castle Rock, CO 80104
Phone: (847) 323-5277
Contact: Scott Springer

PREPARED BY:

CORE CONSULTANTS, INC.
1950 W. LITTLETON BOULEVARD, SUITE 109
LITTLETON, CO 80120
PHONE: 303-703-4444
CONTACT: ROB HANSEN, PE
CORE PROJECT NUMBER: 17-069

PREPARED, June 2, 2022

same conditions. In addition, the minimum static pressure criteria (minimum storage tank level – 20% Full) is 43 psi and the maximum static pressure criteria (maximum storage tank level – 100% Full) is 125 psi.

Phase 1 total irrigation demand is 1,056 gallon per month (0.024 gpm). The largest demand comes from Zone A2 with a demand of 504 gallons per month. The possible future demands for the site were also analyzed. The demands for the development of phase 2-3 were calculated and applied to the phase 1 model along with a 4000 gpm fire flow to show that future development of the site will not impact the water demand to phase 1 while suppling adequate demand to future phases.

The water system analysis was performed using version 2018 of the WaterCAD computer program developed by Bentley Systems, Inc. Water lines are sized to transport water during Average Day, Maximum Day, Maximum Day plus Fire Flow, and Peak Hour demand conditions in accordance with Town specifications.

Simulations of different flow models were completed and compared to the corresponding Town criteria. The simulations consisted of: Average Day, Maximum Day plus Fire with one loop out of service, and Peak Hour demands with one loop out of service. Minimum pressure requirements of 20 psi and 35 psi, and maximum velocity criteria of 15 fps and 10 fps were checked against the Maximum Day plus Fire and Peak Hour demands, respectively.

The configuration of the water distribution pipe system meets all Town of Castle Rock criteria based on the proposed development. It delivers Maximum Day plus fire flows demand with a minimum dynamic pressure of 20 psi, and Peak Hour demands with a minimum residual pressure of 35 psi. The full results of all scenarios can be found in Appendix C.

Each simulation contains two outputs: (1) Junction Report, which is used to check the water pressure in the model against the Town's criteria, and (2) Pipe Report, which is used to check velocities and head loss in the model against the Town's criteria.

VI. CALCULATED WASTEWATER FLOWS

This report addresses the sanitary sewer system that services Miller's Landing Phase 1. The wastewater flows will be conveyed through the site per this report. No upstream wastewater flows are anticipated to be conveyed through the site of Miller's Landing Phase 1.

The proposed wastewater flows for Miller's Landing have been calculated for the site using the criteria listed below:

- ADF/unit — 75 gpd/room (Hotel), 0.1 gpd/SF (Retail/Office),1.5 gpd/SF (Restaurants)
- Peak Factor — $PF=3.65(ADF^{-0.168})$
- Infiltration/Inflow — I= 0.10*Average Flow
- Peak Design Flow — PDF=(PF*ADF)+(Infiltration/Inflow)

A peaking factor was calculated using the equation above. This peaking factor and infiltration/inflow was used to determine the Peak Design Flows for the site. Tables 3 & 4 provide a summary of the results, for the complete calculations, refer to Appendix D.

TABLE 3: PHASE 1 (LOTS 1-4) SANITARY DEMANDS (SEE APPENDIX D FOR COMPLETE DEMAND CALCS)

	Gallons Per Minute (GPM)	Gallons Per Day (MGD)	Cubic Feet Per Second (CFS)
Average Daily Flow	65.97	0.10	0.147
Peak Design Flow	336.46	0.48	0.75

*A Peaking factor of 5 was used for all instances, and infiltration has been applied.

TABLE 4: PHASE 2-3 SANITARY DEMANDS (SEE APPENDIX D FOR COMPLETE DEMAND CALCS)

	Gallons Per Minute (GPM)	Gallons Per Day (MGD)	Cubic Feet Per Second (CFS)
Average Daily Flow	50.87	0.07	0.113
Peak Design Flow	259.43	.37	.578

*A Peaking factor of 5 was used for all instances, and infiltration has been applied.

VII. PROPOSED WASTEWATER SYSTEM

The sanitary sewer system for Miller's Landing Phase 1 was designed using a max build out of Phase 1 (Lots 1-4) as well as the later phases (Phase 2-3) The proposed hotel in phase 1 will connect to an existing 8" sanitary sewer located in Topeka Way, north of Lot 1. The remainder of the phase 1 site development will consist of retail, entertainment and mixed use (Lots 2-4). These lots will connect to proposed 8" sanitary lines that will run in proposed roads Saddlemaker Trail & Rock Mill Rd. All sanitary lines located in these roads will be directed to a proposed 10" sanitary line that will run east from the intersection of Saddlemaker Trail and Rock Mill Rd. and cross the Acme Brick Company property and tie into an existing 18" PVC sanitary sewer located in Prairie Hawk Dr..

