



PRELIMINARY UTILITY REPORT

King Soopers Store #165

Lot 1, Dawson Trails Filing No. 2, Amendment No. 4
Castle Rock, CO
SDP25-0015

PREPARED FOR:
King Soopers, Inc.
65 Tejon Street
Denver, CO 80223

PREPARED BY:
Galloway & Company, LLC
5500 Greenwood Plaza Boulevard, Suite 200
Greenwood Village, CO 80111

DATE:
July 11, 2025

REVISED:
November 7, 2025
February 6, 2026
May 5, 2026



FINAL UTILITY REPORT

King Soopers Store #165

Legal Description

Lot 1, Dawson Trails Filing No. 2, Amendment No. 4

Preparation Date

July 3, 2025

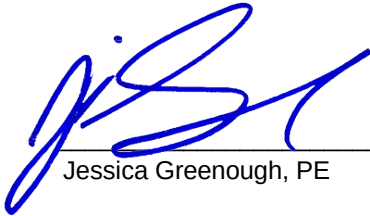
Revised:

Revised:

Prepared for

King Soopers, Inc.
65 Tejon Street
Denver, CO 80223

Prepared by:



Jessica Greenough, PE

Reviewed by:

Jennifer Romano, PE

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.



Jennifer Romano, PE #44401
Registered Professional Engineer
State of Colorado No. 44401

Date

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.

ACM Dawson Trails VIII JV LLC _____
Name of Owner

Authorized Signature

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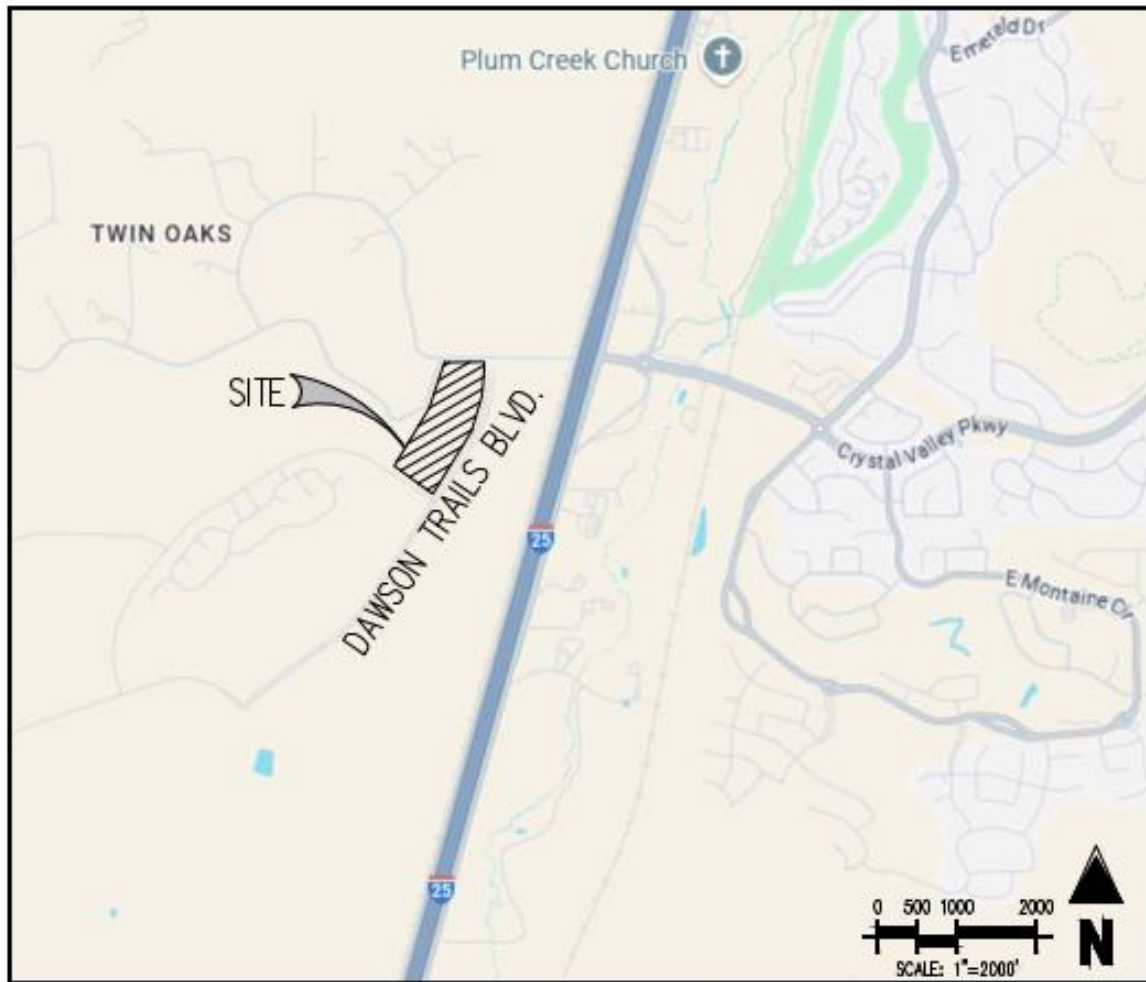
- A. Water Demands
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- C. Wastewater Flows
- D. Wastewater Hydraulic Modeling
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I. Introduction

Location

The proposed King Soopers Store #165 development is located in Section 22, Township 8 South, Range 67 West of the 6th P.M., Town of Castle Rock, County of Douglas, State of Colorado. The development is a portion of planning area E-2 as noted in the Dawson Trails PDP and is located in Tract A, Dawson Trails Filing No. 2. Please refer to the vicinity map below for additional location information. The site is bordered by the proposed Dawson Trails Boulevard roadway and planning area F-3 to the east, the proposed Gambel Ridge Boulevard roadway to the north, the remainder of planning area E-2 to the south, and the proposed Gambel Ridge Boulevard roadway and planning area E-1 to the west.

Exhibit A – Vicinity Map



Description of Property

The property is approximately 21.5 acres and consists of undeveloped native grassland. The site is currently zoned Planned Development Plan (PDP); rezoning is not required with this development as grocery, fuel, and retail are allowed commercial uses under the Dawson Trails PDP. The property generally slopes from southwest to northeast at grades between 1% and 25%.

New public roadways (Gambel Ridge Boulevard to the north and west and Dawson Trails Boulevard to the east) will be constructed with the Dawson Trails Filing No. 2 development. Six access points to the property are proposed from these two public roadways – three right-in / right-out, two 3/4 movement, and one full movement.

The proposed development will include a King Soopers grocery store, fueling facility, and associated parking, drives, landscaping, and utility infrastructure. Seven outlots will be platted with utility services provided at the property lines for future commercial development.

Previous Utility Studies

This report utilizes information from the following utility reports:

Final Utility Report for Dawson Trails Filing 2 Infrastructure, EMK Consultants, Inc., Dec. 2024

Final Utility Report for Dawson Trails Offsite Sanitary Sewer Phase I, CORE Consultants, Inc., April 24, 2025

Utility Phasing

All proposed water and sanitary sewer infrastructure associated with the development will be publicly owned, maintained, and dedicated to the Town of Castle Rock as part of the King Soopers Store #165 improvements. On-site utilities serving the outlots will connect to these improvements in the future. Easements or tracts necessary for utilities will be provided either at time of plat amendment or at time of final design and construction documents in accordance with Town of Castle Rock standards.

II. Development Summary

The development boundary for King Soopers Store #165 is shown on the Development Map in Appendix H for reference; it consists of the northeastern portion of planning area E2. The entire development will consist of commercial buildings. The proposed development composition is included in the table below for reference.

Table 1: Proposed Development Composition

Phase	Development Composition	Total SF	Typical SFEs/Unit
1	Grocery / Fuel	99,245	0.0005/SF
2	Retail	7,200	0.0005/SF
2	Bank	4,000	0.0005/SF
2	Retail / Office	20,000	0.0005/SF
2	Restaurant	20,000	0.0075/SF
1	Car Wash	1 facility	5000 gpd / acre
Total		174,200	

III. Calculated Water Demands

Water Design Criteria

This report conforms to the specifications and design methodology stated in the Town of Castle Rock *Water System Design 2018 Criteria Manual* (herein after referred to as *Standards*). Where criteria are not specifically stated in these standards, the design will conform to engineering best practices.

Table 2: Water Design Criteria

Description	Value
Retail / Offices	0.2 gpd / sf
Restaurants	3.00 gpd / sf
Car Washes	5,000 gpd / facility
MDD Factor	2.5 * ADD
PHD Factor	5.5 * ADD
Maximum Static Pressure	125 psi
Minimum Static Pressure (zero demand, 20% tank stage)	43 psi
Minimum dynamic pressure – MDD + FF (20% tank storage)*	20 psi
Minimum dynamic pressure – PHD (20% tank storage)*	35 psi
Max HGL elevation (pressure zone red)	6680
Top elevation served (pressure zone red)	6557
Lowest elevation served (pressure zone red)	6393
Maximum Pipe Velocity – PHD	10 fps
Maximum Pipe Velocity – MDD	5 fps
Maximum Pipe Velocity – MDD + FF	15 fps
Hazen-Williams Coefficient (PVC & DIP)	120

* Pressure criteria for MDD + FF and PHD conditions shall be satisfied with one critical distribution loop out of service.

Water Demand Calculations

The ADD flow rates by land use, MDD factor, and PHD factor listed in Table 2 were utilized in the water demand calculations. Based on the development composition and the demand unit values, King Soopers Store #165 development, including outlots, will have an average daily demand of 91,089 gpd, a max day demand of 158.14 gpm, and a peak hour demand of 347.91 gpm. Water demand calculations are included in Appendix A for reference.

Fire Flow Demands

Fire flows are calculated based on the 2018 International Fire Code flow rates. All buildings were assumed to be construction type IIIB or better, except for the proposed grocery anchor. This building is analyzed in the MDD + FF scenario because it requires the highest potential fire flow demand within the King Soopers Store #165 development. The grocery anchor is assumed to be construction type II-B. It is also assumed that only one fire will be fought at a time. Based on IFC Table B105.1, a minimum fire flow demand of 6,750 gpm for a 4-hour duration will be required. Per IFC Table B105.2 as amended by the Town of Castle Rock Municipal Code, 15.18.030, the minimum fire flow may be reduced by 75% of that value if an automatic sprinkler system is provided, resulting in a minimum fire flow demand of 1,687 gpm for a 2-hour duration. This fire flow was confirmed by the Castle Rock Fire and Rescue Department in the Confirmation memorandum of Required Fire Flow (refer to Appendix E). An excerpt of Table B105.1 is included below for reference.

TABLE B105.1(2) REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute) ^b	FLOW DURATION (hours)
Type IA and IB ^a	Type IIA and IIIA ^a	Type IV and V-A ^a	Type IIB and IIIB ^a	Type V-B ^a		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	3
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-128,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.
a. Types of construction are based on the International Building Code.
b. Measured at 20 psi residual pressure.

IV. Water System

Existing Distribution System

The surrounding Dawson Trails development is currently in design review with the Town of Castle Rock. The water distribution system that will serve the subject property will consist of the following:

Dawson Trails Filing No. 1 Infrastructure

- Blue Zone loop, which is necessary to feed the Red Zone
- Water Booster Pump from Blue Zone to Red Zone

Dawson Trails Filing No. 2 Infrastructure

- Tank 19 (Red Zone)
- A 24" / 20" transmission main connection between the Blue Zone / Red Zone Booster Pump and the Red Zone Tank within Dawson Trails Boulevard

The King Soopers Store #165 development will be served by the Red Zone. High and low water levels for Red Zone Tank 19 were obtained from the *Final Utility Report for Dawson Trails Filing 2 Infrastructure* by EMK Consultants, Inc. dated December 2024 (refer to Appendix E for excerpts). The required storage shall be:

166.39 gpm x 60 min/hr x 24 hrs =	239,602 gallons
+ 1,687 gpm x 60 min/hr x 2 hrs =	202,440 gallons
Total required storage =	442,042 gallons (0.44 MG)

Hydrant flow tests to confirm existing static water system pressures and flows will be performed and included in a subsequent submittal once the new Dawson Trails water infrastructure is constructed.

Proposed Distribution System

The proposed on-site water infrastructure is designed to accommodate the King Soopers Store #165 development, including all outlots. Water service sizes and fire sprinkler requirements for buildings on the future outlots are currently unknown.

The proposed on-site water distribution system will be looped through the King Soopers development and connect to the existing 24-inch water main in Dawson Trails Boulevard at two locations and to the existing 20-inch water main in Gambel Ridge Boulevard at two locations. An 8-inch water main is proposed throughout the site. No dead-end mains are proposed. All proposed fire hydrant laterals are under 70 feet in length.

Proposed Water System Analysis and Modeling

Bentley WaterCAD v8i has been utilized to analyze the proposed water distribution system and demonstrate that demands will not adversely impact the existing water system. The water flow parameters conform to the design guidelines listed in Table 2.

Demands for each parcel were clustered at the nearest junction along the water lines. The following scenarios were evaluated:

- Static – 20% tank stage
- Static – 100% tank stage
- Peak Hour Demand (PHD) – 20% tank stage
- Maximum Day Demand plus Fire Flow (MDD + FF) – 20% tank stage – one critical loop off

MDD + FF is the worst-case scenario and was used to determine pipe sizes in the proposed water system.

A tank was placed at the intersection of Dawson Trails Boulevard and Gambel Ridge Boulevard to simulate Tank 19. Tank levels were provided for 100% tank stage and 20% tank stage per the *Final Utility Report for Dawson Trails Filing 2 Infrastructure* by EMK Consultants, Inc. dated December 2024. The hydraulic model is subject to change based on the fire flow test data.

A pump was also placed immediately downstream of each reservoir to more accurately model anticipated flows and pressures. The pump curves were input with data from the *Standards* for this submittal and will be updated based on fire flow test data. A dummy pipe with length of 1 foot, diameter of 48 inches, and Hazen-Williams coefficient of 140 was placed between the tank and the first real junction in the system (J-1) based on recommendations from Bentley, the software manufacturer. The model does not account for bend losses within the existing Town of Castle Rock system.

Results from the water model are included in Appendix B for reference. Residual pressures meet Town of Castle Rock requirements for each scenario analyzed. Maximum velocities are below Town requirements for the entire system for each scenario analyzed.

All irrigation will be provided by the domestic water system. Since the development consists of all commercial properties, it is assumed that irrigation will not run concurrently with business hours and will not contribute to peak water demand.

V. Calculated Wastewater Flows

Sanitary Sewer Design Criteria

This report conforms to the specifications and design methodology stated in the Town of Castle Rock *Wastewater Collection Design 2018 Criteria Manual* (herein after referred to as *Standards*).

Table 3: Wastewater Design Criteria

Description	Value
Retail / Offices	0.1 gpd / SF
Restaurants	1.5 gpd / SF
Car Washes	5,000 gpd / acre
Manning's Coefficient (PVC)	0.011
Minimum Velocity*	2.0 fps
Maximum Velocity*	10.0 fps
Maximum Flow Capacity*	75%

* Peak Design Flow scenario

Peak Design Flow (PDF)

PDF = peak base flow + I/I allowance = (ADF * PF) + (0.1 * ADF)

where

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

The maximum PF shall be 5.0, and ADF shall be expressed in units of million gallons per day (MGD).

Sanitary Sewer Design Flows

The ADF flow rates by land use listed in Table 3 were utilized in the wastewater demand calculations. Based on the development's composition and the demand calculations, the anticipated Peak Design Flow is 178.57 gpm, or 0.40 cfs. Refer to Appendix C for demand calculations.

VI. Wastewater System

Existing Wastewater Collection System

Per the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer Phase I* by CORE Consultants, Inc. dated April 24, 2025, the King Soopers Store #165 and outlots portion of Planning Area E-2 was designed to flow to two separate sanitary stubs – one at the northeast corner of the development and one at the south side of the development. These stubs are identified as nodes J-5.06 and J-5.07 in the report. The report accounted for an ADF of 18.06 gpm and a PDF of 90.28 gpm at each of the nodes.

Due to the shallow depth of the southern sanitary sewer in Quandary Peak, Galloway is currently coordinating with CORE Consultants to route wastewater flows for the entire King Sooper Store #165 development to the northern sanitary stub. Initial analysis indicates that the wastewater system has capacity to redirect these flows and CORE Consultants will update their report and model accordingly to reflect these changes.

Proposed Wastewater Collection System

The proposed on-site wastewater system will be 8-inch PVC pipe. Slopes will be designed to 0.63% minimum to ensure velocities are at least 2.0 fps in the interim condition where the grocery store has been constructed but the outlots have not yet been constructed. The maximum allowable slope to ensure 10 fps maximum velocities is 18.9%, so a maximum slope of 7.5% will be utilized as the design constraint per the *Standards*. Any proposed or future grease interceptor shall be in accordance with the Plum Creek Water Reclamation Authority Code of Rules and Regulations.

Proposed Wastewater System Analysis and Modeling

Hydraulic calculations for minimum and maximum allowable pipe slopes based on minimum and maximum allowable velocities are provided in Appendix D. These calculations utilized Bentley Flowmaster. Minimum slope was determined based on the grocery / fuel site only, since the timing of construction of the outlots is not known at this time. The minimum slope required to provide 2.0 fps minimum velocity in the PDF scenario is 0.63%. The maximum allowable slope to provide 10.0 fps maximum velocity in the PDF scenario is 18.9%.

VII. Conclusions

The proposed water and wastewater systems for the King Sooters Store #165 development have been designed in accordance with the Town of Castle Rock *Water System Design 2018 Criteria Manual* and the Town of Castle Rock *Wastewater Collection Design 2018 Criteria Manual*. The proposed water system will connect to the existing 24" water main in Dawson Trails Boulevard at two locations and to the existing 20" water main in Gambel Ridge Boulevard at two locations. The proposed system will add approximately 152.19 gpm of demand to the water system in the Peak Hour Demand scenario. The proposed wastewater system will tie into the 8" sanitary stub at the northeast corner of the site while adding 178.55 gpm or 0.40 cfs in the Peak Design Flow scenario. The proposed development will not have any adverse impacts on existing Town of Castle Rock infrastructure or the surrounding areas.

VII. Appendices

A. Water Demands

B. Water Hydraulic Analysis and Modeling

- Water Schematic
- Hydraulic Modeling Output

C. Wastewater Flows

D. Wastewater Hydraulic Modeling

- Flowmaster Calculations

E. Fire Flow Memo

F. Excerpts from Previous Reports

G. Maps and Plans

- Utility Plans

APPENDIX A

Water Demands

WATER DEMAND CALCULATIONS

Subdivision: Dawson Trails
Location: Castle Rock, CO

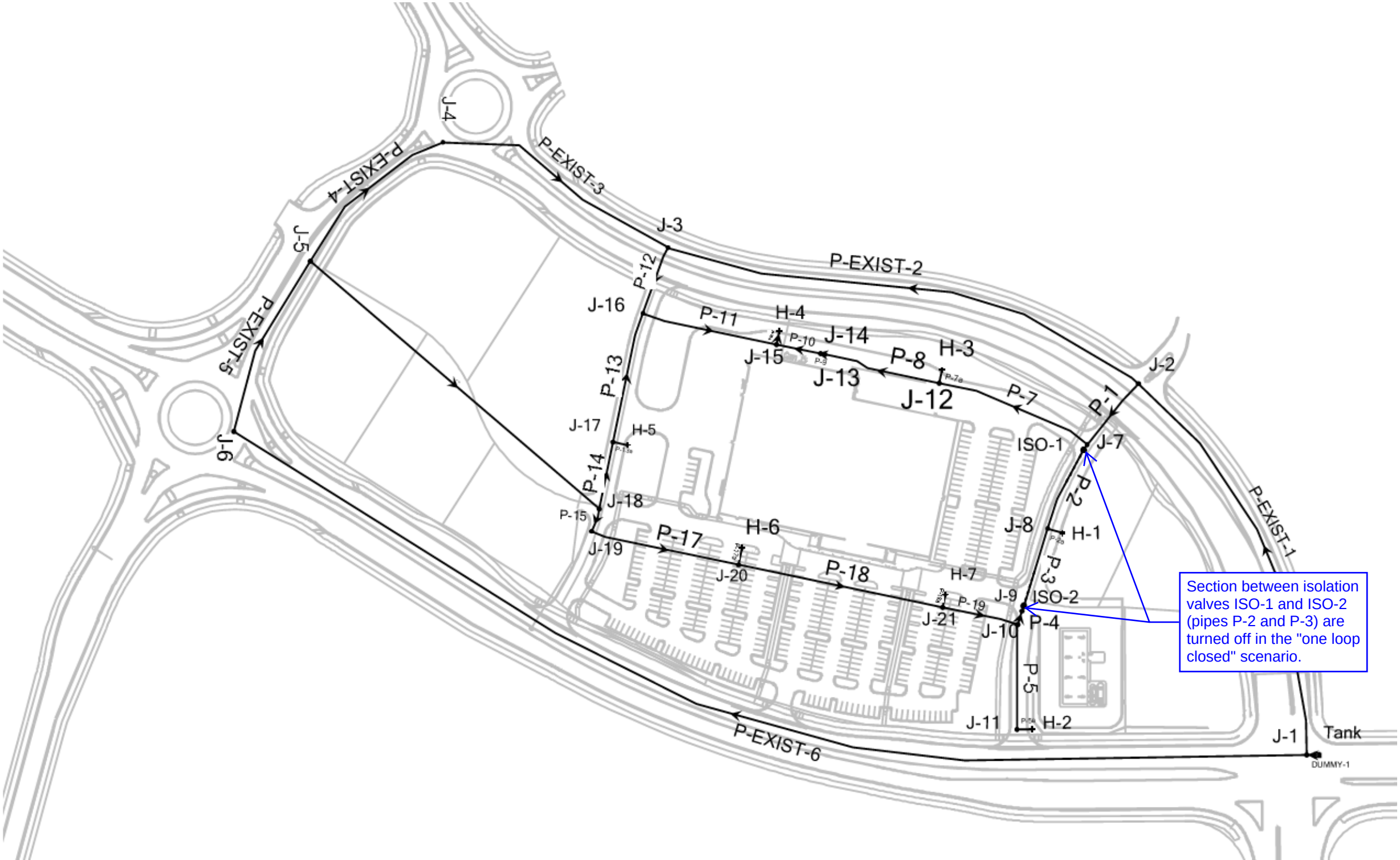
Project Name: King Soopers Store #165
Project No.: KSS000165.20
Calculated By: J. Greenough
Checked By: J. Romano
Date: 6/30/25

Planning Area	Land Use	Total Area (sf)	Flow / Unit* gpd / sf	ADD (gpd)	ADD (gpm)	MDD Factor **	MDD (gpm)	PHD Factor ***	PHD (gpm)
1	Grocery / Fuel	123,000	0.2	24,600	17.08	2.5	42.71	5.5	93.96
1	Retail	7,200	0.2	1,440	1.00	2.5	2.50	5.5	5.50
1	Bank	4,000	0.2	800	0.56	2.5	1.39	5.5	3.06
1	Retail / Office	20,000	0.2	4,000	2.78	2.5	6.94	5.5	15.28
1	Restaurant	20,000	3.00	60,000	41.67	2.5	104.17	5.5	229.17
1	Car Wash	1 facility	5,000 gpd / facility	5,000	3.47	2.5	8.68	5.5	19.10
			Total Flow	95,840	66.56		166.39		366.06

APPENDIX B

Water Hydraulic Analysis and Modeling

Scenario: MDD + FF - 20% Tank Stage, One Loop Off



Scenario Summary Report

Scenario: Static - 100% Tank Stage

Scenario Summary			
ID	93		
Label	Static - 100% Tank Stage		
Notes			
Active Topology	<I> Base Active Topology		
Physical	<I> Base Physical		
Demand	<I> Base Demand		
Initial Settings	100% Tank Stage		
Operational	<I> Base Operational		
Age	<I> Base Age		
Constituent	<I> Base Constituent		
Trace	<I> Base Trace		
Fire Flow	<I> Base Fire Flow		
Energy Cost	<I> Base Energy Cost		
Transient	<I> Base Transient		
Pressure Dependent Demand	<I> Base Pressure Dependent Demand		
Failure History	<I> Base Failure History		
SCADA	<I> Base SCADA		
User Data Extensions	<I> Base User Data Extensions		
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options		
Transient Solver Calculation Options	<I> Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: Static - 100% Tank Stage
 Current Time Step: 0.000 h
 FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	0	0.00	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0

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Scenario: Static - 100% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,680.00	125
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,680.00	122
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,680.00	117
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,680.00	118
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,680.00	121
38	J-18	6,399.12	Red	<Collection: 0 items>	0	6,680.00	122
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,680.00	122
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,680.00	122
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,680.00	122
43	J-13	6,397.53	Red	<Collection: 0 items>	0	6,680.00	122
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,680.00	122
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,680.00	122
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,680.00	123
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,680.00	125
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,680.00	125
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,680.00	123
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,680.00	123
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,680.00	125
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,680.00	110
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,680.00	116
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,680.00	115

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Scenario: Static - 100% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,680.00	123
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,680.00	122
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,680.00	121
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,680.00	122
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,680.00	122
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,680.00	123
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,680.00	129

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Scenario Summary Report

Scenario: Static - 20% Tank Stage

Scenario Summary			
ID	94		
Label	Static - 20% Tank Stage		
Notes			
Active Topology	<I> Base Active Topology		
Physical	<I> Base Physical		
Demand	<I> Base Demand		
Initial Settings	20% Tank Stage		
Operational	<I> Base Operational		
Age	<I> Base Age		
Constituent	<I> Base Constituent		
Trace	<I> Base Trace		
Fire Flow	<I> Base Fire Flow		
Energy Cost	<I> Base Energy Cost		
Transient	<I> Base Transient		
Pressure Dependent Demand	<I> Base Pressure Dependent Demand		
Failure History	<I> Base Failure History		
SCADA	<I> Base SCADA		
User Data Extensions	<I> Base User Data Extensions		
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options		
Transient Solver Calculation Options	<I> Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: Static - 20% Tank Stage

Current Time Step: 0.000 h

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	0	0.00	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0

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Scenario: Static - 20% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,662.00	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,662.00	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,662.00	110
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,662.00	113
38	J-18	6,399.12	Red	<Collection: 0 items>	0	6,662.00	114
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,662.00	114
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,662.00	114
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,662.00	114
43	J-13	6,397.53	Red	<Collection: 0 items>	0	6,662.00	114
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,662.00	114
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,662.00	114
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,662.00	115
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,662.00	117
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,662.00	117
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,662.00	115
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,662.00	116
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,662.00	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,662.00	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,662.00	108

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Scenario: Static - 20% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,662.00	116
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,662.00	115
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,662.00	113
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,662.00	114
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,662.00	115
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,662.00	115
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,662.00	121

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Scenario Summary Report

Scenario: PHD - 20% Tank Stage

Scenario Summary			
ID	105		
Label	PHD - 20% Tank Stage		
Notes			
Active Topology	Base Active Topology		
Physical	Base Physical		
Demand	PHD		
Initial Settings	20% Tank Stage		
Operational	Base Operational		
Age	Base Age		
Constituent	Base Constituent		
Trace	Base Trace		
Fire Flow	Base Fire Flow		
Energy Cost	Base Energy Cost		
Transient	Base Transient		
Pressure Dependent Demand	Base Pressure Dependent Demand		
Failure History	Base Failure History		
SCADA	Base SCADA		
User Data Extensions	Base User Data Extensions		
Steady State/EPS Solver Calculation Options	Base Calculation Options		
Transient Solver Calculation Options	Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: PHD - 20% Tank Stage

Current Time Step: 0.000 h

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	-107	0.69	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	243	0.25	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	131	0.13	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	139	0.89	0.001	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	-107	0.69	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	32	0.20	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	32	0.20	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	112	0.72	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	68	0.43	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	68	0.43	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	-59	0.38	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	-59	0.38	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	44	0.28	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	44	0.28	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	-32	0.20	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	348	0.06	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	-8	0.01	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	-8	0.02	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-105	0.30	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-97	0.62	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-105	0.07	0.000	False	0

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Scenario: PHD - 20% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.99	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.98	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,661.92	110
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,661.84	113
38	J-18	6,399.12	Red	<Collection: 1 item>	264	6,661.80	114
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,661.80	114
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,661.91	114
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,661.90	114
43	J-13	6,397.53	Red	<Collection: 1 item>	76	6,661.90	114
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,661.92	114
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,661.94	114
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,661.91	115
47	J-9	6,391.92	Red	<Collection: 1 item>	9	6,661.89	117
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,661.89	117
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,661.83	115
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,661.87	115
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,661.89	118
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.98	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,662.00	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.98	108

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Scenario: PHD - 20% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,661.91	115
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,661.83	115
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,661.84	113
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,661.91	114
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,661.92	115
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,661.87	115
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,661.89	121

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(P-2 and P-3 closed between valves ISO-1 and ISO-2)

Scenario Summary Report

Scenario: MDD + FF - 20% Tank Stage, One Loop Off

Scenario Summary			
ID	106		
Label	MDD + FF - 20% Tank Stage, One Loop Off		
Notes			
Active Topology	Base Active Topology		
Physical	Base Physical		
Demand	MDD + FF		
Initial Settings	MDD + FF - 20% Tank Stage, One Loop Closed		
Operational	Base Operational		
Age	Base Age		
Constituent	Base Constituent		
Trace	Base Trace		
Fire Flow	Base Fire Flow		
Energy Cost	Base Energy Cost		
Transient	Base Transient		
Pressure Dependent Demand	Base Pressure Dependent Demand		
Failure History	Base Failure History		
SCADA	Base SCADA		
User Data Extensions	Base User Data Extensions		
Steady State/EPS Solver Calculation Options	Base Calculation Options		
Transient Solver Calculation Options	Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	1,899	1.94	0.001	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	347	0.35	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	-667	4.26	0.010	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	4	0.02	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	4	0.02	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	1,517	9.68	0.046	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	1,687	19.14	0.227	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	2,695	0.48	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	347	0.35	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	347	0.98	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-797	2.26	0.002	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-1,144	7.30	0.027	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-797	0.56	0.000	False	0

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.42	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.39	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,635.82	99
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,640.84	104
38	J-18	6,399.12	Red	<Collection: 1 item>	120	6,643.43	106
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,643.43	106
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,630.62	101
42	J-14	6,397.54	Red	<Collection: 1 item>	850	6,631.40	101
43	J-13	6,397.53	Red	<Collection: 1 item>	34	6,631.75	101
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,641.53	106
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,654.87	111
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,490.42	41
47	J-9	6,391.92	Red	<Collection: 1 item>	4	6,643.43	109
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,643.43	109
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,643.43	107
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,643.43	107
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,643.43	110
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.37	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,661.87	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.24	107

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,490.42	41
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,643.43	107
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,640.84	104
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 1 item>	1,687	6,617.17	95
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,641.53	106
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,643.43	107
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,643.43	113

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	2,691	0.48	0.000	True	1
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	1,687	19.14	0.227	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	1,286	8.21	0.034	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	1,687	10.77	0.056	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-1,371	8.75	0.038	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	1,823	1.86	0.001	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	503	0.51	0.000	False	0
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	503	0.51	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	503	1.43	0.001	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-868	2.46	0.002	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-868	0.62	0.000	False	0

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.46	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.40	109
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.37	102
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.11	107
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,661.85	108
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,656.60	112
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,626.13	100
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,591.90	87
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,591.90	87
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,581.84	83
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,646.71	108
43	J-13	6,397.53	Red	<Collection: 1 item>	34	6,639.45	105
42	J-14	6,397.54	Red	<Collection: 1 item>	850	6,639.19	105
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,638.84	104
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,637.77	100
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,636.73	102
38	J-18	6,399.12	Red	<Collection: 1 item>	120	6,636.19	103
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,633.92	102
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,619.37	96
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,599.31	88

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi ^{1/2})	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,626.13	100
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,619.37	96
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,636.73	102
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,638.84	104
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,646.71	108
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,599.31	88
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 1 item>	1,687	6,567.73	80

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APPENDIX C

Wastewater Flows

WASTEWATER DEMAND CALCULATIONS

Subdivision: Dawson Trails
Location: Castle Rock, CO

Project Name: King Soopers Store #165
Project No.: KSS000165.20
Calculated By: J. Greenough
Checked By: J. Romano
Date: 6/30/25

Planning Area	Land Use	Total Area (sf)	Flow / Unit* gpd / sf	ADF (gpd)	ADF (gpm)	I & I (gpm)	PF	PDF (gpm)	Design Flow (cfs)
1	Grocery / Fuel	123,000	0.1	12,300	8.54	0.85	5.0	43.56	0.10
1	Retail	7,200	0.1	720	0.50	0.05	5.0	2.55	0.01
1	Bank	4,000	0.1	400	0.28	0.03	5.0	1.42	0.00
1	Retail / Office	20,000	0.1	2,000	1.39	0.14	5.0	7.08	0.02
1	Restaurant	20,000	1.5	30,000	20.83	2.08	5.0	106.25	0.24
1	Car Wash	1 facility	5000 gpd / acre	5,000	3.47	0.35	5.0	17.71	0.04
			Total Flow	50,420	35.01	3.50		178.57	0.40

APPENDIX D

Wastewater Hydraulic Modeling

Minimum Slope - PDF - Grocery Only

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.011	
Channel Slope	0.00630	ft/ft
Diameter	0.67	ft
Discharge	0.10	ft ³ /s

Results

Normal Depth	0.13	ft
Flow Area	0.05	ft ²
Wetted Perimeter	0.62	ft
Hydraulic Radius	0.08	ft
Top Width	0.53	ft
Critical Depth	0.14	ft
Percent Full	20.1	%
Critical Slope	0.00472	ft/ft
Velocity	2.00	ft/s
Velocity Head	0.06	ft
Specific Energy	0.20	ft
Froude Number	1.15	
Maximum Discharge	1.22	ft ³ /s
Discharge Full	1.13	ft ³ /s
Slope Full	0.00005	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.06	%
Downstream Velocity	Infinity	ft/s

Minimum Slope - PDF - Grocery Only

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.13	ft
Critical Depth	0.14	ft
Channel Slope	0.00630	ft/ft
Critical Slope	0.00472	ft/ft

Minimum Slope - PDF - Entire Development

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.011	
Channel Slope	0.04000	ft/ft
Diameter	0.67	ft
Discharge	0.40	ft ³ /s

Results

Normal Depth	0.17	ft
Flow Area	0.07	ft ²
Wetted Perimeter	0.70	ft
Hydraulic Radius	0.10	ft
Top Width	0.58	ft
Critical Depth	0.29	ft
Percent Full	25.3	%
Critical Slope	0.00481	ft/ft
Velocity	5.77	ft/s
Velocity Head	0.52	ft
Specific Energy	0.69	ft
Froude Number	2.94	
Maximum Discharge	3.08	ft ³ /s
Discharge Full	2.86	ft ³ /s
Slope Full	0.00078	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	25.26	%
Downstream Velocity	Infinity	ft/s

Minimum Slope - PDF - Entire Development

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.17	ft
Critical Depth	0.29	ft
Channel Slope	0.04000	ft/ft
Critical Slope	0.00481	ft/ft

Maximum Slope - PDF - Entire Development

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.011	
Channel Slope	0.18900	ft/ft
Diameter	0.67	ft
Discharge	0.40	ft ³ /s

Results

Normal Depth	0.11	ft
Flow Area	0.04	ft ²
Wetted Perimeter	0.57	ft
Hydraulic Radius	0.07	ft
Top Width	0.50	ft
Critical Depth	0.29	ft
Percent Full	17.2	%
Critical Slope	0.00482	ft/ft
Velocity	10.00	ft/s
Velocity Head	1.55	ft
Specific Energy	1.67	ft
Froude Number	6.25	
Maximum Discharge	6.69	ft ³ /s
Discharge Full	6.22	ft ³ /s
Slope Full	0.00078	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	17.19	%
Downstream Velocity	Infinity	ft/s

Maximum Slope - PDF - Entire Development

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.11	ft
Critical Depth	0.29	ft
Channel Slope	0.18900	ft/ft
Critical Slope	0.00482	ft/ft

APPENDIX E

Fire Flow Memo

CONFIRMATION MEMORANDUM OF REQUIRED FIRE FLOW

PROJECT NAME / DESCRIPTION:

King Scooper's #165 – Dawson Trails

Project consists of the development of approximately +/- 12.2 acres of vacant land for a King Scoopers Marketplace store and Fueling Facility with associated drive aisles, parking lots, and utilities to service the store.

TOTAL SQUARE FOOTAGE:

Commercial: 99,000 sf

Fuel Kiosk: 245 sf

BUILDING CONSTRUCTION TYPE:

Type II-B

FIRE SPRINKLER SYSTEM:

Store – Yes

Fuel Kiosk - No

REQUIRED FLOW AND DURATION:

1687 gpm for 2 hours

CASTLE ROCK FIRE AND RESCUE DEPARTMENT CONFIRMATION:

By: Kevin Sullivan

Digitally signed by Kevin Sullivan
DN: cn=Kevin Sullivan, o=Castle Rock
Fire and Rescue Department, ou=Castle
Rock
Reason: I have reviewed this document
Date: 2025.11.11 09:50:25 -0700

Date: 11-11-25

FIRE REVIEW 18714



11/11/2025

APPENDIX F

Grease Interceptor Form



Commercial Business Building Permit

Grease Interceptor Requirement

All Commercial Business Building Permits for new business and construction of new buildings, remodels, or tenant improvement permits will be required to comply with Town Code 13.05, Grease Interceptors Required. Applicant will be required to submit an Industry Information Questionnaire through the Plum Creek Water Reclamation Authority (PCWRA) to verify if the business will require an oil/grease interceptor. Please go to PCWRA website at:

<https://www.pcwracolorado.org/commercial-businesses>

CONSTRUCTION DRAWINGS

Please note PCWRA requires all new commercial buildings to provide a stub-out for a separate waste line for future interceptor installation, if not proposed with the project. All drainage fixtures and grease waste lines that are tied to the oil/grease must be shown in the construction drawings as well as the location of the oil/grease interceptor.