APPENDIX D

WASTEWATER FLOWS

WASTEWATER FLOW CALCULATIONS

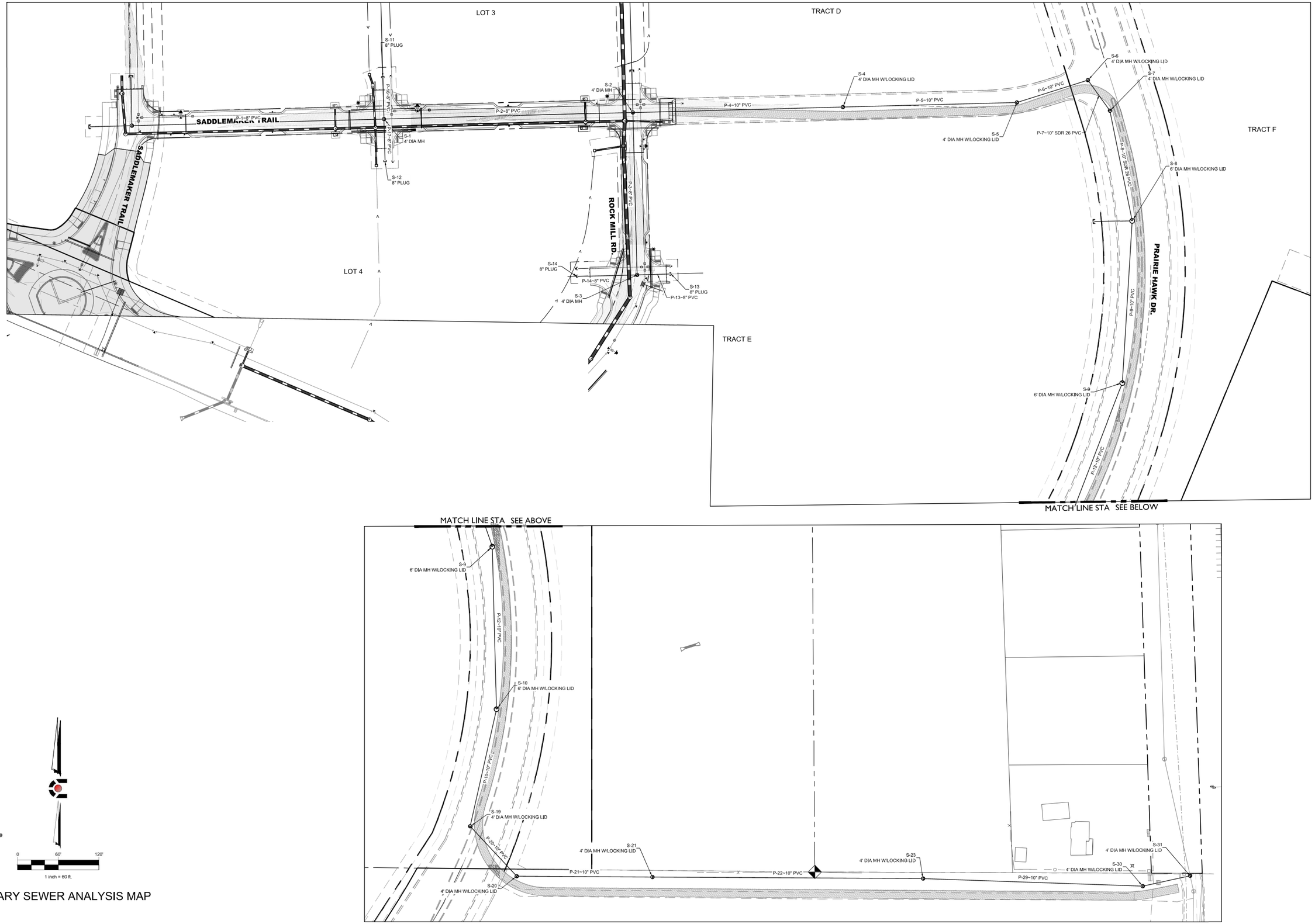
MILLER'S LANDING PHASE 1
Sanitary Sewer
Utility Report

PHASE 1

PEAKING FACTOR*
PEAKING FACTOR (PF) **5.00**

Phase	USE	Size	Units	EQUIVALENT (SFE/Unit)	AVG DAY	DEMAND UNITS	DEMAND AVG DAY (GPD)	DEMAND AVG DAY (GPM)	DEMAND PEAK DESIGN (GPM)
1	Hotel/Confrence	400	Rooms	0.3750	75.0	gpd/room	30000	20.83	104.17
1	Restaurants	25000	SF	0.0075	1.5	gpd/SF	37500	26.04	130.21
1	Office/Mixed Use	200000	SF	0.0005	0.1	gpd/SF	20000	13.89	69.44
1	Retail/Entertianment	75000	SF	0.0005	0.1	gpd/SF	7500	5.21	26.04
							SUB-TOTAL	**65.97**	**329.86**
							TOTAL	**65.97**	**329.86**
				(10% OF THE AVERAGE DAILY FLOW)			**INFILTRATION=**		**6.60**
							TOTALS WITH INFILTRATION=	**65.97**	**336.46**

	Gallons Per Minute (GPM)	Gallons Per Day (MGD)	Cubic Feet Per Second (CFS)
Average Daily Flow	65.97	0.10	0.147
Peak Design Flow	336.46	0.48	0.750



CIVIL ENGINEERING
DEVELOPMENT CONSULTING
LAND SURVEYING
NATURAL RESOURCES
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80120

0 60' 120'

1 inch = 60 ft.