ACKNOWLEDGEMENT

The applicant must sign and date this form to acknowledge that the applicant has read and understands the Town's Code requirement regarding Grease Interceptors, PCWRA's requirement to complete an Industry Information Questionnaire and Food Service Application, and the Town's requirement that a letter from PCWRA must be provided with the Town of Castle Rock Building Permit. This signed form is required to be included in the Utility Report with the Predevelopment Plan (PDP), Site Development Plan (SDP) and Construction Document (CD) submittals.

King Soopers Store #165

Name of Project

1631 Dawson Trails Boulevard

Address of property, if known

Kevin McKenzie
Signature

1/7/26
Date

APPENDIX G

Excerpts from Previous Reports

FINAL UTILITY REPORT

FOR

DAWSON TRAILS FILING 2 INFRASTRUCTURE
TOWN OF CASTLE ROCK, COLORADO
CD23-0045

Prepared for:

Dawson Trail I LLC
Dawson Trail II LLC
Westside Property Investment Company, Inc.
4100 E Mississippi Ave, Ste 500
Glendale, CO 80246
Contact: Lawrence Jacobson
Phone: 303-984-9800

Prepared by:



EMK Consultants, Inc.
7006 S. Alton Way, Bldg F
Centennial, CO 80112
Contact: Eric R. McDaniel
Phone: 303-694-1520
EMK Job No 13466

December 2024



2. WATER SYSTEM

A. General

The Filing 2 water system will be served by a network of Red and Green Zone water distribution lines operated by Castle Rock Water, primarily located within the backbone road system within the Site. An Overall Water Map has been included in Appendix E.

B. Water Distribution System

The layout and design of the major water distribution system proposed in this report generally conforms with the Town of Castle Rock 2017 Water Master Plan. The Site spans over two (2) different water zones – the Red and Green Zone. The water distribution system bringing potable water to the Site is shown on the Overall Water Map in Appendix E and will consist of the following:

- An existing 16" waterline connection from Filing 1 Infrastructure in Dawson Trails Blvd south of the CVI Interchange.
- An existing 20" waterline connection from Filing 1 Infrastructure at the CVI interchange in Crystal Valley Pkwy and Gambel Ridge Blvd.
- Pressure Reducing Valves between zones
- Water Booster Pump from the Red Zone to Green Zone
- Tank 19 or Feed 3 (Red Zone)
- Tank 21 (Green Zone)

Tanks 19 and 21 have not been constructed, the tanks will need to be designed and located before high water and low water levels are established. See Appendix E for an Overall Water Plan Map. It is also to be noted that the Green Zone distribution lines and Tank 21 has not be modeled or drawn as a part of this submittal package. Green Zone to be included in next submittal package.

Raw Water

A potential three (3) acre well site as part of Filing 1 is anticipated for the Site, located near the northern corner of the site in PL-1.07, as shown in the Land Use Map in Appendix E. The well's respective transmission line to convey the raw water to a water treatment plant would also be constructed. It should be noted that there is potential for a public facility located in PL-1.10, in the southeastern corner of the Site, which could include a treatment facility or well site. In either condition, these raw water facilities will be maintained and operated by the Town. Any potential supply to the distribution system is not included in the model.

C. Regional Offsite Improvements

The Dawson Trails development will require three (3) significant offsite improvements located within the vicinity of the development. The first is the Tank 21 which will be a supply for the Green Zone. The exact location of the site has not yet been determined. The second offsite improvement will be the extension and connection of the 16" transmission main from Filing 1 located in Dawson Trails Blvd to the site. The third offsite improvement will be the extension and connection of the 20" transmission main from Filing 1 located in Crystal Valley Pkwy and Gambel Ridge Blvd. The two connections to Filing 1 Infrastructure will loop through the Filing 2 site to the Red Zone tank (Tank 19) located in PL-1.02. The Green Zone transmission mains have not been included in this submittal package.



landscaping and irrigation construction documents provided by Norris Design. See Appendix B for Annual Estimated Irrigation Demands.

In addition to the parameters above, fire flows were analyzed (along with the Maximum Day Demand) as follows:

- **Fire Flow Demand (FFD)** – Fire flow requirements within Town of Castle Rock are dictated by the Town's Fire Department and the latest edition of the International Fire Code (IFC). Fire flow demands (FFD) vary depending on building usage (residential versus commercial), building square footage, and type of building construction which are defined in Appendix B of the IFC. A 50 percent reduction in required fire flow may be allowed for approved residential sprinkler systems, and a 75 percent reduction may be allowed for approved commercial sprinkler systems at the discretion of the Town of Castle Rock Fire Chief. The minimum fire flow for the water distribution system is 1,500 gpm, unless otherwise approved by the Fire Department.

Commercial, schools, and multi-family residential are the only buildings anticipated to have sprinklers within the Dawson Trails development. The specific building square footages, construction type, and usages are not known at this time. For the water model, a fire flow demand of 3,000 gpm was used at all junctions with the potential for these types of development.

F. Water System Modeling and Analysis

The water system was modeled by MSK Consulting, LLC. using InfoWater software. The InfoWater results are included in Appendix B along with a Vicinity Map in Appendix A for the simulation. Simulations were run for the following scenarios:

- Minimum and Maximum Static Pressures with Zero Demand (20% and 100% Tank level)
- Peak Hour Demand (PHD)
- Max Day Demand + Fire Flow (MDD+FF)
- Extended Period Simulation (EPS)

The steady-state simulations (PHD and MDD+FF) were run separately for each pressure zone since booster pump stations and pressure reducing valves will isolate one zone from another. For the EPS scenario, all three pressure zones were modeling concurrently.

Static Pressure with Zero Demand

Prior to applying any demands, the static pressures at each junction were evaluated for two conditions: 20% full tank and 100% full tank. The 20% full condition determines the low static pressure and the 100% full scenario reveals the maximum station pressure. For this analysis, the following tank levels were used:

Table 2.3 Tank Water Levels

Tank	20% Full Elevation	100% Full Elevation
Blue Zone	6490 ft	6508 ft
Red Zone	6662 ft	6680 ft



The majority of the junctions have a static pressure within the required range (43 psi to 125 psi). There are a few junctions in each pressure zone that will need to be raised or lowered during the final design process. Results are provided in Appendix B.

Peak Hour Demand

PHD scenarios were performed on each pressure zone assuming full buildout and the tank levels at 20% full. The PHD factors were applied to average day demands and the model output was evaluated for junction pressure and pipe velocity. A full output is included in Appendix B.

MDD+FF

A maximum day demand plus fire flow (MDD+FF) scenario for each pressure zone was performed. As stated previously, the fire flow demand for all commercial, multi-family, or school development is assumed to be 3,000 gpm. The fire flow for all single-family residential developments is 1,500 gpm. Fire flows were applied during the MDD condition, and all fire hydrant junctions satisfied the CRW's requirement of a minimum of 20 psi residual pressure. A summary of the results is provided below, and complete results are in Appendix B.

Table 2.4 MDD+FF Results

Zone	Lowest Residual Pressure (PSI)
Blue	28.79 (J12)
Red	62.39 (J108)

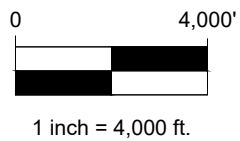
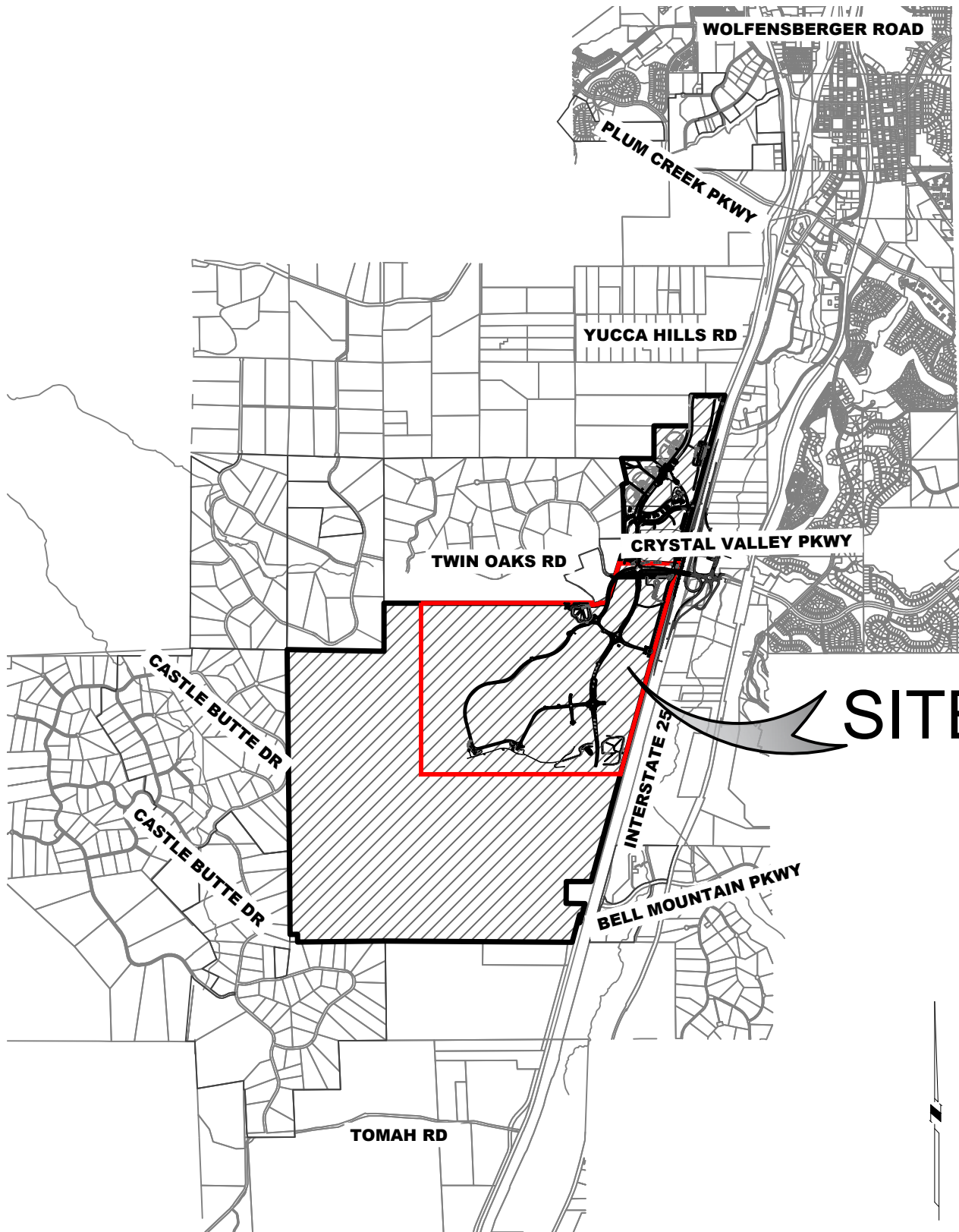
Extended Period Simulation

An Extended Period Simulation (EPS) was performed to analyze the distribution system during a 24-hour period during a maximum day condition. CRW provided the 24-hour diurnal curve (included in Appendix B) that were applied to the calculated MDD. As stated previously, the EPS scenario evaluated the three (3) pressure zones concurrently. The Green and Red Zone tanks were inputted into the model. The inputs included the total volume at buildout and the tank levels. The booster pump stations included a pump curve to allow for the analysis of discharge flows and pressures.

The EPS scenario provides a complete full day's analysis of the distribution system, including a "tank-filling" situation. It provides the upper end of each pump stations' output and the junction pressures and pipe velocities during those conditions. Generally, the demands in the EPS analysis are lower than either the PHD or MDD+FF scenarios. However, it was included in the water system analysis to provide initial results on the tanks' and booster pump stations' performances. In particular, the Red Zone Booster Pump Station was evaluated because this facility will be responsible for conveying the flows to meet the demands of both the Red and Green Zones. Results from the EPS analysis are included in Appendix B, but they are considered preliminary because pump curves for actual pumps were not used and the tank volumes are for full buildout. A more specific analysis will be performed during the design of each booster pump station and tank.

Appendix A

Figures



DAWSON TRAILS VICINITY MAP

CREATED BY: CGV

DATE: 12/19/2024

SHEET NUMBER
1
OF 1 SHEETS
JOB NUMBER
20-224



Appendix B

Water Modeling / Calculations

Dawson Trails for Westside**Potable Water Model**

Water Demands-Phase 1

Date: June 2024

MSK Project #: 52-001-01

Calc'd by: DLT

PRELIMINARY**6/27/24****Assumptions:**

Average Day Demand (ADD) per SFE: 265.0 gpd [7/17/23 Lowered by CRW per ordinance]

Max Day Demand (MDD) Factor: 2.5 x ADD

Peak Hour Demand (PHD) Factor: 5.5 x ADD

Irrigation ADD: 3,750 gpd/irrigated acre

Table B1-1: Potable Water Demands for Phase 1 (w/ Irrigation)

A	B	C	D	E	F	G	H	I	J	K	L
No.	Planning Area	Pressure Zone	Total SFEs	ADD (gpd)	MDD (gpd)	MDD (gpm)	PHD (gpm)	Irrigated Area (ac)	Irrigation ADD (gpd)	Irrigation ADD (gpm)	Junction
1	F-1	Blue	0.0	0	0	0.0	0.0				J28
2	F-1	Blue	0.0	0	0	0.0	0.0				J18
3	F-1	Blue	0.0	0	0	0.0	0.0				J20
4	F-1	Blue	0.0	0	0	0.0	0.0				J20
5	E-1	Blue	0.0	0	0	0.0	0.0				J12
Blue Zone Totals			0.0	0	0	0.0	0.0	0.0	0.0	0.0	
6	F-2 (Ph. 1)	Red	0.0	0	0	0.0	0.0	2.29	8,595.6	5.97	J10
7	F-2 (Ph. 1)	Red	102.0	27,030	67,575	46.9	103.2				J14
8	F-3 (Ph. 1)	Red	62.5	16,563	41,406	28.8	63.3				J94
9	F-3	Red	0.0	0	0	0.0	0.0				J96
10	B-1 (Ph. 1)	Red	233.0	61,745	154,363	107.2	235.8				J140
11	D (Ph. 1)	Red	274.0	72,610	181,525	126.1	277.3				J98
12	D	Red	0.0	0	0	0.0	0.0				J24
13	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J112
14	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J114
15	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J120
16	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J102
17	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J58
18	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J118
19	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J108
20	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J106
21	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J126
22	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J124
23	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J66
24	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J122
25	G-1	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J110
26	G-1	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J116
27	G-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J64
Red Zone Totals			671.5	177,948	444,869	308.9	679.7	2.3	8,595.6	6.0	
28	B-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J134
29	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J130
30	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J44
31	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J74
32	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J132
33	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J128
34	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J42
35	B-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J138
36	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J136
37	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J48
38	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J62
Green Zone Totals			0.0	0	0	0.0	0.0	0.0	0.0	0.0	
Buildout Totals (All Zones)			671.5	177,948	444,869	308.9	679.7	2.3	8,595.6	6.0	

Note:

1. The development composition in each Planning Area is preliminary and may change.

WESTSIDE PROPERTY**Dawson Trails Scenario #0 - Ph1, Static-no demands, Feed 1 OFF, Feed 2 OFF, PS OFF**

Water Model Junction Report

Model Run Date: December 20, 2024

Table B2-1: Water Model Junction Report

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	PHD Demand Applied (gpm)	RZ Tank at 20%=6662.0		RZ Tank at 100%=6680.0	
							Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	295.00	127.82	313.00	135.62
J100			Red	1	6,549.09	0.00	112.91	48.92	130.91	56.72
J102	FH	0.0	Red	1	6,498.44	0.00	163.56	70.87	181.56	78.67
J106	FH	0.0	Red	1	6,492.07	0.00	169.93	73.63	187.93	81.43
J108	FH	0.0	Red	1	6,496.31	0.00	165.69	71.79	183.69	79.59
J14	FH	102.0	Red	1	6,381.00	0.00	281.00	121.75	299.00	129.55
J140	FH	233.0	Red	1	6,467.50	0.00	194.50	84.27	212.50	92.07
J15		0.0	Red	1	6,381.00	0.00	281.00	121.75	299.00	129.55
J16			Red	1	6,350.00	0.00	312.00	135.18	330.00	142.98
J161			Red	1	6,386.00	0.00	276.00	119.58	294.00	127.38
J22			Red	1	6,433.62	0.00	228.38	98.95	246.38	106.75
J24	FH	274.0	Red	1	6,471.80	0.00	190.20	82.41	208.20	90.21
J50			Red	1	6,377.00	0.00	285.00	123.48	303.00	131.28
J54			Red	1	6,425.00	0.00	237.00	102.69	255.00	110.49
J70			Red	1	6,490.00	0.00	172.00	74.52	190.00	82.32
J76	Tank		Red	1	6,646.85	0.00	15.15	6.56	33.15	14.36
J78	Red-Green PS		Red	1	6,607.50	0.00	54.50	23.61	72.50	31.41
J92			Red	1	6,380.00	0.00	282.00	122.18	300.00	129.98
J94	FH	62.5	Red	1	6,395.02	0.00	266.98	115.68	284.98	123.47
J96	FH	0.0	Red	1	6,444.45	0.00	217.55	94.26	235.55	102.06
J98	FH	0.0	Red	1	6,443.18	0.00	218.82	94.81	236.82	102.61
		671.5				0.00				

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

Model Run Date: Dec 20, 2024

ADD: 265.0 gpd/SFE
MDD: 2.5 x ADD
PHD: 5.5 x ADD

Minimum pressure= 6.74

Table B2-2: Water Model Junction Report

		671.5	[Scenario #3 Results] PHD DMD = 685.6 gpm							
		PHD Demand								
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	Applied (gpm)	PHD + IRR ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	5.97	0.00	5.97	6,662.01	127.83
J100			Red	1	6,549.09		0.00	0.00	6,662.30	49.05
J102	FH	0.0	Red	1	6,498.44		0.00	0.00	6,662.20	70.96
J106	FH	0.0	Red	1	6,492.07		0.00	0.00	6,662.19	73.71
J108	FH	0.0	Red	1	6,496.31		0.00	0.00	6,662.07	71.82
J14	FH	102.0	Red	1	6,381.00		103.24	103.24	6,662.00	121.76
J140	FH	233.0	Red	1	6,467.50		235.83	235.83	6,662.08	84.31
J15		0.0	Red	1	6,381.00		0.00	0.00	6,662.01	121.76
J16			Red	1	6,350.00		0.00	0.00	6,662.01	135.19
J161			Red	1	6,386.00		0.00	0.00	6,662.01	119.59
J17		0.0	Blue	1	6,351.40		0.00	0.00	6,493.00	61.35
J22			Red	1	6,433.62		0.00	0.00	6,661.96	98.94
J24	FH	274.0	Red	1	6,471.80		277.33	277.33	6,661.92	82.38
J50			Red	1	6,377.00		0.00	0.00	6,662.00	123.49
J54			Red	1	6,425.00		0.00	0.00	6,661.99	102.69
J70			Red	1	6,490.00		0.00	0.00	6,662.18	74.61
J76	Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	Red-Green PS		Red	1	6,607.50		0.00	0.00	6,662.36	23.77
J88	Blue-Red PS		Blue	1	6,350.00		0.00	0.00	6,493.00	61.96
J92			Red	1	6,380.00		0.00	0.00	6,662.01	122.20
J94	FH	62.5	Red	1	6,395.02		63.26	63.26	6,662.00	115.68
J96	FH	0.0	Red	1	6,444.45		0.00	0.00	6,661.98	94.26
J98	FH	0.0	Red	1	6,443.18		0.00	0.00	6,661.98	94.81
		671.5				5.97	679.66	685.63		

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD+Irr, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 10 ft/sec

Max Velocity = 0.53 ft/sec

Criteria met? yes

Table B2-3: Water Model Pipe Report

Table B2-3: Water Model Pipe Report										[Scenario #3 Results]				
										PHD OUTPUT				
ID (Char)	Description (Char)	Zone (Char)	Phase (Int)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status	
P-1		Red	1	J15	J161	83.66	12	120	99.37	0.28	0	0.04	Open	
P-11		Red	1	J50	J16	1,423.65	12	120	-41.25	0.12	0.01	0.01	Open	
P-18		Red	1	J76	J78	879.01	24	120	685.64	0.49	0.04	0.05	Open	
P-2		Red	1	J10	J16	777.55	24	120	41.25	0.03	0	0	Open	
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed	
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open	
P-30		Red	1	J94	J92	930.51	16	120	-123.61	0.2	0.01	0.02	Open	
P-31		Red	1	J54	J94	1,101.20	16	120	-93.39	0.15	0.01	0.01	Open	
P-32		Red	1	J96	J54	685.74	16	120	-114.88	0.18	0.01	0.01	Open	
P-33		Red	1	J98	J96	257.42	16	120	-114.88	0.18	0	0.01	Open	
P-35		Red	1	J102	J100	970.07	12	120	-162.45	0.46	0.1	0.1	Open	
P-36		Red	1	J106	J102	144.99	12	120	-162.45	0.46	0.01	0.1	Open	
P-37		Red	1	J70	J106	87.97	12	120	-162.45	0.46	0.01	0.1	Open	
P-38		Red	1	J108	J70	1,096.69	12	120	-162.45	0.46	0.11	0.1	Open	
P-39		Red	1	J24	J108	1,454.20	12	120	-162.45	0.46	0.15	0.1	Open	
P-4		Red	1	J22	J24	781.22	12	120	114.88	0.33	0.04	0.05	Open	
P-40		Red	1	J22	J98	1,043.14	16	120	-114.88	0.18	0.01	0.01	Open	
P-66		Red	1	J140	J78	3,778.95	20	120	-523.19	0.53	0.28	0.07	Open	
P-67		Red	1	J92	J140	2,723.50	20	120	-287.36	0.29	0.07	0.02	Open	
P-68		Red	1	J78	J100	2,188.12	16	120	162.45	0.26	0.05	0.02	Open	
P-69		Red	1	J10	J15	1,497.69	24	120	-64.38	0.05	0	0	Open	
P-71		Red	1	J15	J92	570.16	24	120	-163.75	0.12	0	0	Open	
P-72		Red	1	J161	J14	526.76	12	120	66.32	0.19	0.01	0.02	Open	
P-74		Red	1	J14	J50	503.93	12	120	-19.75	0.06	0	0	Open	
P-75		Red	1	J94	J161	1,617.47	12	120	-33.04	0.09	0.01	0.01	Open	
P-76		Red	1	J50	J54	3,892.99	12	120	21.49	0.06	0.01	0	Open	
P-91		Red	1	J10	J14	1,111.51	8	120	17.16	0.11	0.01	0.01	Open	
SUPPLY3	Supply 3	Red	1	FEED3	J76	1.00	24	120	685.64	0.49	0	0	Open	

WESTSIDE PROPERTY

Dawson Trails Scenario #4A - Ph1, SS, MDD+FF+Irr (standard), Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Water Model Fire Flow Report

Model Run Date: Dec 20, 2024

Table B2-4: Water Model Fire Flow Report

ID	Description (Char)	Junction of Interest	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Hydrant Available Flow (gpm)	Hydrant Pressure at Available Flow (psi)	Pass /Fail
J102	FH	no	Red	6,498.44	0	71.02	6,662.35	3,000	63.71	8,713.01	20	Pass
J106	FH	no	Red	6,492.07	0	73.78	6,662.35	1,500	71.55	8,740.97	20	Pass
J108	FH	no	Red	6,496.31	0	71.93	6,662.32	3,000	62.57	7,720.29	20	Pass
J14	FH	yes	Red	6,381.00	46.93	121.89	6,662.30	2,000	118.94	14,551.32	20	Pass
J140	FH	no	Red	6,467.50	107.2	84.42	6,662.32	1,500	83.51	17,297.46	20	Pass
J24	FH	no	Red	6,471.80	126.06	82.54	6,662.29	3,000	73.66	9,031.96	20	Pass
J94	FH	no	Red	6,395.02	28.75	115.81	6,662.30	3,000	111.07	16,064.20	20	Pass
J96	FH	no	Red	6,444.45	0	94.39	6,662.30	3,000	88.4	12,203.95	20	Pass
J98	FH	no	Red	6,443.18	0	94.95	6,662.30	3,000	88.72	11,994.30	20	Pass

WESTSIDE PROPERTY**Dawson Trails Scenario #3 - Ph1, SS, PHD, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0****Dawson Trails Scenario #4B - Ph1, SS, MDD+FF, Costco FF Alternative (2,150 gpm)**

Water Model Junction Report

Model Run Date: Dec 20, 2024

Table B2-2: Water Model Junction Report

						[Scenario #4B Results]			
671.5						MDD DMD = 2,464.9 gpm			
						MDD + IRR			
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	MDD Demand Applied (gpm)	ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	5.97	6,656.66	125.51
J100			Red	1	6,549.09	0.00	0.00	6,661.40	48.66
J102	FH	0.0	Red	1	6,498.44	0.00	0.00	6,660.43	70.19
J106	FH	0.0	Red	1	6,492.07	0.00	0.00	6,660.29	72.89
J108	FH	0.0	Red	1	6,496.31	0.00	0.00	6,659.12	70.54
J14	FH	102.0	Red	1	6,381.00	2196.93	2196.93	6,654.59	118.55
J140	FH	233.0	Red	1	6,467.50	107.20	107.20	6,658.88	82.92
J15		0.0	Red	1	6,381.00	0.00	0.00	6,656.75	119.48
J16			Red	1	6,350.00	0.00	0.00	6,656.64	132.87
J161			Red	1	6,386.00	0.00	0.00	6,656.55	117.23
J17		0.0	Blue	1	6,351.40	0.00	0.00	6,493.00	61.35
J22			Red	1	6,433.62	0.00	0.00	6,657.19	96.88
J24	FH	274.0	Red	1	6,471.80	126.06	126.06	6,657.67	80.54
J50			Red	1	6,377.00	0.00	0.00	6,655.56	120.70
J54			Red	1	6,425.00	0.00	0.00	6,656.89	100.48
J70			Red	1	6,490.00	0.00	0.00	6,660.20	73.75
J76	Tank		Red	1	6,646.85	0.00	0.00	6,662.40	6.74
J78	Red-Green PS		Red	1	6,607.50	0.00	0.00	6,661.93	23.58
J88	Blue-Red PS		Blue	1	6,350.00	0.00	0.00	6,493.00	61.96
J92			Red	1	6,380.00	0.00	0.00	6,656.90	119.98
J94	FH	62.5	Red	1	6,395.02	28.75	28.75	6,656.88	113.46
J96	FH	0.0	Red	1	6,444.45	0.00	0.00	6,657.00	92.10
J98	FH	0.0	Red	1	6,443.18	0.00	0.00	6,657.04	92.67
671.5						2,458.94	2,464.91		

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD+Irr, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 5 ft/sec
 Max Velocity = 3.22 ft/sec
 Criteria met? **yes**

Table B2-3: Water Model Pipe Report

[Scenario #4B Results]

									MDD OUTPUT				
ID (Char)	Description (Char)	Zone (Char)	Phase (Int)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status
P-1	Zone Bndy	Red	1	J15	J161	83.66	12	120	898.16	2.55	0.2	2.41	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-481.20	1.37	1.08	0.76	Open
P-18		Red	1	J76	J78	879.01	24	120	2,464.92	1.75	0.47	0.53	Open
P-2		Red	1	J10	J16	777.55	24	120	481.21	0.34	0.02	0.03	Open
P-29		Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P294		Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-147.53	0.24	0.02	0.02	Open
P-31		Red	1	J54	J94	1,101.20	16	120	117.08	0.19	0.02	0.01	Open
P-32		Red	1	J96	J54	685.74	16	120	429.98	0.69	0.1	0.15	Open
P-33		Red	1	J98	J96	257.42	16	120	429.98	0.69	0.04	0.15	Open
P-35	Red	1	J102	J100	970.07	12	120	-556.04	1.58	0.96	0.99	Open	
P-36	Red	1	J106	J102	144.99	12	120	-556.04	1.58	0.14	0.99	Open	
P-37	Red	1	J70	J106	87.97	12	120	-556.04	1.58	0.09	0.99	Open	
P-38	Red	1	J108	J70	1,096.69	12	120	-556.04	1.58	1.09	0.99	Open	
P-39	Red	1	J24	J108	1,454.20	12	120	-556.04	1.58	1.44	0.99	Open	
P-4	Red	1	J22	J24	781.22	12	120	-429.98	1.22	0.48	0.62	Open	
P-40	Red	1	J22	J98	1,043.14	16	120	429.98	0.69	0.16	0.15	Open	
P-66	Red	1	J140	J78	3,778.95	20	120	-1,908.88	1.95	3.06	0.81	Open	
P-67	Red	1	J92	J140	2,723.50	20	120	-1,801.68	1.84	1.98	0.73	Open	
P-68	Red	1	J78	J100	2,188.12	16	120	556.04	0.89	0.53	0.24	Open	
P-69	Red	1	J10	J15	1,497.69	24	120	-755.98	0.54	0.09	0.06	Open	
P-71	Red	1	J15	J92	570.16	24	120	-1,654.14	1.17	0.15	0.26	Open	
P-72	Red	1	J161	J14	526.76	12	120	1,134.03	3.22	1.95	3.71	Open	
P-74	Red	1	J14	J50	503.93	12	120	-794.10	2.25	0.97	1.92	Open	
P-75	Red	1	J94	J161	1,617.47	12	120	235.87	0.67	0.33	0.2	Open	
P-76	Red	1	J50	J54	3,892.99	12	120	-312.90	0.89	1.33	0.34	Open	
P-91	Red	1	J10	J14	1,111.51	8	120	268.80	1.72	2.07	1.86	Open	
SUPPLY3	Supply 3	Red	1	FEED3	J76	1.00	24	120	2,464.92	1.75	0	0.49	Open

WESTSIDE PROPERTY

Dawson Trails Scenario #0 - Buildout, Static-no demands, Feed 1 OFF, Feed 2 OFF, PS OFF,

Water Model Junction Report

Model Run Date: June 29, 2024

Table B2-7: Water Model Junction Report

Tank at 20%.

Tank at 100%.

BZ=6490.0

BZ=6508.0

RZ=6662.0

RZ=6618.0

GZ=6806.0

GZ=6824.0

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	295.00	127.82	6,367.00	2758.67	313.00	135.62
J100			Red	1	6,549.09	0.00	112.91	48.92	6,549.09	2837.56	130.91	56.72
J102	FH	216.0	Red	1	6,498.44	0.00	163.56	70.87	6,498.44	2815.62	181.56	78.67
J106	FH	102.0	Red	1	6,492.07	0.00	169.93	73.63	6,492.07	2812.86	187.93	81.43
J108	FH	17.0	Red	1	6,496.31	0.00	165.69	71.79	6,496.31	2814.69	183.69	79.59
J110	FH	68.0	Red		6,432.18	0.00	229.82	99.58	6,432.18	2786.91	247.82	107.37
J112	FH	517.0	Red		6,433.00	0.00	229.00	99.22	6,433.00	2787.26	247.00	107.02
J114	FH	688.0	Red		6,460.00	0.00	202.00	87.52	6,460.00	2798.96	220.00	95.32
J116	FH	101.0	Red		6,452.69	0.00	209.31	90.69	6,452.69	2795.79	227.31	98.49
J118	FH	191.0	Red		6,450.00	0.00	212.00	91.85	6,450.00	2794.63	230.00	99.65
J12	FH	20.0	Blue	1	6,370.48	0.00	119.52	51.79	6,370.48	2760.17	137.52	59.58
J120	FH	2.0	Red		6,458.83	0.00	203.17	88.03	6,458.83	2798.45	221.17	95.83
J122	FH	5.0	Red		6,440.00	0.00	222.00	96.19	6,440.00	2790.29	240.00	103.99
J124	FH	189.0	Red		6,515.38	0.00	146.62	63.53	6,515.38	2822.95	164.62	71.33
J126	FH	114.0	Red		6,528.47	0.00	133.53	57.86	6,528.47	2828.63	151.53	65.65
J128	FH	222.0	Green		6,597.16	0.00	208.84	90.49	6,597.16	2858.39	226.84	98.28
J130	FH	169.0	Green		6,593.11	0.00	212.89	92.24	6,593.11	2856.63	230.89	100.04
J132	FH	92.0	Green		6,595.46	0.00	210.54	91.22	6,595.46	2857.65	228.54	99.02
J134	FH	239.0	Green		6,565.00	0.00	241.00	104.42	6,565.00	2844.45	259.00	112.22
J136	FH	333.0	Green		6,679.27	0.00	126.73	54.91	6,679.27	2893.96	144.73	62.71
J138	FH	228.0	Green		6,602.50	0.00	203.50	88.17	6,602.50	2860.70	221.50	95.97
J14	FH	102.0	Red	1	6,381.00	0.00	281.00	121.75	6,381.00	2764.73	299.00	129.55
J140	FH	245.0	Red	1	6,467.50	0.00	194.50	84.27	6,467.50	2802.21	212.50	92.07
J15		0.0	Red	1	6,381.00	0.00	281.00	121.75	6,381.00	2764.73	299.00	129.55
J16			Red	1	6,350.00	0.00	312.00	135.18	6,350.00	2751.30	330.00	142.98
J161			Red	1	6,386.00	0.00	276.00	119.58	6,386.00	2766.90	294.00	127.38
J17			Blue		6,351.40	0.00	138.60	60.05	6,351.40	2751.91	156.60	67.85
J18	FH	4.0	Blue	1	6,370.48	0.00	119.52	51.79	6,370.48	2760.17	137.52	59.58
J20	FH	36.0	Blue		6,352.61	0.00	137.39	59.53	6,352.61	2752.43	155.39	67.33
J22			Red	1	6,433.62	0.00	228.38	98.95	6,433.62	2787.53	246.38	106.75
J24	FH	148.0	Red	1	6,471.80	0.00	190.20	82.41	6,471.80	2804.07	208.20	90.21
J26	FH		Blue		6,320.51	0.00	169.49	73.44	6,320.51	2738.52	187.49	81.23
J28	FH	90.0	Blue		6,341.09	0.00	148.91	64.52	6,341.09	2747.44	166.91	72.32
J42	FH	167.0	Green		6,591.59	0.00	214.41	92.90	6,591.59	2855.97	232.41	100.70
J44	FH	334.0	Green		6,578.02	0.00	227.98	98.78	6,578.02	2850.10	245.98	106.58
J46			Green		6,637.06	0.00	168.94	73.20	6,637.06	2875.68	186.94	81.00
J48	FH	2.0	Green		6,701.21	0.00	104.79	45.40	6,701.21	2903.47	122.79	53.20
J50			Red	1	6,377.00	0.00	285.00	123.48	6,377.00	2763.00	303.00	131.28
J54			Red	1	6,425.00	0.00	237.00	102.69	6,425.00	2783.80	255.00	110.49
J56			Red		6,500.00	0.00	162.00	70.19	6,500.00	2816.29	180.00	77.99
J58	FH	384.0	Red		6,471.27	0.00	190.73	82.64	6,471.27	2803.84	208.73	90.44
J60	Tank		Green		6,806.00	0.00	0.00	0.00	6,806.00	2948.87	18.00	7.80
J62	FH	138.0	Green		6,642.50	0.00	163.50	70.84	6,642.50	2878.03	181.50	78.64
J64	FH	13.0	Red		6,430.00	0.00	232.00	100.52	6,430.00	2785.96	250.00	108.32
J66	FH	25.0	Red		6,492.95	0.00	169.05	73.25	6,492.95	2813.24	187.05	81.04
J68			Red		6,440.00	0.00	222.00	96.19	6,440.00	2790.29	240.00	103.99
J70			Red	1	6,490.00	0.00	172.00	74.52	6,490.00	2811.96	190.00	82.32
J72			Green		6,533.66	0.00	272.34	118.00	6,533.66	2830.88	290.34	125.80
J74	FH	17.0	Green		6,582.76	0.00	223.24	96.72	6,582.76	2852.15	241.24	104.52
J76	RZ Tank		Red	1	6,646.85	0.00	15.15	6.56	6,646.85	2879.92	33.15	14.36
J78	GZBPS		Red	1	6,607.50	0.00	54.50	23.61	6,607.50	2862.87	72.50	31.41
J80			Green		6,607.54	0.00	198.46	85.99	6,607.54	2862.89	216.46	93.79
J82			Green		6,593.54	0.00	212.46	92.05	6,593.54	2856.82	230.46	99.85
J84			Blue	1	6,339.66	0.00	150.34	65.14	6,339.66	2746.82	168.34	72.94
J86			Blue	1	6,286.00	0.00	204.00	88.39	6,286.00	2723.57	222.00	96.19
J88	RZBPS		Blue		6,350.00	0.00	140.00	60.66	6,350.00	2751.30	158.00	68.46
J90			Blue	1	6,346.49	0.00	143.51	62.18	6,346.49	2749.78	161.51	69.98
J92			Red	1	6,380.00	0.00	282.00	122.18	6,380.00	2764.30	300.00	129.98
J94	FH	509.0	Red	1	6,395.02	0.00	266.98	115.68	6,395.02	2770.81	284.98	123.47
J96	FH	678.0	Red	1	6,444.45	0.00	217.55	94.26	6,444.45	2792.22	235.55	102.06
J98	FH	470.0	Red	1	6,443.18	0.00	218.82	94.81	6,443.18	2791.67	236.82	102.61

6,875.0

0.00

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

ADD: 265.0 gpd/SFE

Model Run Date: Dec 20, 2024

MDD: 2.5 x ADD

PHD 5.5 x ADD

Table B2-8: Water Model Junction Report

[Scenario #11 Results]