SANITARY SEWER ANALYSIS MAP

FINAL UTILITY REPORT

FOR

DAWSON TRAILS OFFSITE SANITARY SEWER
TOWN OF CASTLE ROCK, COLORADO
PROJECT NO. CD23-0002

Prepared for:

ACM Dawson Trails VIII JV LLC
4100 E. Mississippi Ave, Ste. 500
Glendale, CO 80246
Contact: Lawrence Jacobson
Phone: (303) 984-9800

Prepared by:

CORE Consultants, Inc.
3473 South Broadway
Englewood, CO 80113
Contact: Joseph Ferris, PE
Phone: 303-730-5975
CORE Project Number: 20-224

September 2023

The purpose of this Final Utility Report is to provide an analysis and design of the proposed wastewater improvements associated with the Dawson Trails Offsite Sanitary Sewer project (Site). The analysis and design included herein meet the guidelines and standards set forth by the Town of Castle Rock (TOCR).

A. PROJECT LOCATION AND DESCRIPTION

The +/- 48-acre Site lies within portions of Sections 10, 11, 15, 22, and 27, Township 8 South, Range 67 West of the Sixth Principal Meridian, Town of Castle Rock, County of Douglas, State of Colorado. The Site is bounded by the BNSF Railway and Interstate 25 to the east, Dawson Trails and various properties that include vacant, residential, commercial, agricultural, and utility land uses to the west, Dawson Trails to the south, and vacant land to the north. East Plum Creek runs adjacent to Interstate 25 to the east. A Vicinity Map is included in **Appendix C.**

The Site is linear in shape and generally runs south to north through Dawson Trails and several properties that include vacant, residential, commercial, agricultural, and utility land uses. An existing abandoned sanitary sewer main lies within the Site boundary. This existing main will be removed prior to installation of the proposed wastewater system. Excerpts from the construction drawings associated with the existing main [4] are included in **Appendix D**.

The proposed Site improvements include a sanitary sewer main (Interceptor), the entire length of the Site, that will connect the future Dawson Trails wastewater system to the Town's existing system. The Dawson Trails wastewater system mainlines will be designed and constructed in future phases of the project, including main infrastructure packages and individual parcel packages. The northern portion of the interceptor will be installed in one phase, and the southern portion of the interceptor will be installed in a future phase once deemed necessary. Excerpts from the construction drawings associated with the Interceptor [2] are included in **Appendix C.**

B. CALCULATED FLOWS

This report addresses the sanitary Interceptor that services the entire future Dawson Trails development. Per the approved Planned Development Plan (PDP) [5], Dawson Trails will consist of 5,850 residential units, 3.2 million square feet of commercial development, two (2) elementary school sites, and approximately 760 +/- acres of community parks, open space, and public land dedication.

Since there is a mix of residential and non-residential land uses, Average Daily Flows (ADFs) were calculated using flow rates per unit for the various land uses from section 4.4.1.1 of the TOCR Criteria. Flow calculation for the total Dawson Trials development is as follows:

- ADF = 1,507,328 gpd = 1,046.76 gpm
- Peaking Factor (PF) = 5.0
- Infiltration/Inflow (I) = 0.10 * ADF = 0.10 * 1,046.76 gpm = 104.68 gpm
- Peak Design Flow (PDF) = (PF * ADF) + I = (5.0 * 1,046.76 gpm) + 104.68 gpm = 5,338.48 gpm = 11.89 cfs

Note that the cumulative total PDF on the attached calculation table does not match the total PDF shown above because flows for a portion of Basin 3A was included at both Junction J-3A and Junction J-1.01. Since it is unclear at this time how these flows will ultimately be routed, both routes were sized to account for them.

A combined Wastewater Flow and Pipe Capacity Calculation Table is included in **Appendix A.** Wastewater Maps are included in **Appendix C.**

C. EXISTING WASTEWATER SYSTEM

An existing sanitary sewer main, consisting of 12 and 15-inch PVC pipe and associated manholes, was constructed and abandoned in the 1980s within the Site boundary. The existing main generally runs south to north along the west edge of the BNSF Railway from Territorial Road to Plum Creek Parkway. A relatively small portion of the existing main runs west to east within the Territorial Road right-of-way. The existing main will be removed and replaced with the proposed Interceptor. The proposed Interceptor will connect to a separate existing 18-inch PVC sanitary sewer main approximately 360 feet north of Plum Creek parkway. This existing main continues south to north along the west side of the BNSF Railway.

The Town's Wastewater Master Plan (Master Plan) [4] states "Modeling indicates that should Dawson Ridge eventually grow to its fully platted zoning level, 1,400 linear feet of 12-inch sewer will need to be upsized to 15 inch". The approved Dawson Trails Planned Development Plan and Zoning Regulations (PDP) proposes a higher density for the overall development than what was modeled in the Master Plan; therefore, the Interceptor is designed with larger pipe sizes than 12-inch. Excerpts from the Master Plan are included in **Appendix D**.

The existing 18-inch sanitary sewer main that will receive flows from the Dawson Trails development will eventually become a bottleneck as future phases of the Dawson Trails development are constructed. This existing main will need to be replaced (by others) at an undetermined time in the future to meet the full build-out capacity demands.