PHD DMD = 7,765.5 gpm

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	PHD Demand Applied (gpm)	PHD + IRR ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	5.97	0.00	5.97	6,650.22	122.72
J100			Red	1	6,549.09		0.00	0.00	6,651.33	44.30
J102	FH	216.0	Red	1	6,498.44	35.67	218.63	254.30	6,646.52	64.16
J106	FH	102.0	Red	1	6,492.07	35.67	103.24	138.91	6,646.03	66.71
J108	FH	17.0	Red	1	6,496.31	35.67	17.21	52.88	6,645.30	64.56
J110	FH	68.0	Red		6,432.18	35.67	68.83	104.50	6,643.91	91.74
J112	FH	517.0	Red		6,433.00	35.67	523.28	558.95	6,644.11	91.47
J114	FH	688.0	Red		6,460.00	35.67	696.36	732.03	6,640.55	78.23
J116	FH	101.0	Red		6,452.69	35.67	102.23	137.90	6,640.51	81.38
J118	FH	191.0	Red		6,450.00	35.67	193.32	228.99	6,640.51	82.55
J12	FH	20.0	Blue	1	6,370.48		20.24	20.24	6,492.80	53.00
J120	FH	2.0	Red		6,458.83	35.67	2.02	37.69	6,640.52	78.73
J122	FH	5.0	Red		6,440.00	35.67	5.06	40.73	6,640.65	86.94
J124	FH	189.0	Red		6,515.38	35.67	191.30	226.97	6,641.44	54.62
J126	FH	114.0	Red		6,528.47	35.67	115.39	151.06	6,641.41	48.94
J128	FH	222.0	Green		6,597.16	23.02	224.70	247.72	6,715.14	51.12
J130	FH	169.0	Green		6,593.11	23.02	171.05	194.07	6,714.77	52.71
J132	FH	92.0	Green		6,595.46	23.02	93.12	116.14	6,714.77	51.70
J134	FH	239.0	Green		6,565.00	23.02	241.90	264.92	6,714.91	64.96
J136	FH	333.0	Green		6,679.27	23.02	337.05	360.07	6,716.58	16.17
J138	FH	228.0	Green		6,602.50	23.02	230.77	253.79	6,720.56	51.16
J14	FH	102.0	Red	1	6,381.00		103.24	103.24	6,650.00	116.56
J140	FH	245.0	Red	1	6,467.50		247.98	247.98	6,654.12	80.86
J15		0.0	Red	1	6,381.00		0.00	0.00	6,650.24	116.66
J16			Red	1	6,350.00		0.00	0.00	6,650.21	130.08
J161			Red	1	6,386.00		0.00	0.00	6,650.10	114.44
J17			Blue		6,351.40		0.00	0.00	6,492.80	61.27
J18	FH	4.0	Blue	1	6,370.48	12.72	4.05	16.77	6,492.80	53.00
J20	FH	36.0	Blue		6,352.61		36.44	36.44	6,492.80	60.75
J22			Red	1	6,433.62		0.00	0.00	6,644.73	91.47
J24	FH	148.0	Red	1	6,471.80		149.80	149.80	6,644.81	74.97
J26	FH		Blue		6,320.51		0.00	0.00	6,492.80	74.65
J28	FH	90.0	Blue		6,341.09		91.09	91.09	6,492.80	65.74
J42	FH	167.0	Green		6,591.59	23.02	169.03	192.05	6,717.65	54.62
J44	FH	334.0	Green		6,578.02	23.02	338.06	361.08	6,716.14	59.85
J46			Green		6,637.06		0.00	0.00	6,725.13	38.16
J48	FH	2.0	Green		6,701.21	23.02	2.02	25.04	6,720.95	8.55
J50			Red	1	6,377.00		0.00	0.00	6,649.91	118.25
J54			Red	1	6,425.00		0.00	0.00	6,647.19	96.28
J56			Red		6,500.00		0.00	0.00	6,641.60	61.35
J58	FH	384.0	Red		6,471.27	35.67	388.67	424.34	6,640.54	73.35
J60	Tank		Green		6,806.00		0.00	0.00	6,805.99	-0.01
J62	FH	138.0	Green		6,642.50	23.02	139.68	162.70	6,731.13	38.40
J64	FH	13.0	Red		6,430.00	35.67	13.16	48.83	6,640.82	91.35
J66	FH	25.0	Red		6,492.95	35.67	25.30	60.97	6,641.41	64.32
J68			Red		6,440.00		0.00	0.00	6,643.61	88.23
J70			Red	1	6,490.00		0.00	0.00	6,645.80	67.51
J72			Green		6,533.66		0.00	0.00	6,717.64	79.72
J74	FH	17.0	Green		6,582.76	23.02	17.21	40.23	6,717.64	58.44
J76	RZ Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	GZBPS		Red	1	6,607.50		0.00	0.00	6,660.40	22.92
J80			Green		6,607.54		0.00	0.00	6,714.81	46.48
J82			Green		6,593.54		0.00	0.00	6,714.81	52.55
J84			Blue	1	6,339.66		0.00	0.00	6,492.84	66.37
J86			Blue	1	6,286.00		0.00	0.00	6,493.00	89.69
J88	RZBPS		Blue		6,350.00		0.00	0.00	6,492.80	61.88
J90			Blue	1	6,346.49		0.00	0.00	6,492.81	63.40
J92			Red	1	6,380.00		0.00	0.00	6,650.30	117.12
J94	FH	509.0	Red	1	6,395.02		515.19	515.19	6,648.85	109.99
J96	FH	678.0	Red	1	6,444.45		686.24	686.24	6,645.49	87.11
J98	FH	470.0	Red	1	6,443.18		475.71	475.71	6,645.21	87.54

6,875.0

806.90

6,958.55 7,765.53

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF, Costco FF Alternative

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 10 ft/sec
 Max Velocity = 6.29 ft/sec
 Criteria met? **yes**

Table B2-9: Water Model Pipe Report

									PHD OUTPUT				
	Description	Zone		From			Diameter		Flow	Velocity	Headloss	HL/1000	
ID	(Char)	(Char)	Phase (Int)	Node	To Node	Length (ft)	(in)	Roughness	(gpm)	(ft/s)	(ft)	(ft/k-ft)	Status
P-1		Red	1	J15	J161	83.66	12	120	724.98	2.06	0.14	1.62	Open
P-10		Green		J46	J48	2,269.53	12	120	776.51	2.2	4.18	1.84	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-243.62	0.69	0.31	0.22	Open
P-13		Red		J56	J58	1,156.14	12	120	531.95	1.51	1.06	0.91	Open
P-14		Green		J60	J62	5,824.79	12	120	2,217.81	6.29	74.85	12.85	Open
P-141	Supply 4	Green		T2-GZ	J60	1.00	12	120	0.00	0	0	0.00	Closed
P-15		Red		J64	J66	2,301.39	12	120	-268.08	0.76	0.59	0.26	Open
P-16		Red		J68	J70	2,127.41	12	120	-567.74	1.61	2.19	1.03	Open
P-17		Green		J72	J74	945.67	12	120	0.00	0	0	0	Open
P-18		Red	1	J76	J78	879.01	24	120	5,383.19	3.82	1.99	2.27	Open
P-181	Supply 3	Red		T1-RZ	J76	1.00	24	120	0.00	0	0	0	Closed
P-19		Green		J80	J82	227.74	12	120	0.00	0	0	0	Open
P-2		Red	1	J10	J16	777.55	24	120	243.63	0.17	0.01	0.01	Open
P-20		Blue	1	J84	J86	6,218.83	16	120	-164.53	0.26	0.16	0.03	Open
P-21		Blue		J26	J88	1,436.03	12	120	-8.98	0.03	0	0	Open
P-22		Blue		J28	J90	342.27	12	120	-82.11	0.23	0.01	0.03	Open
P-23		Blue	1	J90	J84	1,172.78	16	120	-164.53	0.26	0.03	0.03	Open
P-24		Blue	1	J18	J90	1,011.16	16	120	-82.43	0.13	0.01	0.01	Open
P-25		Blue		J17	J88	1,707.01	24	120	0.00	0	0	0	Open
P-26		Blue		J88	J20	253.09	16	120	-13.15	0.02	0	0	Open
P-27		Blue	1	J12	J18	1,454.96	12	120	-16.07	0.05	0	0	Open
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P-291	Zone Bndy	Blue		J88	P1	68.07	24	120	0.00	0	0	0	Open
P-292	Zone Bndy	Red		P1	J16	61.69	24	120	0.00	0	0	0	Open
P293	Zone Bndy	Blue	1	J88	P1_PH1	64.87	24	120	0.00	0	0	0	Open
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-3		Blue		J18	J20	646.08	16	120	49.59	0.08	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-1,513.61	2.42	1.45	1.56	Open
P-31		Red	1	J54	J94	1,101.20	16	120	-1,485.05	2.37	1.66	1.51	Open
P-32		Red	1	J96	J54	685.74	16	120	-1,944.94	3.1	1.7	2.48	Open
P-33		Red	1	J98	J96	257.42	16	120	-1,258.70	2.01	0.29	1.11	Open
P-34		Red		J100	J56	2,226.75	12	120	1,239.03	3.51	9.73	4.37	Open
P-35		Red	1	J102	J100	970.07	12	120	-1,326.83	3.76	4.81	4.96	Open
P-36		Red	1	J106	J102	144.99	12	120	-1,072.53	3.04	0.48	3.34	Open
P-37		Red	1	J70	J106	87.97	12	120	-933.62	2.65	0.23	2.59	Open
P-38		Red	1	J108	J70	1,096.69	12	120	-365.88	1.04	0.5	0.46	Open
P-39		Red	1	J24	J108	1,454.20	12	120	-313.00	0.89	0.5	0.34	Open
P-4		Red	1	J22	J24	781.22	12	120	-163.20	0.46	0.08	0.1	Open
P-40		Red	1	J22	J98	1,043.14	16	120	-782.99	1.25	0.48	0.46	Open
P-41		Red		J110	J112	393.61	12	120	-387.24	1.1	0.2	0.51	Open
P-42		Red		J112	J22	233.82	12	120	-946.19	2.68	0.62	2.65	Open
P-43		Red		J68	J110	1,036.73	12	120	-282.74	0.8	0.29	0.28	Open
P-44		Red		J114	J68	1,405.64	12	120	-850.48	2.41	3.06	2.18	Open
P-45		Red		J116	J114	738.3	12	120	-118.45	0.34	0.04	0.06	Open
P-46		Red		J118	J116	148.99	12	120	19.45	0.06	0	0	Open
P-47		Red		J120	J118	481.07	12	120	69.92	0.2	0.01	0.02	Open
P-48		Red		J58	J120	435.82	12	120	107.61	0.31	0.02	0.05	Open
P-49		Red		J122	J118	1,191.76	12	120	178.52	0.51	0.14	0.12	Open
P-5		Blue		J26	J28	227.24	12	120	8.98	0.03	0	0	Open
P-50		Red		J64	J122	917.58	12	120	219.25	0.62	0.16	0.18	Open
P-51		Red		J66	J56	505.3	12	120	-329.05	0.93	0.19	0.38	Open
P-52		Red		J56	J124	323.43	12	120	378.03	1.07	0.16	0.49	Open
P-53	Zone Bndy	Red		J126	J72	384.78	12	120	0.00	0	0	0	Closed
P-54		Red		J124	J126	327.74	12	120	151.06	0.43	0.03	0.09	Open
P-55		Green		J74	J42	355.34	12	120	-40.23	0.11	0	0.01	Open
P-56		Green		J44	J128	1,616.96	12	120	431.45	1.22	1	0.62	Open
P-57		Green		J130	J128	2,911.06	12	120	-183.73	0.52	0.37	0.13	Open
P-58		Green		J132	J130	186.16	12	120	10.34	0.03	0	0	Open
P-59		Green		J80	J132	633.30	12	120	126.48	0.36	0.04	0.06	Open
P-60		Green		J134	J80	1,597.08	12	120	126.48	0.36	0.1	0.06	Open
P-61		Green		J136	J134	3,230.69	12	120	391.40	1.11	1.67	0.52	Open
P-62		Green		J48	J136	2,523.92	12	120	751.47	2.13	4.37	1.73	Open
P-63		Green		J138	J42	948.27	12	120	1,024.81	2.91	2.92	3.08	Open
P-64		Green		J46	J138	985.08	12	120	1,278.60	3.63	4.56	4.63	Open
P-65		Green		J62	J46	538.12	12	120	2,055.11	5.83	6.01	11.16	Open
P-66		Red	1	J140	J78	3,778.95	20	120	-2,817.33	2.88	6.28	1.66	Open
P-661		Red		J78	P2	100.00	12	120	0.00	0	0	0	Open
P-662		Green		P2	J82	100.00	12	120	0.00	0	0	0	Open
P-67		Red	1	J92	J140	2,723.50	20	120	-2,569.35	2.62	3.82	1.4	Open
P-68		Red	1	J78	J100	2,188.12	16	120	2,565.86	4.09	9.07	4.15	Open
P-69		Red	1	J10	J15	1,497.69	24	120	-330.76	0.23	0.02	0.01	Open
P-70		Blue		J12	J88	1,592.12	12	120	-4.17	0.01	0	0	Open
P-71		Red	1	J15	J92	570.16	24	120	-1,055.73	0.75	0.06	0.11	Open
P-72		Red	1	J161	J14	526.76	12	120	238.34	0.68	0.11	0.21	Open
P-74		Red	1	J14	J50	503.93	12	120	216.26	0.61	0.09	0.17	Open
P-75		Red	1	J94	J161	1,617.47	12	120	-486.63	1.38	1.25	0.77	Open
P-76		Red	1	J50	J54	3,892.99	12	120	459.89	1.3	2.72	0.7	Open
P-9		Green		J42	J44	788.06	12	120	792.53	2.25	1.51	1.91	Open
P-91		Red		J10	J14	1,111.51	8	120	81.16	0.52	0.23	0.2	Open
SUPPLY1	Supply 1	Blue	1	FEED1	J86	1.00	16	120	164.53	0.26	0	0	Open
SUPPLY2	Supply 2	Blue		FEED2	J17	887.22	24	120	0.00	0	0	0	Closed
SUPPLY3	Supply 3	Red	1	FEED3	J76	1	24	120	5,383.19	3.82	0	1.95	Open
SUPPLY4	Supply 4	Green		FEED4	J60	1	12	120	2,217.81	6.29	0.01	12.70	Open

WESTSIDE PROPERTY

Dawson Trails Scenario #12A - Buildout, SS, MDD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Water Model Fire Flow Report

Model Run Date: Dec 20, 2024

Table B2-4A: Water Model Fire Flow Report

ID	Description (Char)	Junction of Interest	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Hydrant Available Flow (gpm)	Hydrant Pressure at Available Flow (psi)	Pass /Fail
J102	FH	no	Red	6,498.44	135.05	69.03	6,657.74	3,000	59.85	8,998.88	20	Pass
J106	FH	no	Red	6,492.07	82.6	71.73	6,657.60	1,500	68.06	9,202.10	20	Pass
J108	FH	no	Red	6,496.31	43.49	69.81	6,657.43	3,000	57.56	7,290.46	20	Pass
J110	FH	no	Red	6,432.18	66.95	97.43	6,657.04	3,000	86.53	10,644.06	20	Pass
J112	FH	no	Red	6,433.00	273.53	97.11	6,657.13	3,000	87.25	11,700.54	20	Pass
J114	FH	no	Red	6,460.00	352.2	84.85	6,655.82	3,000	67.98	7,541.67	20	Pass
J116	FH	no	Red	6,452.69	82.14	87.99	6,655.77	3,000	70.15	7,219.95	20	Pass
J118	FH	no	Red	6,450.00	123.54	89.16	6,655.77	3,000	71.24	7,317.79	20	Pass
J12	FH	no	Blue	6,370.48	9.2	53.06	6,492.95	3,000	28.79	3,565.97	20	Pass
J120	FH	no	Red	6,458.83	36.59	85.34	6,655.77	3,000	66.22	6,644.49	20	Pass
J122	FH	no	Red	6,440.00	37.97	93.5	6,655.79	3,000	71.44	6,406.49	20	Pass
J124	FH	no	Red	6,515.38	122.62	60.94	6,656.02	1,500	53.3	4,779.93	20	Pass
J126	FH	no	Red	6,528.47	88.12	55.26	6,656.01	1,500	46.64	3,914.67	20	Pass
J128	FH	no	Green	6,597.16	125.16	78.92	6,779.29	1,500	31.58	1,883.88	20	Pass
J130	FH	no	Green	6,593.11	100.77	80.62	6,779.18	1,500	31.63	1,850.43	20	Pass
J132	FH	no	Green	6,595.46	65.35	79.61	6,779.18	1,500	30.57	1,792.94	20	Pass
J134	FH	no	Green	6,565.00	132.98	92.82	6,779.23	1,500	43.87	2,125.16	20	Pass
J136	FH	no	Green	6,679.27	176.22	43.52	6,779.72	1,500	-3.65	1,058.46	20	Fail
J138	FH	no	Green	6,602.50	127.92	77.28	6,780.86	1,500	35.17	2,008.38	20	Pass
J14	FH	yes	Red	6,381.00	46.93	120.43	6,658.94	2,000	115.85	14,637.60	20	Pass
J140	FH	no	Red	6,467.50	112.72	83.45	6,660.09	1,500	81.49	17,139.86	20	Pass
J18	FH	no	Blue	6,370.48	14.56	53.06	6,492.95	3,000	32.93	3,959.72	20	Pass
J20	FH	no	Blue	6,352.61	16.56	60.81	6,492.95	3,000	40.2	4,387.75	20	Pass
J24	FH	no	Red	6,471.80	68.09	80.4	6,657.35	3,000	68.79	8,579.42	20	Pass
J26	FH	no	Blue	6,320.51	0	74.72	6,492.95	3,000	53.53	5,055.77	20	Pass
J28	FH	no	Blue	6,341.09	41.41	65.8	6,492.95	3,000	45.29	4,711.25	20	Pass
J42	FH	no	Green	6,591.59	99.85	81.64	6,780.00	1,500	37.39	2,011.05	20	Pass
J44	FH	no	Green	6,578.02	176.68	87.34	6,779.58	1,500	41.79	2,168.42	20	Pass
J48	FH	no	Green	6,701.21	23.94	34.55	6,780.95	3,000	-83.6	647.82	20	Fail
J58	FH	no	Red	6,471.27	212.34	79.95	6,655.78	3,000	60.36	6,366.59	20	Pass
J62	FH	no	Green	6,642.50	86.51	61.29	6,783.95	1,500	25.85	1,767.16	20	Pass
J64	FH	no	Red	6,430.00	41.65	97.85	6,655.83	3,000	74.61	6,387.30	20	Pass
J66	FH	no	Red	6,492.95	47.17	70.65	6,656.00	3,000	50.94	5,539.64	20	Pass
J74	FH	no	Green	6,582.76	30.84	85.46	6,780.00	3,000	-36.16	1,990.73	20	Fail
J94	FH	no	Red	6,395.02	234.18	114.22	6,658.62	3,000	107.38	16,653.36	20	Pass
J96	FH	no	Red	6,444.45	311.93	92.37	6,657.63	3,000	84.29	12,994.37	20	Pass
J98	FH	no	Red	6,443.18	216.23	92.88	6,657.53	3,000	84.62	12,768.64	20	Pass

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

Model Run Date: Dec 20, 2024

Table B2-8: Water Model Junction Report

[Scenario #12B Results]										
MDD DMD = 6,120.0 gpm										
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	MDD + FF	MDD+ FF	Head (ft)	Pressure (psi)
							Demand Applied (gpm)	+ IRR ADD (gpm)		
J10			Red	1	6,367.00	5.97	0.00	5.97	6,649.52	122.41
J100			Red	1	6,549.09		0.00	0.00	6,654.94	45.86
J102	FH	216.0	Red	1	6,498.44	35.67	99.38	135.05	6,651.39	66.27
J106	FH	102.0	Red	1	6,492.07	35.67	46.93	82.60	6,650.98	68.85
J108	FH	17.0	Red	1	6,496.31	35.67	7.82	43.49	6,650.06	66.62
J110	FH	68.0	Red		6,432.18	35.67	31.28	66.95	6,649.04	93.97
J112	FH	517.0	Red		6,433.00	35.67	237.86	273.53	6,649.00	93.59
J114	FH	688.0	Red		6,460.00	35.67	316.53	352.20	6,648.88	81.84
J116	FH	101.0	Red		6,452.69	35.67	46.47	82.14	6,648.91	85.02
J118	FH	191.0	Red		6,450.00	35.67	87.87	123.54	6,648.93	86.19
J12	FH	20.0	Blue	1	6,370.48		9.20	9.20	6,492.95	53.06
J120	FH	2.0	Red		6,458.83	35.67	0.92	36.59	6,648.97	82.39
J122	FH	5.0	Red		6,440.00	35.67	2.30	37.97	6,649.02	90.57
J124	FH	189.0	Red		6,515.38	35.67	86.95	122.62	6,649.63	58.17
J126	FH	114.0	Red		6,528.47	35.67	52.45	88.12	6,649.62	52.49
J128	FH	222.0	Green		6,597.16	23.02	102.14	125.16	6,779.29	78.92
J130	FH	169.0	Green		6,593.11	23.02	77.75	100.77	6,779.18	80.62
J132	FH	92.0	Green		6,595.46	23.02	42.33	65.35	6,779.18	79.61
J134	FH	239.0	Green		6,565.00	23.02	109.96	132.98	6,779.23	92.82
J136	FH	333.0	Green		6,679.27	23.02	153.20	176.22	6,779.72	43.52
J138	FH	228.0	Green		6,602.50	23.02	104.90	127.92	6,780.86	77.28
J14	FH	102.0	Red	1	6,381.00		2196.93	2196.93	6,647.31	115.39
J140	FH	245.0	Red	1	6,467.50		112.72	112.72	6,654.19	80.89
J15		0.0	Red	1	6,381.00		0.00	0.00	6,649.62	116.39
J16			Red	1	6,350.00		0.00	0.00	6,649.49	129.77
J161			Red	1	6,386.00		0.00	0.00	6,649.32	114.1
J17			Blue		6,351.40		0.00	0.00	6,492.95	61.33
J18	FH	4.0	Blue	1	6,370.48	12.72	1.84	14.56	6,492.95	53.06
J20	FH	36.0	Blue		6,352.61		16.56	16.56	6,492.95	60.81
J22			Red	1	6,433.62		0.00	0.00	6,649.02	93.33
J24	FH	148.0	Red	1	6,471.80		68.09	68.09	6,649.30	76.91
J26	FH		Blue		6,320.51		0.00	0.00	6,492.95	74.72
J28	FH	90.0	Blue		6,341.09		41.41	41.41	6,492.95	65.8
J42	FH	167.0	Green		6,591.59	23.02	76.83	99.85	6,780.00	81.64
J44	FH	334.0	Green		6,578.02	23.02	153.66	176.68	6,779.58	87.34
J46			Green		6,637.06		0.00	0.00	6,782.19	62.89
J48	FH	2.0	Green		6,701.21	23.02	0.92	23.94	6,780.95	34.55
J50			Red	1	6,377.00		0.00	0.00	6,648.22	117.52
J54			Red	1	6,425.00		0.00	0.00	6,649.04	97.08
J56			Red		6,500.00		0.00	0.00	6,649.68	64.86
J58	FH	384.0	Red		6,471.27	35.67	176.67	212.34	6,649.04	77.03
J60	Tank		Green		6,806.00		0.00	0.00	6,806.00	0
J62	FH	138.0	Green		6,642.50	23.02	63.49	86.51	6,783.95	61.29
J64	FH	13.0	Red		6,430.00	35.67	5.98	41.65	6,649.14	94.95
J66	FH	25.0	Red		6,492.95	35.67	11.50	47.17	6,649.55	67.85
J68			Red		6,440.00		0.00	0.00	6,649.21	90.65
J70			Red	1	6,490.00		0.00	0.00	6,650.76	69.66
J72			Green		6,533.66		0.00	0.00	6,780.00	106.74
J74	FH	17.0	Green		6,582.76	23.02	7.82	30.84	6,780.00	85.46
J76	RZ Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	GZBPS		Red	1	6,607.50		0.00	0.00	6,660.73	23.06
J80			Green		6,607.54		0.00	0.00	6,779.19	74.38
J82			Green		6,593.54		0.00	0.00	6,779.19	80.44
J84			Blue	1	6,339.66		0.00	0.00	6,492.96	66.42
J86			Blue	1	6,286.00		0.00	0.00	6,493.00	89.69
J88	RZBPS		Blue		6,350.00		0.00	0.00	6,492.95	61.94
J90			Blue	1	6,346.49		0.00	0.00	6,492.95	63.46
J92			Red	1	6,380.00		0.00	0.00	6,649.81	116.91
J94	FH	509.0	Red	1	6,395.02		234.18	234.18	6,649.33	110.19
J96	FH	678.0	Red	1	6,444.45		311.93	311.93	6,648.98	88.62
J98	FH	470.0	Red	1	6,443.18		216.23	216.23	6,648.98	89.17
6,875.0						806.90	5,312.98	6,119.96		

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF, Costco FF Alternative

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 5 ft/sec

Max Velocity = 3.47 ft/sec

Criteria met? yes

Table B2-9: Water Model Pipe Report

Table B2-9: Water Model Pipe Report									[Scenario #12B Results]				
									MOD+FF OUTPUT				
	Description	Zone		From			Diameter		Flow	Velocity	Headloss	HL/1000	
ID	(Char)	(Char)	Phase (Int)	Node	To Node	Length (ft)	(in)	Roughness	(gpm)	(ft/s)	(ft)	(ft/k-ft)	Status
P-1		Red	1	J15	J161	83.66	12	120	1,116.92	3.17	0.3	3.61	Open
P-10		Green		J46	J48	2,269.53	12	120	402.91	1.14	1.24	0.55	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-526.28	1.49	1.27	0.9	Open
P-13		Red		J56	J58	1,156.14	12	120	408.19	1.16	0.65	0.56	Open
P-14		Green		J60	J62	5,824.79	12	120	1,146.22	3.25	22.05	3.78	Open
P-141	Supply 4	Green		T2-GZ	J60	1.00	12	120	0	0	0	0	Closed
P-15		Red		J64	J66	2,301.39	12	120	-222.16	0.63	0.42	0.18	Open
P-16		Red		J68	J70	2,127.41	12	120	-470.39	1.33	1.55	0.73	Open
P-17		Green		J72	J74	945.67	12	120	0.00	0	0	0	Open
P-18		Red	1	J76	J78	879.01	24	120	4,892.02	3.47	1.67	1.9	Open
P-181	Supply 3	Red		T1-RZ	J76	1.00	24	120	0.00	0	0	0	Closed
P-19		Green		J80	J82	227.74	12	120	0.00	0	0	0	Open
P-2		Red	1	J10	J16	777.55	24	120	526.28	0.37	0.02	0.03	Open
P-20		Blue	1	J84	J86	6,218.83	16	120	-81.73	0.13	0.04	0.01	Open
P-21		Blue		J26	J88	1,436.03	12	120	-2.04	0.01	0	0	Open
P-22		Blue		J28	J90	342.27	12	120	-39.37	0.11	0	0.01	Open
P-23		Blue	1	J90	J84	1,172.78	16	120	-81.73	0.13	0.01	0.01	Open
P-24		Blue	1	J18	J90	1,011.16	16	120	-42.36	0.07	0	0	Open
P-25		Blue		J17	J88	1,707.01	24	120	0.00	0	0	0	Open
P-26		Blue		J88	J20	253.09	16	120	-4.34	0.01	0	0	Open
P-27		Blue	1	J12	J18	1,454.96	12	120	-6.90	0.02	0	0	Open
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P-291	Zone Bndy	Blue		J88	P1	68.07	24	120	0.00	0	0	0	Open
P-292	Zone Bndy	Red		P1	J16	61.69	24	120	0.00	0	0	0	Open
P293	Zone Bndy	Blue	1	J88	P1_PH1	64.87	24	120	0.00	0	0	0	Open
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-3		Blue		J18	J20	646.08	16	120	20.90	0.03	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-838.49	1.34	0.49	0.52	Open
P-31		Red	1	J54	J94	1,101.20	16	120	-570.83	0.91	0.28	0.26	Open
P-32		Red	1	J96	J54	685.74	16	120	-329.09	0.53	0.06	0.09	Open
P-33		Red	1	J98	J96	257.42	16	120	-17.16	0.03	0	0	Open
P-34		Red		J100	J56	2,226.75	12	120	888.27	2.52	5.26	2.36	Open
P-35		Red	1	J102	J100	970.07	12	120	-1,124.85	3.19	3.55	3.65	Open
P-36		Red	1	J106	J102	144.99	12	120	-989.80	2.81	0.42	2.89	Open
P-37		Red	1	J70	J106	87.97	12	120	-907.20	2.57	0.22	2.45	Open
P-38		Red	1	J108	J70	1,096.69	12	120	-436.81	1.24	0.7	0.63	Open
P-39		Red	1	J24	J108	1,454.20	12	120	-393.32	1.12	0.76	0.52	Open
P-4		Red	1	J22	J24	781.22	12	120	-325.23	0.92	0.29	0.37	Open
P-40		Red	1	J22	J98	1,043.14	16	120	199.07	0.32	0.04	0.04	Open
P-41		Red		J110	J112	393.61	12	120	147.37	0.42	0.03	0.08	Open
P-42		Red		J112	J22	233.82	12	120	-126.16	0.36	0.01	0.06	Open
P-43		Red		J68	J110	1,036.73	12	120	214.32	0.61	0.18	0.17	Open
P-44		Red		J114	J68	1,405.64	12	120	-256.07	0.73	0.33	0.24	Open
P-45		Red		J116	J114	738.3	12	120	96.13	0.27	0.03	0.04	Open
P-46		Red		J118	J116	148.99	12	120	178.27	0.51	0.02	0.12	Open
P-47		Red		J120	J118	481.07	12	120	159.26	0.45	0.05	0.1	Open
P-48		Red		J58	J120	435.82	12	120	195.85	0.56	0.06	0.14	Open
P-49		Red		J122	J118	1,191.76	12	120	142.54	0.4	0.1	0.08	Open
P-5		Blue		J26	J28	227.24	12	120	2.04	0.01	0	0	Open
P-50		Red		J64	J122	917.58	12	120	180.51	0.51	0.11	0.12	Open
P-51		Red		J66	J56	505.3	12	120	-269.33	0.76	0.13	0.26	Open
P-52		Red		J56	J124	323.43	12	120	210.74	0.6	0.05	0.16	Open
P-53	Zone Bndy	Red		J126	J72	384.78	12	120	0.00	0	0	0	Closed
P-54		Red		J124	J126	327.74	12	120	88.12	0.25	0.01	0.03	Open
P-55		Green		J74	J42	355.34	12	120	-30.84	0.09	0	0.01	Open
P-56		Green		J44	J128	1,616.96	12	120	221.51	0.63	0.29	0.18	Open
P-57		Green		J130	J128	2,911.06	12	120	-96.35	0.27	0.11	0.04	Open
P-58		Green		J132	J130	186.16	12	120	4.42	0.01	0	0	Open
P-59		Green		J80	J132	633.30	12	120	69.77	0.2	0.01	0.02	Open
P-60		Green		J134	J80	1,597.08	12	120	69.77	0.2	0.03	0.02	Open
P-61		Green		J136	J134	3,230.69	12	120	202.75	0.58	0.49	0.15	Open
P-62		Green		J48	J136	2,523.92	12	120	378.97	1.08	1.23	0.49	Open
P-63		Green		J138	J42	948.27	12	120	528.88	1.5	0.86	0.9	Open
P-64		Green		J46	J138	985.08	12	120	656.80	1.86	1.33	1.35	Open
P-65		Green		J62	J46	538.12	12	120	1,059.71	3.01	1.76	3.27	Open
P-66		Red	1	J140	J78	3,778.95	20	120	-2,878.89	2.94	6.54	1.73	Open
P-661		Red		J78	P2	100.00	12	120	0.00	0	0	0	Open
P-662		Green		P2	J82	100.00	12	120	0.00	0	0	0	Open
P-67		Red	1	J92	J140	2,723.50	20	120	-2,766.17	2.82	4.38	1.61	Open
P-68		Red	1	J78	J100	2,188.12	16	120	2,013.12	3.21	5.79	2.65	Open
P-69		Red	1	J10	J15	1,497.69	24	120	-810.76	0.57	0.1	0.07	Open
P-70		Blue		J12	J88	1,592.12	12	120	-2.30	0.01	0	0	Open
P-71		Red	1	J15	J92	570.16	24	120	-1,927.68	1.37	0.19	0.34	Open
P-72		Red	1	J161	J14	526.76	12	120	1,150.40	3.26	2.01	3.81	Open
P-74		Red	1	J14	J50	503.93	12	120	-768.02	2.18	0.91	1.8	Open
P-75		Red	1	J94	J161	1,617.47	12	120	33.48	0.09	0.01	0.01	Open
P-76		Red	1	J50	J54	3,892.99	12	120	-241.74	0.69	0.83	0.21	Open
P-9		Green		J42	J44	788.06	12	120	398.19	1.13	0.42	0.53	Open
P-91		Red		J10	J14	1,111.51	8	120	278.52	1.78	2.21	1.99	Open
SUPPLY1	Supply 1	Blue	1	FEED1	J86	1.00	16	120	81.73	0.13	0	0	Open
SUPPLY2	Supply 2	Blue		FEED2	J17	887.22	24	120	0.00	0	0	0	Closed
SUPPLY3	Supply 3	Red	1	FEED3	J76	1	24	120	4,892.02	3.47	0	1.95	Open
SUPPLY4	Supply 4	Green		FEED4	J60	1	12	120	1,146.22	3.25	0	3.91	Open

Dawson Trails for Westside

Potable Water Model
Water Model Scenarios Summary
Date: December 2024
MSK Project #: 52-001-01
Calc'd by: DLT

PRELIMINARY
Not for the report
12/20/24

Assumptions:

- 1. These scenarios are based on the lower ADD value of 265 gpd/SFE requested by CRW to account for the Town's landscaping ordinance.
- 2. CRW does not want dedicated FF pumps in the RZ BPS. Fire flows will be handled by the tanks.

Summary of Scenario Results

A		B		C	D	E	F	G	H	I	J	K	L	M	N	O	Pass/Fail	Notes
No.	Run	Model Date	Development Area	Model Type	Demand Scenario	Max FF Demand	Red Zone Tank	Red Zone BPS	Blue Zone FEED1	Blue Zone FEED2	ID(s)	Pressure	Pass/Fail	ID(s)	Velocity	Pass?		
0	yes	12/20/24	Phase 1	SS	static - no demands	n/a	online	offline	16", closed	24", closed	n/a	n/a	n/a	n/a	n/a	n/a		
3	yes	12/20/24	Phase 1	SS	PHD+IRR	n/a	online	offline	16", closed	24", closed			see report	n/a	0.53	yes		
4A	yes	12/20/24	Phase 1	SS	MDD+IRR+FF	standard	online	offline	16", closed	24", closed			see report	n/a				Costco (J14) FF=2,000 gpm
4B	yes	12/20/24	Phase 1	SS	MDD+IRR+FF (Costco Alt)	2,150 (J14)	online	offline	16", closed	24", closed			see report	n/a	3.22	yes		Residual pressure at J14 must be 65 psi or higher
11	yes	12/20/24	Buildout	SS	PHD+IRR	n/a	online	offline	16", open	24", closed	n/a	n/a	see report	n/a	n/a	see report		Rez 1, 3, 4 are open. All PS are closed. Rez is closed
12A	yes	12/20/24	Buildout	SS	MDD+IRR+FF	standard	online	offline	16", open	24", closed	n/a	n/a	see report	n/a	n/a	n/a		Costco (J14) FF=2,000 gpm
12B	yes	12/20/24	Buildout	SS	MDD+IRR+FF (Costco Alt)	2,150 (J14)	online	offline	16", open	24", closed	J14	update	see report	n/a	n/a	n/a		Residual pressure at J14 must be 65 psi or higher

Model History:

No.	Date	Changes from Previous Model	Scenarios Run
6	12/20/24	Add a RZ junction and two 12" RZ pipes. No changes to demands, feeds.	See above
5	6/30/24	Update pipes/junctions in Phase 1 and BZ feed (only FEED2 for Ph 1). Added irrigation demand to Ph 1 and buildout.	See above
4	6/8/24	Move J10, added 8" line within Costco area, close 16" FEED, open 24" FEED2	5A
3	10/7/23	Found P-71 was closed in Scenarios 11,12,13; opened and reran. Changed P-293 and P-294 to 24".	11,12,13
2	9/29/23	Responded to TCR comments on Crystal Valley Connection Submittal by EMK. Added the revised RZBPS location to J-88 and associated BZ and RZ pipe changes. Also increased FEED1 pipe to 16" based on Master Plan.	3,4,5,11,12,13
1	7/20/23, 7/24/23	Revised RZBPS pumping scenarios to MDD demand over a 12-hour period based on CRW's comments. Reduced ADD to 265 gpd/SFE also based on CRW's comments, which changed MDD and PHD. Revised for both Ph 1 and buildout. Adjusted pipe sizes to meet criteria.	3,4,5,11,12,13



Dawson Trails Infrastructure North Filing 1
Annual Estimated Irrigation Demand

Area Name	Trees in Native				
	Drip / Low Flow	Rotor / Rotary	Drip / Low Flow	Annual Water Use (Gal)	Annual Water Use (Acr/Ft)
	Trees & Shrubs (Acres)	Native Seed (Acres)	Trees & Shrubs (Acres)		
Dawson Trail North Infra	3.65	0.36	0.52	1,764,077	5.4
Temporary Irrigation	0.00	6.39	0.00	2,374,543	7.3
TOTAL	3.65	6.75	0.52	4,138,619	12.70
					Peak Flow Required (GPM)
					61.6
					82.9
					144.53