D. PROPOSED WASTEWATER SYSTEM

The proposed Interceptor consists of approximately 16,500 feet of sanitary sewer main consisting of 21 and 24-inch PVC pipe and associated manholes. The Interceptor will be installed from approximately 4,800 feet south of Territorial Road to approximately 360 feet north of Plum Creek Parkway, where it will connect to the existing 18-inch PVC sanitary sewer main owned and operated by the Town. The alignment of the Interceptor is in conformance with what is shown in the Master Plan for the Dawson Interceptor. Any future development of the existing wastewater infrastructure needed to serve this site is the responsibility of the developer.

These flows and any in Dawson may not exceed that outlined in the Town Criteria and those of the density of the approved PDP. A metering station that monitors wastewater flow rates will be required at the downstream end of the interceptor.

There are no lift stations, force mains, or pretreatment facilities that are currently proposed. It is anticipated that future development in Planning Area A, located on the west side of the site, will require a lift station as shown on the Overall Sanitary Map in **Appendix C**.

Most of the interceptor is outside of the public right-of-way and will therefore be within a proposed 30' utility easement. There is a proposed maintenance access road that runs along the west and north side of the sanitary interceptor, ensuring there is no difficulty for the Town to access or maintain the interceptor.

E. PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING

Pipe capacity and velocity calculations are included in the combined Wastewater Flow and Pipe Capacity Calculation Table is included in **Appendix A.**

F. POTENTIAL SUBDIVISION IMPROVEMENTS AGREEMENT (SIA) ITEMS

No SIA items are anticipated.

G. 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.

SHEET 4

SHEET 3

SHEET 2

END INTERCEPTOR CONSTRUCTION
CONNECT TO EX. 18" SEWER MAIN

PLUM CREEK PKWY.

DAWSON TRAILS BLVD.

PROPOSED SANITARY INTERCEPTOR

INTERSTATE 25

F-1
41.0 AC

OSP-5
4.5 AC

OSP-06
11.7 AC

PL-1.07
44.1 AC

PL-1.08
5.0 AC

BNSF RAILWAY

CLARKES CIR.

PL-2.05
8.4 AC

PL-2.04
6.5 AC

F-2
33.4 AC

COSTCO WHOLESALE

E-1
6.5 AC

PL 2.06
4.4 AC

FUTURE CRYSTAL VALLEY INTERCHANGE

TWIN OAKS RD.

KING SOOPERS

TERRITORIAL RD

PL 2.03
0.9 AC

F-3
81.9 AC

CRYSTAL VALLEY PKWY.

E-2

PL-1.06
7.5 AC

B-1
124.4 AC
484 DU

OSP-07
16.8 AC

EAST PLUM CREEK

PL-2.02
31.2 AC

PL-1.03
12.0 AC

E-2
62.4 AC

F-1, F-2, & F-3
940 DU
F-1 & F-2: 20 AC MIN COMM
F-3: 25 AC MIN COMM

A

PL-2.01
382.9 AC

PL-1.02
8.0 AC

PL-1.05
13.0 AC

D

C-2

C-1

PL-1.04
12.2 AC

G-1
62.6 AC

OSP-1
8.5 AC

OSP-3
17.3 AC

OSP-4
3.9 AC

CORE ELECTRIC SUBSTATION

BEGIN INTERCEPTOR CONSTRUCTION

OSP-2
4.1 AC

C-1
151.9 AC
481 DU

PL-1.01
4.5 AC

D
206.2 AC
1,938 DU

NOT A PART

OSP-08
4.0 AC

G-1 & G-2
66.9 AC MIN NON-RES

A
236.5 AC
471 DU

NOT A PART

C-2
187.4 AC
908 DU

FIRE STATION

PL-1.09
12.0 AC

B-2
58.9 AC
228 DU

PL-1.10
109.3 AC

G-2
4.3 AC

PL-2.08
0.9 AC

0 700' 1,400'

1 inch = 700 ft.

LEGEND

- 21" PROPOSED SANITARY
- 24" PROPOSED SANITARY
- 18" EXISTING SANITARY
- EXISTING/ PROPOSED FLOW DIRECTION ARROW
- RESIDENTIAL
- COMMERCIAL
- PARK / OPEN SPACE
- SCHOOL
- ASSUMED IRRIGATED AREA
- BUILDING AREAS (APPROXIMATE LOCATION)
- RL — RETAIL
- O — OFFICE
- H — HOTEL
- I — INDUSTRIAL
- RT — RESTAURANT
- CW — CAR WASH

CORE CONSULTANTS. INC.
3473 S. BROADWAY
ENGLEWOOD, CO 80113
303.703.4444
LIVEYOURCORE.COM

LAND DEVELOPMENT
ENERGY
PUBLIC INFRASTUCTURE

DAWSON TRAILS OFFSITE SANITARY SEWER

OVERALL WASTEWATER MAP

DATE: 3/24/23
CREATED BY: CGV
JOB NO. 20-224
SHEET 1 OF 5

Overall Wastewater Map.dwg
X:\20-224 Dawson\Civil\CAD\Plans\Sanitary Offsite\Utility
Caroline Van Horn
2021-09-11 (4:36 PM)

MATCH LINE SHEET 3

B-1
124.4 AC
484 DU

J-5.04
168 SFD (DU)

J-5.05
95,000 COM O (SF)

200 SFD (DU)
150,000 COM RT (SF)
60,000 COM RL (SF)
J-5.07

F-3
81.9 AC

OSP-07
16.8 AC

J-5.08
100,000 COM O (SF)
300,000 COM H (SF)
540 MF (DU)

J-5

185 SFD (DU)
J-5.02

LP

J-5.03
131 SFD (DU)

E-2
62.4 AC

PL-2.02
31.2 AC

F-3

J-5.06
200 SFD (DU)

F-1, F-2, & F-3
940 DU
F-1 & F-2: 20 AC MIN COMM
F-3: 25 AC MIN COMM

PROPOSED SANITARY INTERCEPTOR

HP

PL-1.03
12.0 AC

D

133 SFD (DU)
J-4.05

PL-1.02
8.0 AC

HP

J-5.01
60,000 COM RL (SF)

C-2

PL-1.05
13.0 AC

J-4.06
300 MF (DU)
167 SFD (DU)

200,000 COM O (SF)
J-4.07

G-1
62.6 AC

J-4

J-3A

A

PL-2.01
382.9 AC

HP

LP

83 SFD (DU)
J-4.03

92 SFD (DU)
J-4.01

J-4.02
34 SFD (DU)

C-1

C-2

J-4.04
1 SC (EA)

HP

D

PL-1.04
12.2 AC

LP

BEGIN INTERCEPTOR CONSTRUCTION

OSP-1
8.5 AC

OSP-3
17.3 AC

OSP-4
3.9 AC

HP

CASTLE BUTTE DR.

J-3A.02
333 SFD (DU)

J-3A.01
2 PK (SFE)

PL-1.01
4.5 AC

HP

CORE ELECTRIC SUBSTATION

J-3.04
155 SFD (DU)

LP

J-3.05A

J-3

C-1
151.9 AC
481 DU

OSP-2
4.1 AC

C-2

196 SFD (DU)
J-3.02

J-3.03
195 SFD (DU)

D
206.2 AC
1,938 DU

J-3.06
200,000 COM O (SF)

BNSF RAILWAY

NOT A PART

HP

J-3.01
26 SFD (DU)

OSP-08
4.0 AC

163 MF (DU)
459 SFD (DU)
J-3.05

G-1 & G-2
66.9 AC MIN NON-RES

INTERSTATE 25

A
236.5 AC
471 DU

C-1

NOT A PART

LP

C-2
187.4 AC
908 DU

D

G-1

2 PK (SFE)
J-2.04

J-2.06
400,000 COM I (SF)

POTENTIAL SANITARY OUTFALL DEPENDING ON ELEVATION CHANGE

LP

A

348 SFD (DU)
J-2.03

HP

J-2.05
173 SFD (DU)

D

J-2

98 SFD (DU)
J-2.01

363 SFD (DU)
J-2.02

C-1

69 SFD (DU)
J-1.02

PL-1.09
12.0 AC

5000 COM O (SF)
J-1.08

91 SFD (DU)
J-1.07

J-1.09
2 PK (SFE)

J-1

PL-2.08
0.9 AC

GRADING AREA TO BE FURTHER ANALYZED DURING FINAL DESIGN. FLOWS ACCOUNTED FOR @ BOTH J-3A & J-1.01

B-2
58.9 AC
228 DU

1 SC (EA)
J-1.03

C-2

91 SFD (DU)
J-1.06

J-1.10
100,000 COM I (SF)

PL-1.10
109.3 AC

J-1.04
228 SFD (DU)

91 SFD (DU)
J-1.05

G-2
4.3 AC

LP

J-1.01
138 SFD (DU)

0 400' 800'
1 inch = 400 ft.

JUNCTION TABLE

JUNCTION	RESIDENTIAL (GPD)	NON-RESIDENTIAL (GPD)	TOTAL PEAK FLOW (GPM)	CUMULATIVE TOTAL PEAK FLOW (GPM)
J-1.01	27,600	-	98	98
J-1.02	13,800	-	49	147
J-1.03	-	3,375	12	159
J-1.04	45,600	-	162	320
J-1.05	18,200	-	65	385
J-1.06	18,200	-	65	449
J-1.07	18,200	-	65	514
J-1.08	-	500	2	516
J-1.09	-	400	2	517
J-1.10	-	551	2	2
J-1	-	-	-	519
J-2.01	19,600	-	70	70
J-2.02	72,600	-	257	327
J-2.03	69,600	-	247	573
J-2.04	-	400	2	575
J-2.05	34,600	-	123	697
J-2.06	-	2,204	8	705
J-2	-	-	-	1,224
J-3A.01	-	400	2	2
J-3A.02	66,600	-	236	237
J-3A	-	-	-	335
J-3.01	5,200	-	19	354
J-3.02	39,200	-	139	493
J-3.03	39,000	-	138	631
J-3.04	31,000	-	110	741
J-3.05	92,340	-	327	327
J-3.05A	-	-	-	1,068
J-3.06	-	20,000	71	1,139
J-3	-	-	-	2,363
J-4.01	18,400	-	65	65
J-4.02	6,800	-	24	89
J-4.03	16,600	-	59	148
J-4.04	-	3,375	12	160
J-4.05	26,600	-	94	254
J-4.06	72,400	-	257	511
J-4.07	-	20,000	71	582
J-4	-	-	-	2,945
J-5.01	-	6,000	21	21
J-5.02	37,000	-	131	152
J-5.03	26,200	-	93	245
J-5.04	33,600	-	119	364
J-5.05	-	9,500	34	398
J-5.06	26,000	-	92	92
J-5.07	26,000	231,000	910	1,400
J-5.08	70,200	63,906	475	1,875
J-5	-	-	-	4,820
J-6.01	-	8,000	28	28
J-6.02	52,000	12,479	228	257
J-6	-	-	-	5,077
J-7.01	-	40,000	142	142
J-7.02	-	5,000	18	160
J-7.03	-	27,500	97	257
J-7	-	-	-	5,334
J-8.01	-	400	2	2
J-8.02	-	10,000	36	37
J-8.03	-	400	2	39
J-8	-	-	-	5,372
J-9.01	-	3,030	11	11
J-9	-	-	-	5,383
TOTAL	1,023,140	468,421	-	5,383