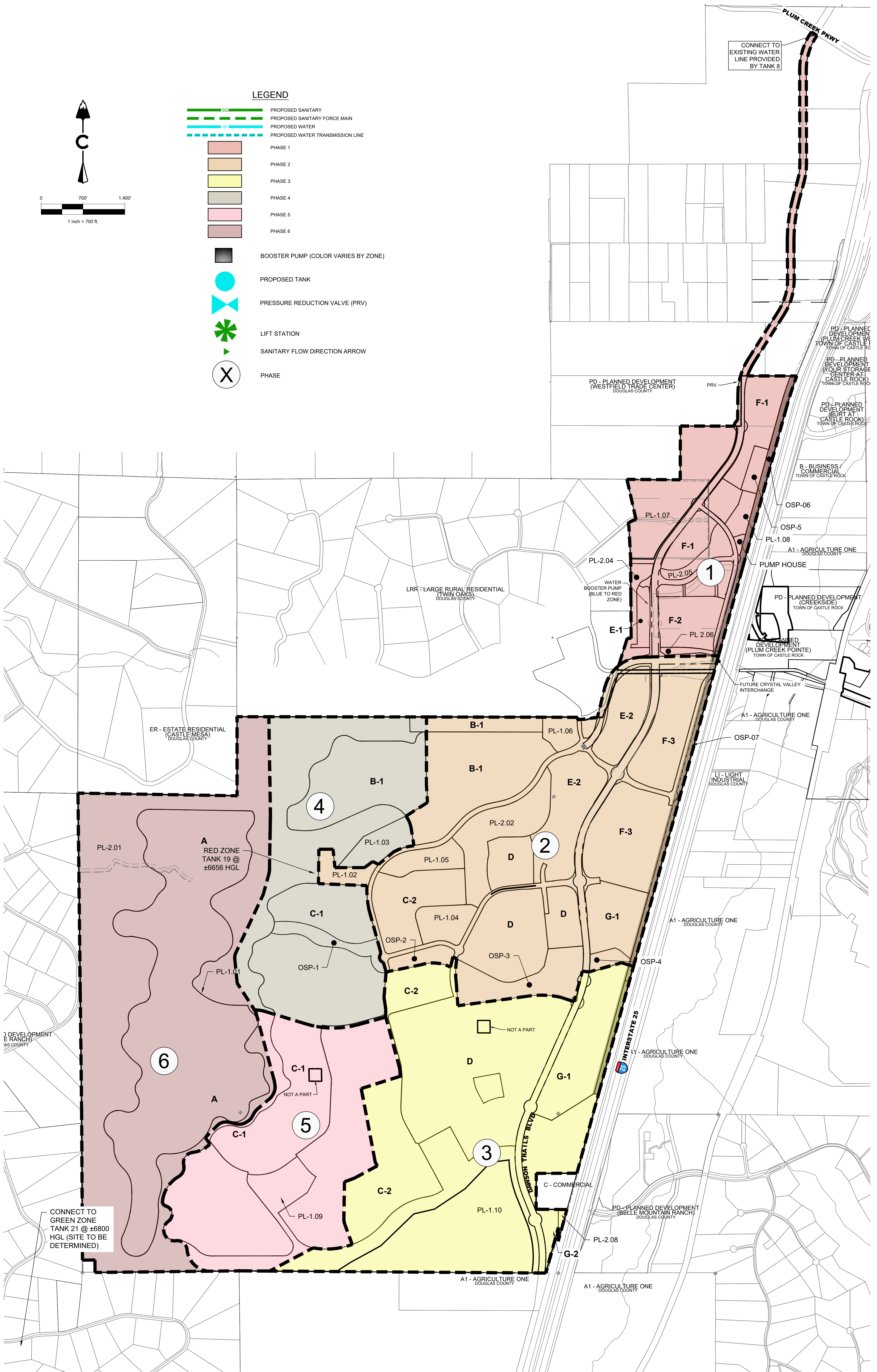
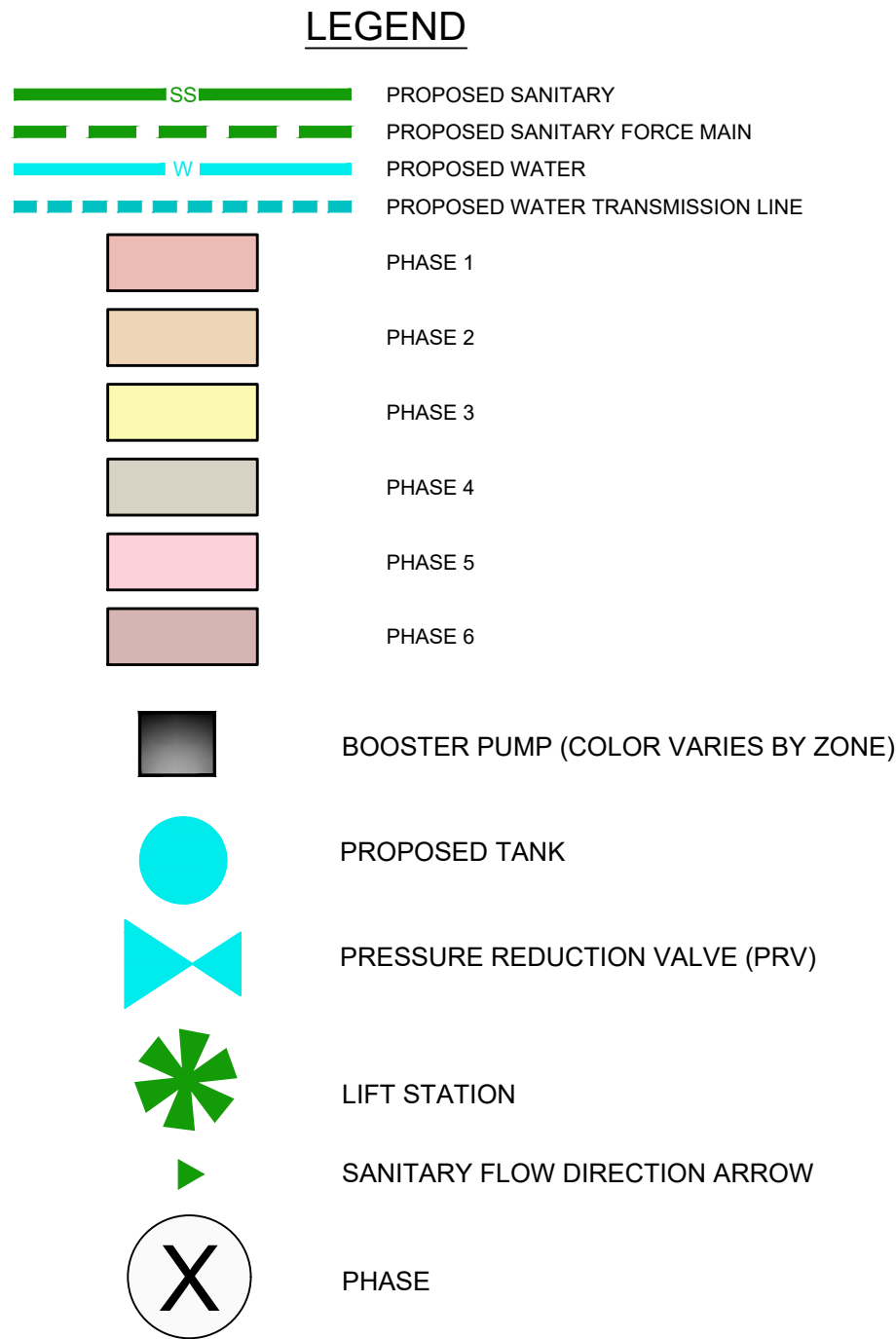
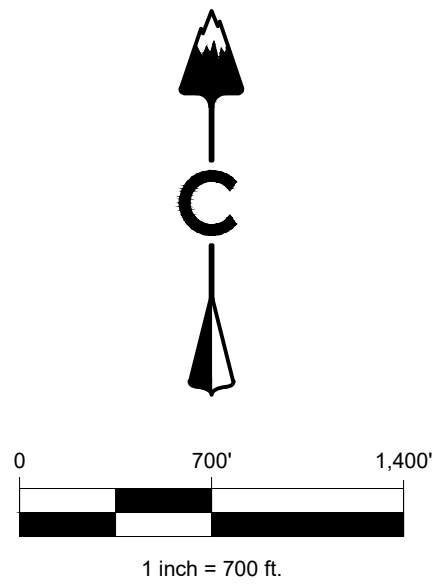
Appendix C

Sanitary Calculations



Appendix E

Maps



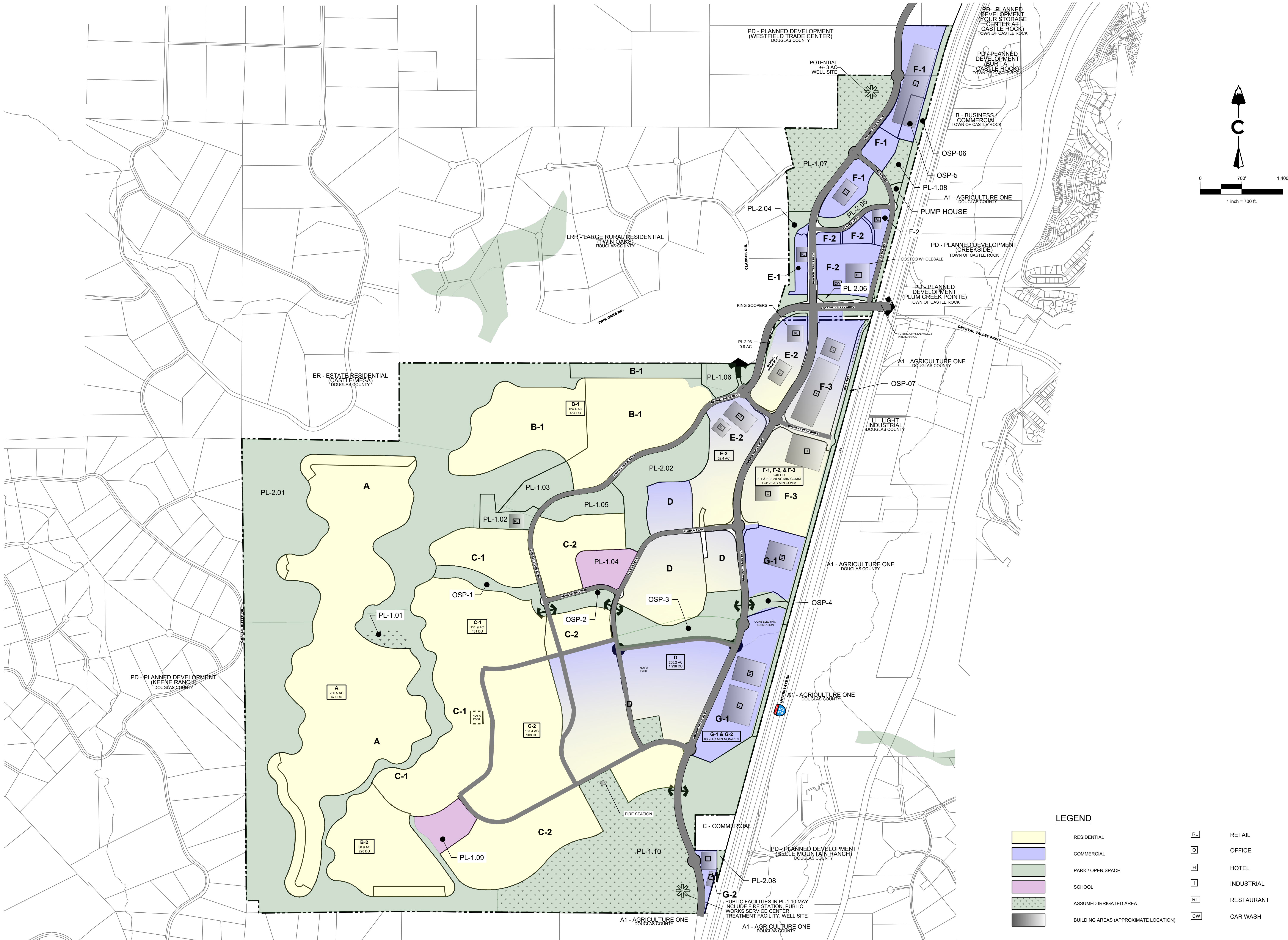
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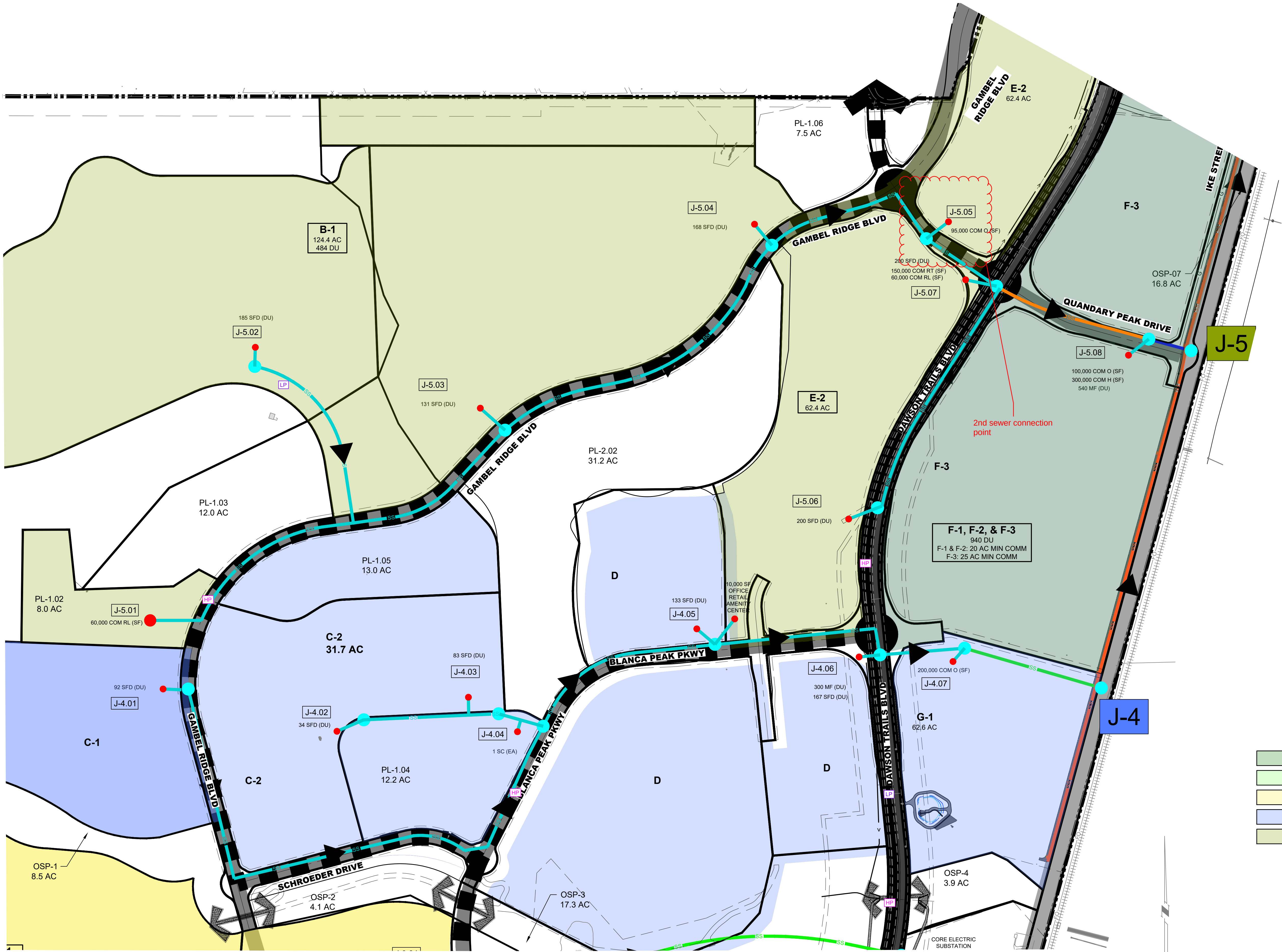
DAWSON TRAILS

OVERALL UTILITY & PHASING MAP

DATE: 8/20/2024
CREATED BY: CGV
JOB NO. 20-224
SHEET
1 OF 5



2022-10-10 10:41:13 PM \\server\David Ott\Projects\2024\2024-Dawson\Civil\Reports\Final Utility Report\Wastewater Drawings OVERALL WASTEWATER MAP-F1.dwg



JUNCTION TABLE				
JUNCTION	RESIDENTIAL (GPD)	NON-RESIDENTIAL	TOTAL PEAK FLOW (GPM)	CUMULATIVE TOTAL PEAK
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	1,000	98	258
J-4.06	72,400	-	257	514
J-4.07	-	20,000	71	585
J-4	-	-	-	2,948
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	-	-	-	4,823

SUMMARY TABLE			
	USE	QUANTITIES	TOTALS
RESIDENTIAL	MULTIFAMILY (DU)	1,240	2,233
	SINGLE FAMILY (DU)	993	
NON-RESIDENTIAL	SCHOOL (EA)	1	975,000
	PARKS (SFE)	-	
	CAR WASH (AC)	-	
	INDUSTRIAL (SF)	-	
	HOTEL (SF)	300,000	
	RESTAURANTS (SF)	150,000	
	RETAIL/ OFFICE (SF)	525,000	