SUMMARY TABLE

	USE	QUANITIES	TOTALS
RESIDENTIAL	MULTIFAMILY (DU)	2,098	5,850
	SINGLE FAMILY (DU)	3,752	
NON-RESIDENTIAL	SCHOOL (EA)	2	3,200,000
	PARKS (SFE)	10	
	CAR WASH (AC)	3	
	INDUSTRIAL (SF)	1,500,000	
	HOTEL (SF)	300,000	
	RESTAURANTS (SF)	175,000	
	RETAIL/ OFFICE (SF)	1,225,000	

NOTES:

1. SEE APPENDIX C FOR DETAILED SANITARY SEWER CALCULATIONS

LEGEND

- 8" PROPOSED SANITARY
- 10" PROPOSED SANITARY
- 12" PROPOSED SANITARY
- 15" PROPOSED SANITARY
- 18" PROPOSED SANITARY
- 21" PROPOSED SANITARY
- 24" PROPOSED SANITARY
- 27" PROPOSED SANITARY
- FORCE MAIN SANITARY
- FLOW DIRECTION ARROW
- HIGH POINT
- LOW POINT
- SANITARY JUNCTION
- SANITARY INPUT PT.
- LIFT STATION

LEGEND

- BASIN 1
- BASIN 2
- BASIN 3A
- BASIN 3B
- BASIN 4
- BASIN 5
- BASIN 6
- BASIN 7
- BASIN 8
- BASIN 9

X SFD (DU)	SINGLE FAMILY (UNITS)
X MF (DU)	MULTI-FAMILY (UNITS)
X SC (EA)	SCHOOL (UNITS)
X COM (SF)	COMMERCIAL (UNITS)
RL	RETAIL
O	OFFICE
H	HOTEL
I	INDUSTRIAL
RT	RESTAURANT
CW	CAR WASH
X PK (SFE)	PARK (UNITS)