NOTES:
1. SEE APPENDIX C FOR DETAILED SANITARY SEWER CALCULATIONS

LEGEND

	BASIN 1
	BASIN 2
	BASIN 3
	BASIN 4
	BASIN 5

LEGEND

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

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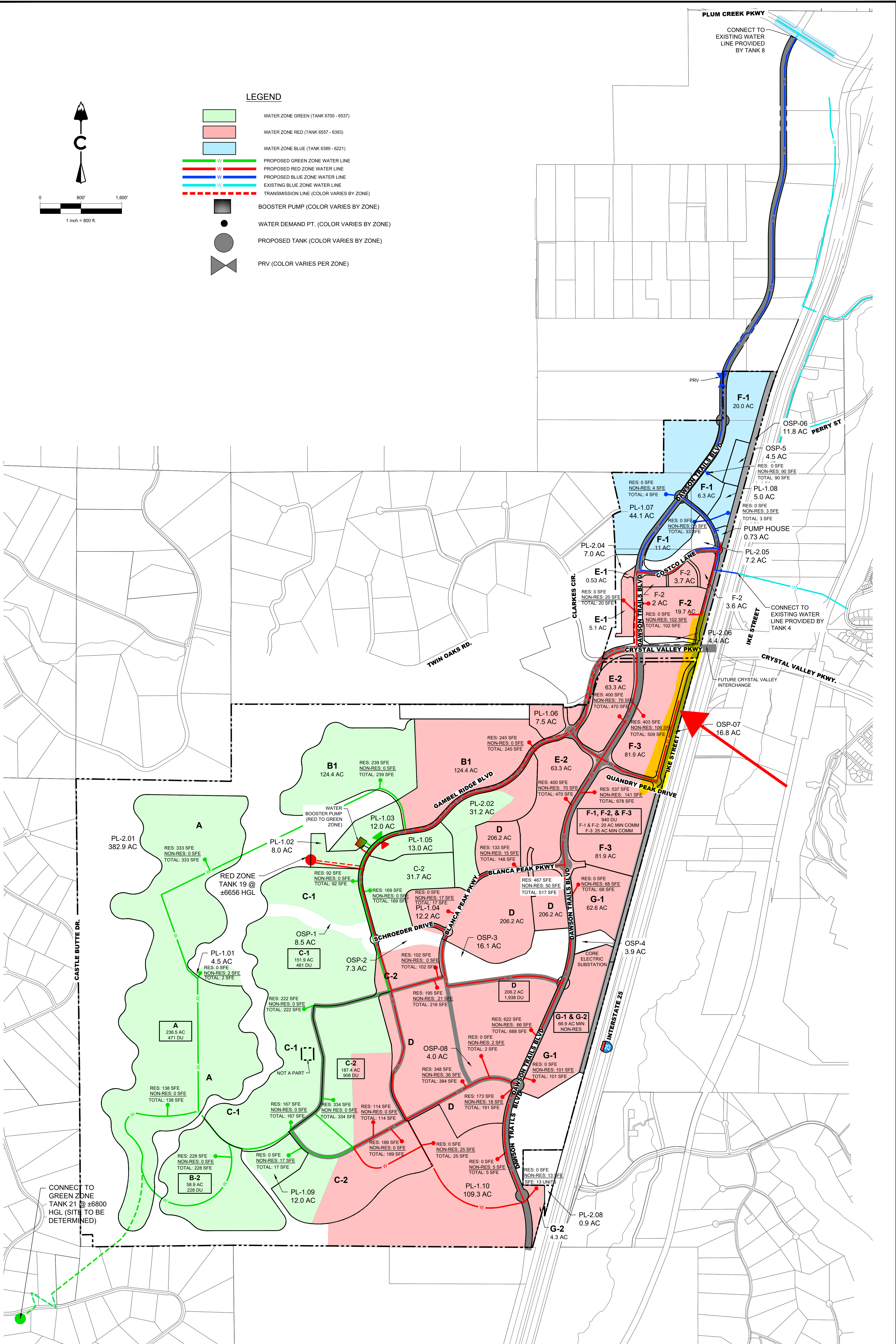


OVERALL WASTEWATER MAP
(1 OF 1)

DAWSON TRAILS

8/15/2024
CREATED BY: CGV
JOB NO.
20-224
SHEET
1 OF 1

2024.05.11 4:38 PM X:\20-224 Dawson/Civil/Reports_Overall/Utility/Master Map.dwg OVERALL WATER MAP.dwg Tony Yuan



CORE CONSULTANTS, INC.
3473 S. BROADWAY
ENGLEWOOD, CO 80113
303.703.4444
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LAND DEVELOPMENT
ENERGY
PUBLIC INFRASTRUCTURE

DAWSON TRAILS

OVERALL WATER MAP

DATE: 8/21/2024
CREATED BY: CGV
JOB NO. 20-224
SHEET
3 OF 5



Legend

● Junction

TYPE

● Active

● Domain

○ Inactive

— Pipe

— Active

— Domain

— Inactive

ZONE

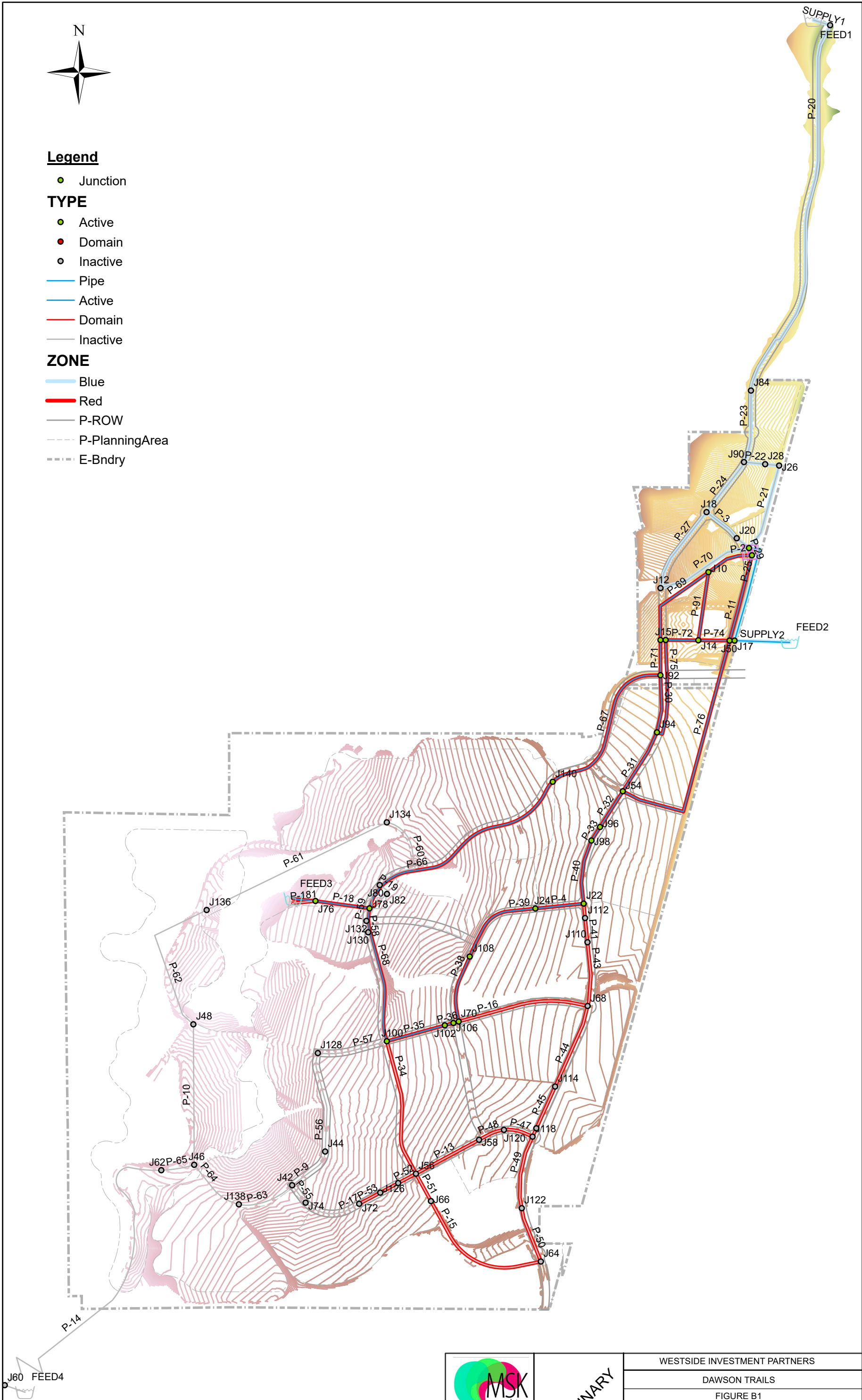
— Blue

— Red

— P-ROW

--- P-PlanningArea

--- E-Bndry





7157 S. Andes Cir
Centennial, CO 80016
303-903-0918

PRELIMINARY

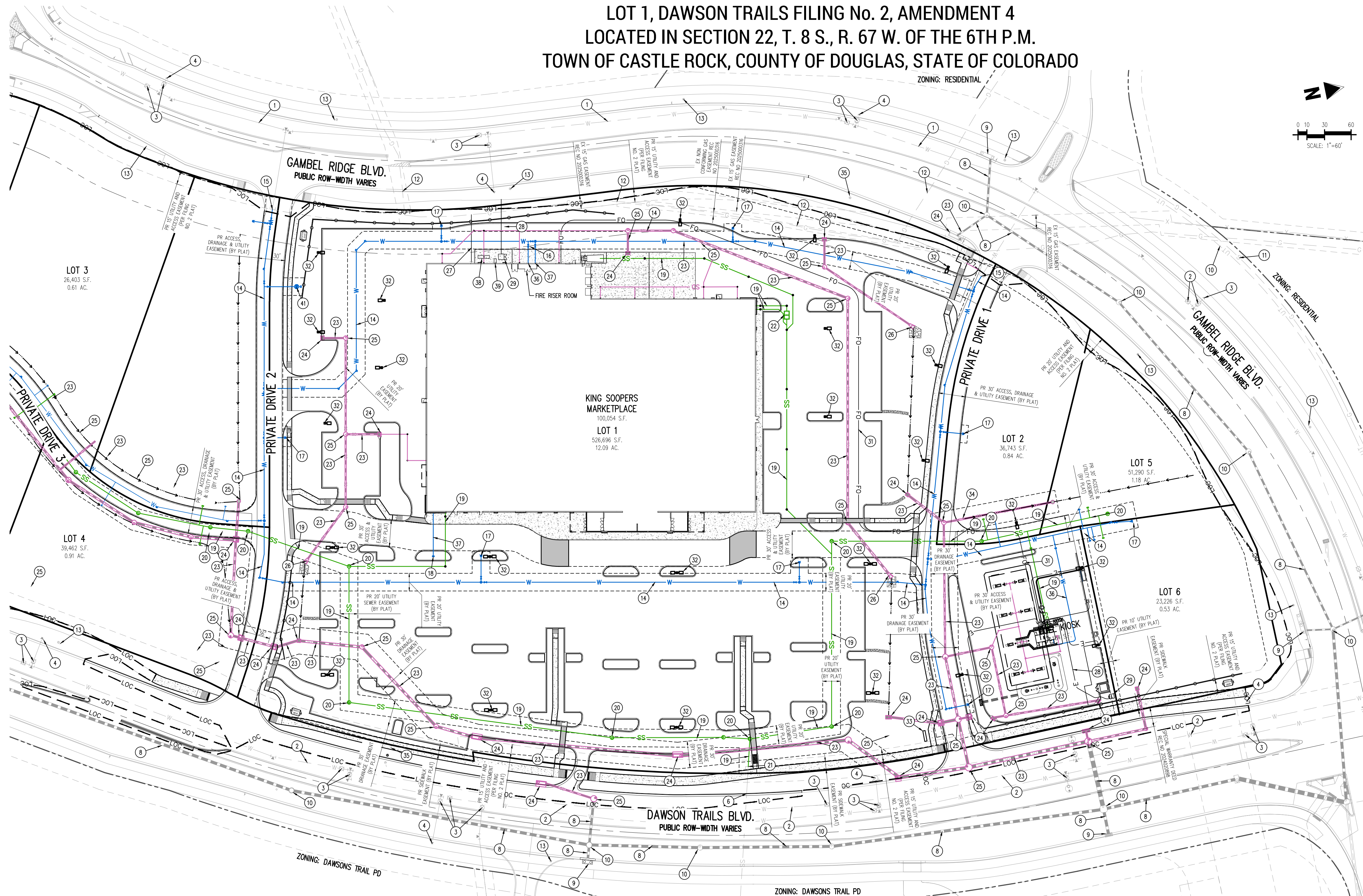
WESTSIDE INVESTMENT PARTNERS	
DAWSON TRAILS	
FIGURE B1	
PHASE 1 WATER DISTRIBUTION SYSTEM MODEL	
PIPE & JUNCTION ID	
DECEMBER 2024	JN: 52-001-01

APPENDIX H

Maps and Plans

TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO

ZONING: RESIDENTIAL



UTILITY SCHEDULE

- | | | | | | |
|----|---|----|---|----|---|
| 1 | EXISTING 20" PVC WATER LINE | 17 | PROPOSED FIRE HYDRANT | 34 | PROPOSED STUB FOR FUTURE CONNECTION |
| 2 | EXISTING 16" PVC WATER LINE | 18 | PROPOSED FDC | 35 | RELOCATE SITE LIGHT (BY OTHERS) |
| 3 | EXISTING WATER VALVE | 19 | PROPOSED SANITARY SEWER | 36 | PROPOSED WATER SERVICE LINE TO WATER METER LOCATED INSIDE OF BUILDING |
| 4 | EXISTING FIRE HYDRANT | 20 | PROPOSED SANITARY SEWER MANHOLE | 37 | PROPOSED FIRE SERVICE LINE |
| 5 | EXISTING WATER METER | 21 | REMOVE PLUG AND CONNECT TO EXISTING 8" SANITARY SEWER | 38 | PROPOSED GENERATOR |
| 6 | EXISTING 8" PVC SANITARY SEWER | 22 | PROPOSED SANITARY SEWER GREASE INTERCEPTOR | 39 | PROPOSED EUSERC |
| 7 | EXISTING SANITARY SEWER MANHOLE | 23 | PROPOSED STORM SEWER | 40 | PROPOSED ELECTRICAL SWITCH GEAR VAULT |
| 8 | EXISTING STORM SEWER | 24 | PROPOSED STORM SEWER INLET | 41 | PROPOSED IRRIGATION METER |
| 9 | EXISTING STORM SEWER INLET | 25 | PROPOSED STORM SEWER MANHOLE | | |
| 10 | EXISTING STORM SEWER MANHOLE | 26 | PROPOSED CONCRETE FLARED END SECTION | | |
| 11 | EXISTING UNDERGROUND TELEPHONE | 27 | PROPOSED GAS LINE | | |
| 12 | EXISTING GAS LINE (AS-BUILT CONDITION WITHIN NON-CONFORMING EASEMENT) | 28 | PROPOSED UNDERGROUND ELECTRICAL | | |
| 13 | EXISTING SITE LIGHT | 29 | PROPOSED ELECTRICAL TRANSFORMER; G.C. TO COORDINATE INSTALLATION WITH UTILITY COMPANY | | |
| 14 | PROPOSED 8" PVC WATER LINE | 31 | PROPOSED FIBER OPTIC LINE | | |
| 15 | CONNECT TO EXISTING WATER MAIN | 32 | PROPOSED SITE LIGHTING | | |
| 16 | PROPOSED WATER METER | 33 | PROPOSED MONUMENT SIGN (BY OTHERS) | | |

UTILITY LEGEND

- | | |
|---|---------------------------------------|
|  | EXISTING WATER LINE |
|  | PROPOSED WATER LINE |
|  | EXISTING SANITARY SEWER |
|  | PROPOSED SANITARY SEWER |
|  | EXISTING STORM SEWER (LESS THAN 12") |
|  | EXISTING STORM SEWER (12" AND LARGER) |
|  | PROPOSED STORM SEWER (LESS THAN 12") |
|  | PROPOSED STORM SEWER (12" AND LARGER) |
|  | PROPOSED UNDERGROUND ELECTRICAL |
|  | PROPOSED FIBER OPTIC LINE |
|  | EXISTING UNDERGROUND TELEPHONE |
|  | PROPOSED UNDERGROUND TELEPHONE |
|  | EXISTING GAS LINE |
|  | PROPOSED GAS LINE |
|  | EXISTING ELECTRIC LIGHT POLE |
|  | PROPOSED SITE LIGHTING |
|  | PROPOSED PAD MOUNTED TRANSFORMER |
|  | EXISTING SANITARY SEWER MANHOLE |
|  | PROPOSED SANITARY SEWER MANHOLE |
|  | EXISTING STORM SEWER INLET |
|  | EXISTING STORM SEWER MANHOLE |
|  | PROPOSED STORM SEWER MANHOLE |
|  | PROPOSED STORM INLET |
|  | EXISTING WATER VALVE |
|  | EXISTING FIRE HYDRANT |
|  | EXISTING WATER METER |
|  | PROPOSED WATER VALVE |
|  | PROPOSED WATER METER |
|  | PROPOSED FIRE HYDRANT |

SITE LEGEND

- | | |
|--|----------------------------------|
| | PROPERTY BOUNDARY LINE |
| | ADJACENT PROPERTY BOUNDARY LINE |
| | EXISTING EASEMENT LINE |
| | PROPOSED EASEMENT LINE |
| | PROPOSED EDGE OF GRAVEL |
| | PROPOSED CURB AND GUTTER |
| | CURB AND GUTTER BY OTHERS |
| | PROPOSED CONCRETE SIDEWALK |
| | ENHANCED CONCRETE PAVEMENT |
| | LIMITS OF ARCHITECTURAL SCOPE |
| | ADA PATH OF TRAVEL |
| | PROPOSED SIGHT DISTANCE TRIANGLE |
| | PROPOSED SWALE |
| | PROPOSED RETAINING WALL |
| | PARKING COUNT |
| | SIGN BY OTHERS |
| | PROPOSED SIGN |
| | PROPOSED PIPE BOLLARD |
| | PROPOSED ADA PARKING SYMBOL |
| | LIGHT POLE BY OTHERS |
| | PROPOSED SITE LIGHTING |
| | PROPOSED SANITARY SEWER MANHOLE |
| | MANHOLE BY OTHERS |
| | STORM SEWER INLET BY OTHERS |
| | PROPOSED STORM SEWER MANHOLE |
| | PROPOSED STORM INLET |
| | WATER METER BY OTHERS |
| | PROPOSED WATER METER |
| | FIRE HYDRANT BY OTHERS |
| | PROPOSED FIRE HYDRANT |
| | PROPOSED CART CORRAL |

UTILITY NOTES

1. THIS SITE IS LOCATED WITHIN THE TOWN OF CASTLE ROCK RED WATER PRESSURE ZONE.
2. ALL PROPOSED EASEMENTS MUST BE RECORDED PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.
3. ALL UTILITY EASEMENTS FOR WATER AND WASTEWATER LINES SHALL BE FOR THE EXCLUSIVE USE OF THE TOWN SO THAT ACCESS AND MAINTENANCE MAY BE PERFORMED.
4. THE MINIMUM SEPARATION BETWEEN WATERLINES, SANITARY SEWER AND STORM SEWER LINES IS 10 FEET.
5. THE MINIMUM SEPARATION BETWEEN WATER SERVICE LINES IS 5 FEET.
6. ANY TIE-IN, CROSSING OR LAYOUT OF TOWN CRITICAL INFRASTRUCTURE WILL REQUIRE A TIME AND MATERIALS PERMIT (TOWNSHIP) WITH FEES REQUIRED PRIOR TO CONSTRUCTION.

SDP25-0015 - SITE DEVELOPMENT PLAN
LOT 1, DAWSON TRAILS FILING No. 2, AMENDMENT 4

Galloway

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Greenwood Village, CO 80111
303.770.8884
GallowayUS.com

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SITE DEVELOPMENT PLAN
LOT 1, DAWSON TRAILS FILING No. 2, AMENDMENT 4

KING SOOPERS #165

CRYSTAL VALLEY PKWY & DAWSON TRAILS BLVD
CASTLE ROCK, COLORADO

[illegible]

Project No:	KSS000165
Drawn By:	RDG
Checked By:	JRR
Date:	

UTILITY PLAN