CORE CONSULTANTS, INC.
3473 S. BROADWAY
ENGLEWOOD, CO 80113
303.703.4444
LIVEYOURCORE.COM

LAND DEVELOPMENT | ENERGY | PUBLIC INFRASTUCTURE

CORE

DETAILED WASTEWATER MAP

DAWSON TRAILS OFFSITE SANITARY SEWER

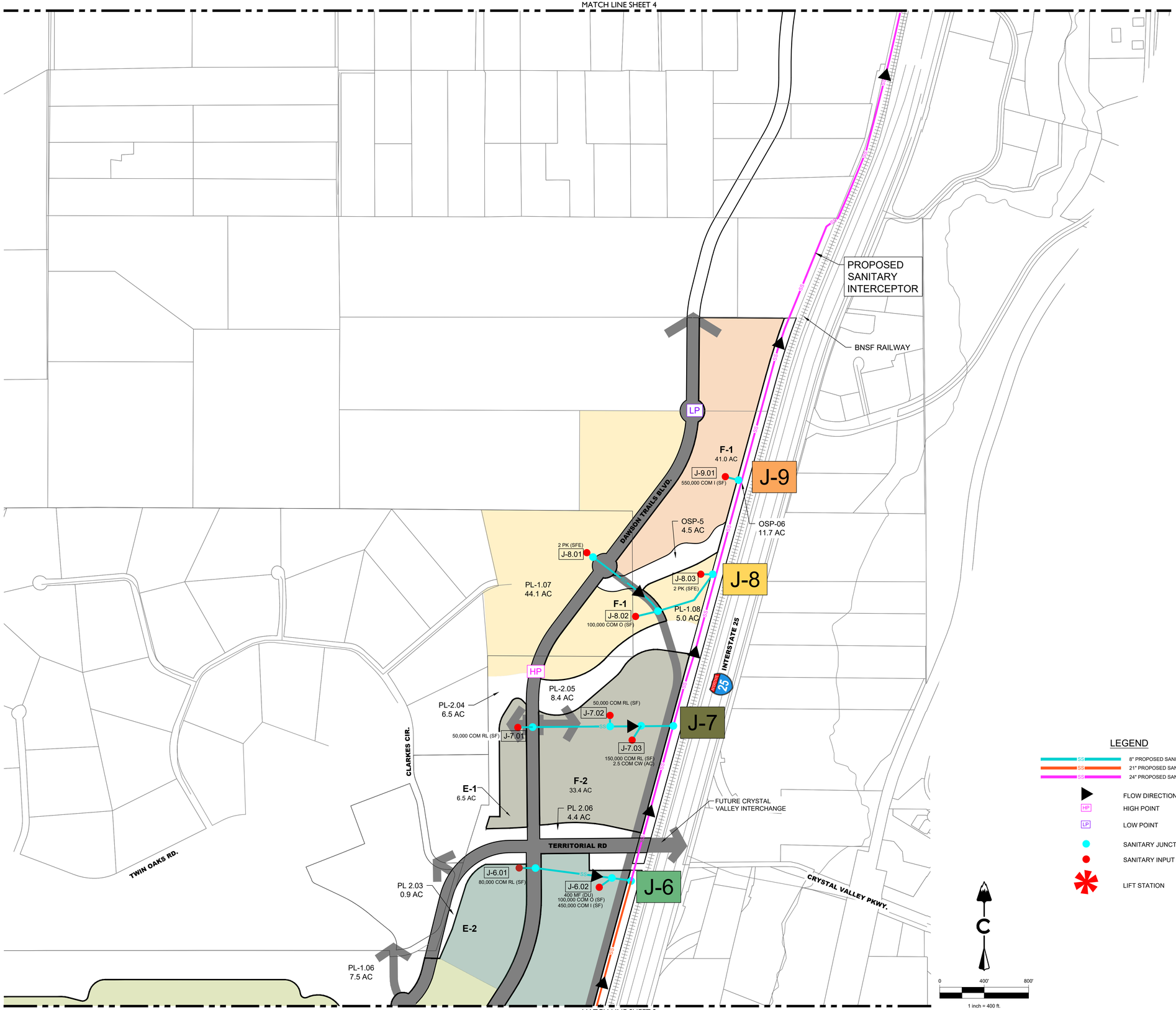
DATE: 3/24/23

CREATED BY: CGV

JOB NO. 20-224

SHEET 2 OF 5

2022-10-10 (4:13 PM) Caroline Van Horn X:\20-224 Dawson\Civil\CAD\Plans\Sanitary Offsite\Utility Detailed Wastewater Maps.dwg



JUNCTION TABLE				
JUNCTION	RESIDENTIAL (GPD)	NON-RESIDENTIAL (GPD)	TOTAL PEAK FLOW (GPM)	CUMULATIVE TOTAL PEAK FLOW (GPM)
J-1.01	27,600	-	98	98
J-1.02	13,800	-	49	147
J-1.03	-	3,375	12	159
J-1.04	45,600	-	162	320
J-1.05	18,200	-	65	385
J-1.06	18,200	-	65	449
J-1.07	18,200	-	65	514
J-1.08	-	500	2	516
J-1.09	-	400	2	517
J-1.10	-	551	2	2
J-1	-	-	-	519
J-2.01	19,600	-	70	70
J-2.02	72,600	-	257	327
J-2.03	69,600	-	247	573
J-2.04	-	400	2	575
J-2.05	34,600	-	123	697
J-2.06	-	2,204	8	705
J-2	-	-	-	1,224
J-3A.01	-	400	2	2
J-3A.02	66,600	-	236	237
J-3A	-	-	-	335
J-3.01	5,200	-	19	354
J-3.02	39,200	-	139	493
J-3.03	39,000	-	138	631
J-3.04	31,000	-	110	741
J-3.05	92,340	-	327	327
J-3.05A	-	-	-	1,068
J-3.06	-	20,000	71	1,139
J-3	-	-	-	2,363
J-4.01	18,400	-	65	65
J-4.02	6,800	-	24	89
J-4.03	16,600	-	59	148
J-4.04	-	3,375	12	160
J-4.05	26,600	-	94	254
J-4.06	72,400	-	257	511
J-4.07	-	20,000	71	582
J-4	-	-	-	2,945
J-5.01	-	6,000	21	21
J-5.02	37,000	-	131	152
J-5.03	26,200	-	93	245
J-5.04	33,600	-	119	364
J-5.05	-	9,500	34	398
J-5.06	26,000	-	92	92
J-5.07	26,000	231,000	910	1,400
J-5.08	70,200	63,906	475	1,875
J-5	-	-	-	4,820
J-6.01	-	8,000	28	28
J-6.02	52,000	12,479	228	257
J-6	-	-	-	5,077
J-7.01	-	40,000	142	142
J-7.02	-	5,000	18	160
J-7.03	-	27,500	97	257
J-7	-	-	-	5,334
J-8.01	-	400	2	2
J-8.02	-	10,000	36	37
J-8.03	-	400	2	39
J-8	-	-	-	5,372
J-9.01	-	3,030	11	11
J-9	-	-	-	5,383
TOTAL	1,023,140	468,421	-	5,383

SUMMARY TABLE			
	USE	QUANITIES	TOTALS
RESIDENTIAL	MULTIFAMILY (DU)	2,098	5,850
	SINGLE FAMILY (DU)	3,752	
NON-RESIDENTIAL	SCHOOL (EA)	2	3,200,000
	PARKS (SFE)	10	
	CAR WASH (AC)	3	
	INDUSTRIAL (SF)	1,500,000	
	HOTEL (SF)	300,000	
	RESTAURANTS (SF)	175,000	
	RETAIL/ OFFICE (SF)	1,225,000	

NOTES:

1. SEE APPENDIX C FOR DETAILED SANITARY SEWER CALCULATIONS

LEGEND

- 8" PROPOSED SANITARY
- 21" PROPOSED SANITARY
- 24" PROPOSED SANITARY
- FLOW DIRECTION ARROW
- HP HIGH POINT
- LP LOW POINT
- SANITARY JUNCTION
- SANITARY INPUT PT.
- LIFT STATION

LEGEND

- BASIN 1
- BASIN 2
- BASIN 3A
- BASIN 3B
- BASIN 4
- BASIN 5
- BASIN 6
- BASIN 7
- BASIN 8
- BASIN 9

X SFD (DU)	SINGLE FAMILY (UNITS)
X MF (DU)	MULTI-FAMILY (UNITS)
X SC (EA)	SCHOOL (UNITS)
X COM (SF)	COMMERCIAL (UNITS)
RL	RETAIL
O	OFFICE
H	HOTEL
I	INDUSTRIAL
RT	RESTAURANT
CW	CAR WASH
X PK (SFE)	PARK (UNITS)

CORE CONSULTANTS, INC.
3473 S. BROADWAY
ENGLEWOOD, CO 80113
303.703.4444
LIVEYOURCORE.COM

LAND DEVELOPMENT | ENERGY | PUBLIC INFRASTUCTURE

CORE

DETAILED WASTEWATER MAP

DAWSON TRAILS OFFSITE SANITARY SEWER

DATE: 3/24/23

CREATED BY: CGV

JOB NO. 20-224

SHEET 3 OF 5

2022-10-10 (4:13 PM) Caroline Van Horn X:\20-224 Dawson\Civil\CAD\Plans\Sanitary Offsite\Utility Detailed Wastewater Maps.dwg

APPENDIX H – FINAL UTILITY REPORT CHECKLIST

Castle Rock Water
175 Kellogg Court, Castle Rock CO 80109
720-733-6000

Final Utility Report Checklist

The Final 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 Final Utility Report, the Preliminary Utility Report and associated hydraulic modeling shall be thoroughly updated to reflect the final design and layout of all water/wastewater system facilities and mains since the approval of the Site Development Plan (SDP), and as now shown on the Construction Drawings (CDs). The Final Utility Report shall describe adherence to the Preliminary Utility Report or describe deviations, and shall resolve any outstanding issues regarding the Town's ability to serve the development. As applicable, hydraulic modeling shall be provided for both the initial phase of development represented on the CDs, and for full build-out of the overall site. The Final Utility Report shall include a discussion of applicable SCADA requirements.

The following outline sets forth the **required minimum** content to be provided in the Final Utility Report that shall be submitted with the CDs. 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 Final 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
✓		A. Name of Project, including legal name of development
✓		B. Address
✓		C. Owner
✓		D. Developer
✓		E. Engineer
✓		F. Submittal date and revision dates as applicable
✓		**APPROVAL BLOCK SHEET** (Available on Town's website) On Page 3
✓		**TABLE OF CONTENTS**
		PROJECT LOCATION AND DESCRIPTION
✓		A. Site Location
✓		B. Description of Property and Land Use
		CALCULATED WATER DEMANDS
✓		A. Average Day Demands (ADD)
✓		B. Max Day Demands (MDD)

Final Utility Report – Formatting Checklist

Included	N/A	
		CALCULATED WATER DEMANDS (CONT.)
✓		C. Peak Hour Demands (PHD)
✓		D. Irrigation Demands
		EXISTING WATER SYSTEM
✓		A. Existing Distribution System
✓		B. Existing Supply Facilities
		PROPOSED WATER SYSTEM
✓		A. Proposed Distribution System
✓		B. Proposed Supply Facilities
✓		C. Required Fire Flows
✓		D. Land Dedication Requirements
		PROPOSED WATER SYSTEM ANALYSIS AND MODELING
✓		A. Hydraulic Models
✓		B. Hydraulic Modeling Scenarios
✓		C. Hydraulic Modeling Output and Required Schematics
✓		D. Fire Flow Test Results
		CALCULATED WASTEWATER FLOWS
✓		A. Average Day Wastewater Flows (ADF)
✓		B. Peaking Factor (PF)
✓		C. Peak Design Flows (PDF)
		EXISTING WASTEWATER SYSTEM
✓		A. Existing Collection System
		PROPOSED WASTEWATER SYSTEM
✓		A. Proposed Collection System
✓		B. Proposed Wastewater Facilities
✓		C. Land Dedication Requirements
		PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING
✓		A. Hydraulic Models
✓		B. Hydraulic Modeling Scenarios
✓		C. Hydraulic Modeling Output and Required Schematics
✓		**POTENTIAL SUBDIVISION IMPROVEMENTS AGREEMENT (SIA) ITEMS**
		POTENTIAL PERMITTING REQUIREMENTS
✓		**REFERENCES**

Final Utility Report – Formatting Checklist

Included	N/A	
✓		**APPENDICES**
✓		Appendix A — Water Demands
✓		Water Fixture Unit Counts and Tap/Meter Sizing Calculations
✓		Irrigation Demands
✓		Hydraulic Worksheet(s) and Irrigation Chart(s)
✓		Appendix B — Water Storage
		Confirmation Memo for Required Fire Flow
✓		Appendix C — Water Hydraulic Analysis and Modeling
✓		Fire Flow Test Results
✓		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. Overall Utility Plan from the CDs
✓		D. Water/Wastewater Utility Plan(s)

Notes/Comments: