



**PRELIMINARY UTILITY REPORT
FOR
DAWSON TRAILS – TRACT O & H**

Castle Rock, Colorado
Town of Castle Rock Project SDP23-0040

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EMK Job. No. 13393

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UTILITY REPORT APPROVAL BLOCKS

Engineer's Statement:

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

Signature: _____

Registered Professional Engineer

State Of Colorado No. _____

(Affix Seal)

Owner/Developer's Statement:

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

Name of Developer

Authorized Signature

I. Project Location and Description

A. Site Location

Tract O and H of Dawson Trails is located west of Interstate 25, just south of the proposed Crystal Valley Interchange. More specifically, it is located in the east half of section 28, west half of section 27, Township 8 South, Range 67 West of the 6th Principal Meridian in the Town of Castle Rock. A site location map is included in Appendix F. Paved streets from a defunct development project in the 1980s exist in the area. Future phases of the Dawson Trails development will surround Tract O and H.

B. Description of Property and Land Use

Tract O and H cover approximately 56 acres, distributed across a northern area and southern area. No phasing is planned with this portion of the project.

The proposed land use consists of approximately 256 lots, with 166 of those being a single-family detached product and 90 being an attached product.

No schools, commercial buildings or industrial buildings are planned for the site.

A stock pond fed by the North Dawson tributary exists on the southern fringe of Tract O and H. This stock pond will be removed and the major drainageway will be improved as part of a separate project.

II. Calculated Water Demands

A. Average Daily Demands (ADD)

Average daily demand is calculated based upon section 4.4.1 of the *Town of Castle Rock Water System Design 2018 Criteria Manual*. Per the latest technical memorandum for the *Dawson Trails – Crystal Valley Water Connection* by MSK Consulting, the average daily demand for Dawson Trails has been reduced to 265 gpd per/SFE. This lower value accounts for the water conservation requirements within Dawson Trails and the Town's ordinance that limits the amount of outdoor irrigated area per new home. Demand calculations can be found in Appendix A.

B. Max Day Demands (MDD)

A peaking factor of 2.5 is applied to ADD to calculate MDD per section 4.4.1.2 of the water manual. Irrigation has not been broken out from the ADD, but may be separated out in future submittals if it is deemed significant enough.

C. Peak Hour Demands (PHD)

A peaking factor of 5.5 is applied to ADD to calculate PHD per section 4.4.1.2 of the water manual. Irrigation has not been broken out from the ADD, but may be separated out in future submittals if it is deemed significant enough.

III. Existing Water System

A. Existing Distribution System

The site does not have an active water system. Portions of an old water system that was installed as part of a development project in the 1980s still exists on the site. This existing system is not operational and will be abandoned or removed.

B. Existing Supply Facilities

A water tank that was part of the defunct 1980s development project still exists on the site. This tank, Tank 19, will be removed and replaced with a new tank at the same location.

IV. Proposed Water System

A. Proposed Distribution System

Piping in residential streets will deliver water to individual lots. A 12-inch red zone water main is proposed in Collector Road C that runs through Tract O and H. Eight-inch distribution pipes in the northern and southern sections of Tract O and H will connect to this 12-inch watermain. Both the north and south systems will have two connection points to provide looping. Tract O and H is included in an overall area identified as area 47 in Figure 3.7 of the *Town of Castle Rock Water Master Plan 2023*. Tract O and H will be one piece of the overall Dawson Trails development. Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer.

B. Proposed Supply Facilities

The Dawson Trails development will be fed by water supply infrastructure from the north. A 24-inch blue zone pipe is proposed across I-25 from Crystal Valley Ranch. A red zone pump station will use the proposed 24-inch connection to feed Dawson Trails water infrastructure to the south. Red zone Tank 19 and green zone Tank 21 will be constructed as part of a separate project to serve Dawson Trails.

C. Land Dedication Requirements

No land dedication is required for the Tract O and H portion of the development.

V. Proposed Water System Analysis and Modeling

A. Hydraulic Models

Bentley WaterCAD was used to evaluate the hydraulic characteristics of the system. Water demands were applied at the junctions in the system that were closest to blocks of proposed lots. Demand calculations and junctions that these demands were applied to can be found in Appendix A.

The Tract O and H water system is part of an overall Dawson Trails system being studied as part of a separate project by MSK Consulting. Assumed HGLs were obtained from MSK Consulting and used in the Tract O and H model.

B. Hydraulic Modeling Scenarios

The four scenarios prescribed by the *Town of Castle Rock Water System Design 2018 Criteria Manual* were studied in this report. These scenarios are and their pressure requirements are presented in the following table.

Hydraulic Condition	Pressure (psi)
Minimum static pressure with zero demand (20% tank stage)	43
Maximum static pressure with zero demand (100% tank stage)	125
Minimum dynamic pressures (based on 20% tank stage):	
Max Daily Demand + fire flow (see note below)	20
Peak Hour Demand (see note below)	35

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

C. Hydraulic Modeling Output and Required Schematics

A summary of the results of the hydraulic analysis in these four scenarios is presented in the following paragraphs. A model schematic, along with output tables for each scenario, are included in Appendix C.

Scenario 1 – Minimum Static Pressure with zero demand (20% tank storage)

The min static pressure scenario results indicated pressures ranging from 67 – 94 psi. The HGL for this model was set at 6,662.40', which is 20% of the total height of the tank above the finished floor elevation of 6658'. Detailed output from the modeling of this scenario is presented in Appendix C.

Scenario 2 – Maximum Static Pressure with zero demand (100% tank storage)

The max static pressure scenario results indicated pressures ranging from 74 – 101 psi. The HGL for this model was set at 6,680', which is 22' above the tank finished floor elevation of 6658'. Detailed output from the modeling of this scenario is presented in Appendix C.

Scenario 3a – Maximum Daily Demand + Fire Flow

The Maximum Daily Demand + Fire Flow demand scenario indicated pressures ranging from 54 – 94 psi. The Fire Flow Report indicates that all of the junctions in the model could be supplied with a fire flow of 1500 gpm while keeping the system pressure above 20 psi and the maximum pipe velocity below 15 ft/sec. Detailed output from the modeling of this scenario is presented in Appendix C.

Scenario 3b – Maximum Daily Demand + Fire Flow at J-22 with P-12 closed

The results from Scenario 3a indicate that junction J-22 typically reports the minimum pressure and pipe P-12 typically reports the maximum velocity during fire flow analysis. Therefore, this scenario was developed to test a flow of 1500 gpm at J-22 with pipe P-12 closed. The minimum reported pressure under this scenario was 47 psi at J-22 and the maximum pipe velocity was 10.2 ft/sec in pipes P-6 and P-7.

Scenario 4 – Peak Hour Demand

The Peak Hour demand scenario indicated pressures ranging from 66 – 93 psi. Velocities were well below the maximum allowable velocity of 10 ft/sec, with 1.4 ft/sec being the maximum velocity reported by the model. Pipe P-12 was taken out of service for this run. Detailed output from the modeling of this scenario is presented in Appendix C.

VI. Calculated Wastewater Flows

A. Average Day Wastewater Flows (ADF)

Average daily flows are calculated based upon Section 4.4.1 of the *Town of Castle Rock Wastewater System Design 2018 Criteria Manual*. Calculations contained in Appendix C indicate an average daily flow of 0.0534 MGD for 256 single family residential/duplex units at 200 gpd/dwelling unit.

B. Peaking Factor

A peaking factor of 5 was calculated based upon section 4.4.1.2 of the manual. See calculations in Appendix D.

C. Peak Design Flows (PDF)

A peak design flow of 0.27 MGD was calculated based upon section 4.4.1.3 of the manual. See calculations in Appendix D.

VII. Existing Wastewater System

A. Existing Collection System

An existing sanitary sewer main extends from the proposed Dawson Trails development north to Plum Creek Parkway. Details of this existing main are covered in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer* by Core Consultants. This utility report discusses how the overall Dawson Trails development fits in with to the town's wastewater master plan.

VIII. Proposed Wastewater System

A. Proposed Collection System

Development in Tract O and H will tie into an 8-inch sanitary main proposed in Collector Road C to be constructed by others. Capacity of this main has been analyzed in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer* by Core Consultants. A figure from Core's report included in Appendix E

indicates that the proposed Tract O and H development fits within the design assumptions of the utility report. There are 256 single family detached units (SFD) or townhomes proposed to feed into nodes J-4.05 and J-4.06, with 300 SDF units allocated for in the utility study. Additional wastewater collection capacity exists for up to 350 MF units in Tract O and H for the east area of future development.

All streets in Tract O and H will be adequately served by an 8-inch sanitary collection main.

B. Proposed Wastewater Facilities

No lift stations, force mains or pretreatment facilities will be required to service the Tract O and H development.

C. Land Dedication Requirements

No land dedication is required for wastewater facilities in Tract O and H.

IX. Proposed Wastewater System Analysis and Modeling

A. Hydraulic Models

Modeling for the entire Dawson Trails site was performed in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer* by Core Consultants. Please see this report for details.

B. Hydraulic Modeling Scenarios

Modeling for the entire Dawson Trails site was performed in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer* by Core Consultants. Please see this report for details.

C. Hydraulic Modeling Output and Required Schematics

Modeling for the entire Dawson Trails site was performed in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer* by Core Consultants. Please see this report for details.

X. Potential Permitting Requirements

Permitting for the project will be covered by a separate project for the overall Dawson Trails site.

XI. References

1. Town of Castle Rock Water Master Plan, 2023.
2. Town of Castle Rock Wastewater Master Plan, 2022.
3. Town of Castle Rock Water System Design 2018 Criteria Manual.
4. Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual.
5. Final Utility Report for Dawson Trails Offsite Sanitary Sewer, Prepared by Core Consultants, June 2023.
6. Conceptual Utility Letter for Dawson Trails, Prepared by Core Consultants, May 2022.
7. Technical Memorandum – Dawson Trails – Crystal Valley Water Connection, prepared by MSK Consulting, August 15, 2023.

APPENDIX A
Water Demands

associated with the Town's Concept, Preliminary, and Final Development Packages are documented in Chapter 3 of these Criteria.

Use 265 gpd/du for both of these. Per the latest technical memorandum for the Dawson Trails – Crystal Valley Water Connection by MSK Consulting, the average daily demand for Dawson Trails has been reduced to 265 gpd per/SFE. This lower value accounts for the water conservation requirements within Dawson Trails and the Town's ordinance that limits the amount of outdoor irrigated area per new home.

4.4.1. Design Demands

The tabulation below provides the Average Daily Demand (ADD) rates that shall be applied to compute the demands associated with the various types of land use within the development. Demands shall be computed for intermediate and full build-out phases of the development, and shall be assigned to the appropriate design points within the model to accurately reflect the geographical distribution of land use throughout the site.

Land Use	Typical ADD/Unit	Typical SFEs/Unit
Single Family Residential and Duplexes	400 gpd/dwelling unit	1.00/dwelling unit
Multi-Family Residential (Townhomes and	260 gpd/dwelling unit	0.65/dwelling unit
Retail/Offices	0.2 gpd/SF	0.0005/SF
Hotels/Motels	75 gpd/room	0.19/room
Restaurants	3.0 gpd/SF	0.0075/SF
Car Washes	5,000 gpd/facility	12.5/facility
Industrial / Other Commercial	1,200 gpd/acre	3.0/acre
Institutional	800 gpd/acre	2.0/acre
Rates for Typical Douglas County School Sizes:		
Elementary (10 ac, 675 students)	3,375 gpd/school	8.44/school
Middle (25 ac, 850 students)	8,500 gpd/school	21.25/school
High (50 ac, 1,700 students)	17,000 gpd/school	42.50/school
Rates for Alternate School Sizes:		
Elementary – Domestic	5 gpd/student	0.013/student
Middle – Domestic	10 gpd/student	0.025/student
High – Domestic	10 gpd/student	0.025/student
Elementary Schools – Irrigation	3,000 gpd/total acreage	7.5/total acreage
Middle Schools – Irrigation	5,250 gpd/total acreage	13.1/total acreage
High Schools – Irrigation	4,400 gpd/total acreage	11.0/total acreage
Churches	600 gpd/church	1.5/church
Gym/Fitness Center	0.5 gpd/SF	0.00125 SFE/SF
Irrigated Land (Sports Fields and School Sites Excluded)	3,750 gpd/ irrigated acre	9.38/acre

Water Service Demand Calculations - Tract O and H

Calculated by:

DJO

Date:

1/22/2025

Junction ID	Blocks to Junction	Number of Dwelling Units	Average Day (gal/day)	Average Day (gpm)	Maximum Day (gal/day)	Maximum Day (gpm)	Peak Hour (gal/day)	Peak Hour (gpm)	Notes
J-1			0	0.0	0	0.0	0	0.0	
J-2			0	0.0	0	0.0	0	0.0	
J-3			0	0.0	0	0.0	0	0.0	
J-4			0	0.0	0	0.0	0	0.0	
J-5			0	0.0	0	0.0	0	0.0	
J-6	13	18	4770	3.3	11925	8.3	26235	18.2	
J-7	14, 15, 21	38	10070	7.0	25175	17.5	55385	38.5	
J-8	16	4	1060	0.7	2650	1.8	5830	4.0	
J-9	17	11	2915	2.0	7287.5	5.1	16032.5	11.1	
J-10			0	0.0	0	0.0	0	0.0	
J-11			0	0.0	0	0.0	0	0.0	
J-12	1, 2	20	5300	3.7	13250	9.2	29150	20.2	
J-13	4	7	1855	1.3	4637.5	3.2	10202.5	7.1	
J-14	5, 6	7	1855	1.3	4637.5	3.2	10202.5	7.1	
J-15	18	13	3445	2.4	8612.5	6.0	18947.5	13.2	
J-16	19, 24	26	6890	4.8	17225	12.0	37895	26.3	
J-17	22, 23	25	6625	4.6	16562.5	11.5	36437.5	25.3	
J-18	10, 20	41	10865	7.5	27162.5	18.9	59757.5	41.5	
J-19	11, 12	12	3180	2.2	7950	5.5	17490	12.1	
J-20			0	0.0	0	0.0	0	0.0	
J-21	7, 8	13	3445	2.4	8612.5	6.0	18947.5	13.2	
J-22	9	9	2385	1.7	5962.5	4.1	13117.5	9.1	
J-23	1a	6	1590	1.1	3975	2.8	8745	6.1	
J-24	3	6	1590	1.1	3975	2.8	8745	6.1	

Notes:

1. Average Day Demand = 265 gal-day/dwelling unit (This is different from the ToCR water manual because new regulations allow for less landscaping)
2. Maximum Day Demand = 2.5 x Average Day Demand
3. Peak Hour Demand = 5.5 x Average Day Demand

APPENDIX B
Water Storage

Water Storage Calculations

	Gallons per Minute (GPM)	Gallons Per Day (GPD)	Million Gallons per Day (MGD)
Total Max Day Demand	112.3	161650	0.162
Required Fire Flow (1,500 gpm for 120 min)	1500	180000	0.18
Required Storage		341650	0.342
Required Storage without Fire Flow		161650	0.162

4.4.2 Storage Requirements

The required storage volume associated with a particular development shall be computed as follows:

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

Example Calculation:

Based on an assumed 1500 gpm two-hour fire and an MDD rate of 75 gpm, the storage requirement would be:

75 gpm x 60 min/hr x 24 hrs = 108,000 gallons

+ 1500 gpm x 60 min/hr x 2 hrs = 180,000 gallons

Total required storage = 288,000 gallons (0.288 MG)

Based on the computed storage volume, Castle Rock Water will evaluate whether the development is compatible with the location and magnitude of the existing and master-planned storage volume within the pressure zone, or if additional storage must be considered to provide the appropriate level of service to the development. Due to hydraulic constraints and limitations within the service area, fire storage within the pressure zone may need to be duplicated as determined by Castle Rock Water.

APPENDIX C
Water Hydraulic Analysis Modeling

WATERCAD SCHEMATIC - DAWSON TRAILS TRACT O AND H



SCENARIO 1
Minimum Static Pressure with zero demand (20% tank storage)

Scenario: 1 Zero Demand - Tanks 20% Full
Current Time Step: 0.000 h
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	6,447.00	0	6,662.40	93
J-2	6,468.00	0	6,662.40	84
J-3	6,486.00	0	6,662.40	76
J-4	6,498.00	0	6,662.40	71
J-5	6,446.00	0	6,662.40	94
J-6	6,456.00	0	6,662.40	89
J-7	6,463.00	0	6,662.40	86
J-8	6,491.00	0	6,662.40	74
J-9	6,497.00	0	6,662.40	72
J-10	6,501.00	0	6,662.40	70
J-11	6,492.00	0	6,662.40	74
J-12	6,492.00	0	6,662.40	74
J-13	6,482.00	0	6,662.40	78
J-14	6,471.00	0	6,662.40	83
J-15	6,498.00	0	6,662.40	71
J-16	6,492.00	0	6,662.40	74
J-17	6,484.00	0	6,662.40	77
J-18	6,492.00	0	6,662.40	74
J-19	6,495.00	0	6,662.40	72
J-20	6,500.00	0	6,662.40	70
J-21	6,503.00	0	6,662.40	69
J-22	6,508.00	0	6,662.40	67
J-23	6,494.00	0	6,662.40	73
J-24	6,484.00	0	6,662.40	77

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Scenario: 1 Zero Demand - Tanks 20% Full
Current Time Step: 0.000 h
FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (In net) (gpm)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
RES-J22	6,662.40	0	0	6,662.40
RES-J70	6,662.40	0	0	6,662.40

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SCENARIO 2
Maximum Static Pressure with zero demand (100% tank storage)

Scenario: 2 Zero Demand - Tanks 100% Full
Current Time Step: 0.000 h
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	6,447.00	0	6,680.00	101
J-2	6,468.00	0	6,680.00	92
J-3	6,486.00	0	6,680.00	84
J-4	6,498.00	0	6,680.00	79
J-5	6,446.00	0	6,680.00	101
J-6	6,456.00	0	6,680.00	97
J-7	6,463.00	0	6,680.00	94
J-8	6,491.00	0	6,680.00	82
J-9	6,497.00	0	6,680.00	79
J-10	6,501.00	0	6,680.00	77
J-11	6,492.00	0	6,680.00	81
J-12	6,492.00	0	6,680.00	81
J-13	6,482.00	0	6,680.00	86
J-14	6,471.00	0	6,680.00	90
J-15	6,498.00	0	6,680.00	79
J-16	6,492.00	0	6,680.00	81
J-17	6,484.00	0	6,680.00	85
J-18	6,492.00	0	6,680.00	81
J-19	6,495.00	0	6,680.00	80
J-20	6,500.00	0	6,680.00	78
J-21	6,503.00	0	6,680.00	77
J-22	6,508.00	0	6,680.00	74
J-23	6,494.00	0	6,680.00	80
J-24	6,484.00	0	6,680.00	85

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Scenario: 2 Zero Demand - Tanks 100% Full**Current Time Step: 0.000 h****FlexTable: Reservoir Table**

Label	Elevation (ft)	Flow (In net) (gpm)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
RES-J22	6,680.00	0	0	6,680.00
RES-J70	6,680.00	0	0	6,680.00

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SCENARIO 3a
Maximum Daily Demand + Fire Flow

Scenario: 3a Max Day + FF
Current Time Step: 0.000 h
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	6,447.00	0	6,662.30	93
J-2	6,468.00	0	6,662.31	84
J-3	6,486.00	0	6,662.31	76
J-4	6,498.00	0	6,662.34	71
J-5	6,446.00	0	6,662.29	94
J-6	6,456.00	8	6,662.28	89
J-7	6,463.00	18	6,662.28	86
J-8	6,491.00	2	6,662.28	74
J-9	6,497.00	5	6,662.29	72
J-10	6,501.00	0	6,662.29	70
J-11	6,492.00	0	6,662.31	74
J-12	6,492.00	9	6,662.31	74
J-13	6,482.00	3	6,662.31	78
J-14	6,471.00	3	6,662.31	83
J-15	6,498.00	6	6,662.28	71
J-16	6,492.00	12	6,662.28	74
J-17	6,484.00	12	6,662.28	77
J-18	6,492.00	19	6,662.28	74
J-19	6,495.00	6	6,662.28	72
J-20	6,500.00	0	6,662.28	70
J-21	6,503.00	6	6,662.28	69
J-22	6,508.00	4	6,662.29	67
J-23	6,494.00	3	6,662.31	73
J-24	6,484.00	3	6,662.31	77

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Scenario: 3a Max Day + FF
Current Time Step: 0.000 h
FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (In net) (gpm)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
RES-J22	6,662.30	27	-27	6,662.30
RES-J70	6,662.35	-145	145	6,662.35

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Scenario: 3a Max Day + FF
Current Time Step: 0.000 h
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Headloss Gradient (ft/ft)	Velocity (ft/s)
P-1	228	12.0	120.0	-27	0.000	0.08
P-2	422	12.0	120.0	-53	0.000	0.15
P-3	373	12.0	120.0	-53	0.000	0.15
P-4	1,266	12.0	120.0	-75	0.000	0.21
P-5	107	12.0	120.0	-145	0.000	0.41
P-6	471	8.0	120.0	26	0.000	0.17
P-7	264	8.0	120.0	26	0.000	0.17
P-8	261	8.0	120.0	10	0.000	0.06
P-9	821	8.0	120.0	-4	0.000	0.03
P-10	530	8.0	120.0	-13	0.000	0.09
P-11	258	8.0	120.0	-32	0.000	0.20
P-12	303	8.0	120.0	-70	0.000	0.45
P-13	209	8.0	120.0	21	0.000	0.13
P-14	303	8.0	120.0	12	0.000	0.08
P-15	352	8.0	120.0	0	0.000	0.00
P-16	252	8.0	120.0	-6	0.000	0.04
P-17	205	8.0	120.0	0	0.000	0.00
P-18	389	8.0	120.0	9	0.000	0.06
P-19	735	8.0	120.0	3	0.000	0.02
P-20	532	8.0	120.0	-13	0.000	0.08
P-21	449	8.0	120.0	-3	0.000	0.02
P-22	182	8.0	120.0	-7	0.000	0.05
P-23	266	8.0	120.0	-7	0.000	0.05
P-24	265	8.0	120.0	-4	0.000	0.02
P-25	934	8.0	120.0	6	0.000	0.04
P-26	136	8.0	120.0	-4	0.000	0.02
P-27	337	8.0	120.0	-9	0.000	0.06
P-28	363	8.0	120.0	-12	0.000	0.08
P-29	133	8.0	120.0	-18	0.000	0.12
P-30	169	8.0	120.0	-39	0.000	0.25
P-31	334	8.0	120.0	-10	0.000	0.06
P-32	363	8.0	120.0	-17	0.000	0.11
P-33	132	8.0	120.0	3	0.000	0.02
P-34	171	8.0	120.0	3	0.000	0.02
P-35	204	8.0	120.0	3	0.000	0.02

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Scenario: 3a Max Day + FF

Current Time Step: 0.000 h

Fire Flow Node FlexTable: Fire Flow Results Table

Label	Fire Flow Status	Fire Flow (Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Velocity of Maximum Pipe (ft/s)	Pipe w/ Maximum Velocity
J-1	Passed	1,500	3,000	20	66	J-22	6.05	P-1
J-2	Passed	1,500	3,000	20	66	J-22	5.40	P-2
J-3	Passed	1,500	3,000	20	66	J-22	4.85	P-2
J-4	Passed	1,500	3,000	20	66	J-22	6.91	P-5
J-5	Passed	1,500	3,000	20	61	J-22	10.93	P-6
J-6	Passed	1,500	3,008	20	57	J-22	11.01	P-12
J-7	Passed	1,500	3,017	20	57	J-22	11.49	P-12
J-8	Passed	1,500	3,002	20	57	J-22	11.72	P-12
J-9	Passed	1,500	3,005	20	57	J-22	12.14	P-12
J-10	Passed	1,500	3,000	20	57	J-22	12.71	P-12
J-11	Passed	1,500	3,000	20	66	J-23	10.98	P-13
J-12	Passed	1,500	3,009	20	58	J-23	11.31	P-14
J-13	Passed	1,500	3,003	20	63	J-23	11.90	P-16
J-14	Passed	1,500	3,003	20	66	J-22	11.13	P-17
J-15	Passed	1,500	3,006	20	55	J-22	12.01	P-12
J-16	Passed	1,500	3,012	20	57	J-22	11.72	P-12
J-17	Passed	1,500	3,011	20	57	J-22	11.67	P-12
J-18	Passed	1,500	3,019	20	55	J-22	11.86	P-12
J-19	Passed	1,500	3,006	20	55	J-22	11.92	P-12
J-20	Passed	1,500	3,000	20	54	J-22	12.06	P-12
J-21	Passed	1,500	3,006	20	54	J-22	12.21	P-29
J-22	Passed	1,500	3,004	20	55	J-21	12.29	P-12
J-23	Passed	1,500	2,350	20	64	J-12	15.00	P-34
J-24	Passed	1,500	2,350	20	66	J-22	15.00	P-35

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SCENARIO 3b
Maximum Daily Demand + 1500 gmp Fire Flow @ J-22 with P-12 closed

Scenario: 3b Max Day + 1500 gpm at J-22, P-12 Closed
Current Time Step: 0.000 h
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	6,447.00	0	6,661.32	93
J-2	6,468.00	0	6,661.52	84
J-3	6,486.00	0	6,661.64	76
J-4	6,498.00	0	6,662.29	71
J-5	6,446.00	0	6,637.59	83
J-6	6,456.00	8	6,624.29	73
J-7	6,463.00	18	6,622.02	69
J-8	6,491.00	2	6,620.66	56
J-9	6,497.00	5	6,619.34	53
J-10	6,501.00	0	6,617.50	50
J-11	6,492.00	0	6,661.58	73
J-12	6,492.00	9	6,661.57	73
J-13	6,482.00	3	6,661.56	78
J-14	6,471.00	3	6,661.55	82
J-15	6,498.00	6	6,618.62	52
J-16	6,492.00	12	6,620.18	55
J-17	6,484.00	12	6,620.69	59
J-18	6,492.00	19	6,619.11	55
J-19	6,495.00	6	6,618.92	54
J-20	6,500.00	0	6,618.47	51
J-21	6,503.00	6	6,616.87	49
J-22	6,508.00	1,504	6,616.29	47
J-23	6,441.00	3	6,661.57	95
J-24	6,510.00	3	6,661.56	66

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Scenario: 3b Max Day + 1500 gpm at J-22, P-12 Closed
Current Time Step: 0.000 h
FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (In net) (gpm)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
RES-J22	6,662.30	-1,226	1,226	6,662.30
RES-J70	6,662.35	-392	392	6,662.35

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Scenario: 3b Max Day + 1500 gpm at J-22, P-12 Closed
Current Time Step: 0.000 h
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Headloss Gradient (ft/ft)	Velocity (ft/s)
P-1	228	12.0	120.0	1,226	0.004	3.48
P-2	422	12.0	120.0	-371	0.000	1.05
P-3	373	12.0	120.0	-300	0.000	0.85
P-4	1,266	12.0	120.0	-392	0.001	1.11
P-5	107	12.0	120.0	-392	0.001	1.11
P-6	471	8.0	120.0	1,597	0.050	10.19
P-7	264	8.0	120.0	1,597	0.050	10.19
P-8	261	8.0	120.0	617	0.009	3.94
P-9	821	8.0	120.0	253	0.002	1.61
P-10	530	8.0	120.0	315	0.002	2.01
P-11	258	8.0	120.0	556	0.007	3.55
P-12	303	0.0	120.0	0	0.148	0.27
P-13	209	8.0	120.0	92	0.000	0.59
P-14	303	8.0	120.0	41	0.000	0.26
P-15	352	8.0	120.0	29	0.000	0.19
P-16	252	8.0	120.0	23	0.000	0.15
P-17	205	8.0	120.0	71	0.000	0.45
P-18	389	8.0	120.0	51	0.000	0.32
P-19	735	8.0	120.0	487	0.006	3.11
P-20	532	8.0	120.0	246	0.002	1.57
P-21	449	8.0	120.0	347	0.003	2.21
P-22	182	8.0	120.0	64	0.000	0.41
P-23	266	8.0	120.0	271	0.002	1.73
P-24	265	8.0	120.0	500	0.006	3.19
P-25	934	8.0	120.0	485	0.006	3.09
P-26	136	8.0	120.0	230	0.001	1.47
P-27	337	8.0	120.0	224	0.001	1.43
P-28	363	8.0	120.0	429	0.004	2.74
P-29	133	8.0	120.0	423	0.004	2.70
P-30	169	8.0	120.0	-556	0.007	3.55
P-31	334	8.0	120.0	236	0.001	1.51
P-32	363	8.0	120.0	525	0.006	3.35
P-33	132	8.0	120.0	-205	0.001	1.31
P-34	171	8.0	120.0	3	0.000	0.02
P-35	204	8.0	120.0	3	0.000	0.02

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SCENARIO 4
Peak Hour Demand

Scenario: 4 Peak Hour
Current Time Step: 0.000 h
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	6,447.00	0	6,661.95	93
J-2	6,468.00	0	6,661.98	84
J-3	6,486.00	0	6,662.01	76
J-4	6,498.00	0	6,662.17	71
J-5	6,446.00	0	6,661.39	93
J-6	6,456.00	18	6,661.07	89
J-7	6,463.00	39	6,661.01	86
J-8	6,491.00	4	6,661.00	74
J-9	6,497.00	11	6,660.99	71
J-10	6,501.00	0	6,660.99	69
J-11	6,492.00	0	6,661.99	74
J-12	6,492.00	20	6,661.98	74
J-13	6,482.00	7	6,661.98	78
J-14	6,471.00	7	6,661.98	83
J-15	6,498.00	13	6,660.99	71
J-16	6,492.00	26	6,661.00	73
J-17	6,484.00	25	6,661.00	77
J-18	6,492.00	42	6,660.99	73
J-19	6,495.00	12	6,660.99	72
J-20	6,500.00	0	6,660.99	70
J-21	6,503.00	13	6,660.99	68
J-22	6,508.00	9	6,660.99	66
J-23	6,494.00	6	6,661.98	73
J-24	6,484.00	6	6,661.98	77

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Scenario: 4 Peak Hour
Current Time Step: 0.000 h
FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (In net) (gpm)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
RES-J22	6,661.96	-78	78	6,661.96
RES-J70	6,662.18	-181	181	6,662.18

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Scenario: 4 Peak Hour
Current Time Step: 0.000 h
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Headloss Gradient (ft/ft)	Velocity (ft/s)
P-1	228	12.0	120.0	78	0.000	0.22
P-2	422	12.0	120.0	-135	0.000	0.38
P-3	373	12.0	120.0	-130	0.000	0.37
P-4	1,266	12.0	120.0	-181	0.000	0.51
P-5	107	12.0	120.0	-181	0.000	0.51
P-6	471	8.0	120.0	212	0.001	1.36
P-7	264	8.0	120.0	212	0.001	1.36
P-8	261	8.0	120.0	87	0.000	0.56
P-9	821	8.0	120.0	20	0.000	0.13
P-10	530	8.0	120.0	13	0.000	0.08
P-11	258	8.0	120.0	14	0.000	0.09
P-12	303	0.0	120.0	0	0.004	0.08
P-13	209	8.0	120.0	51	0.000	0.32
P-14	303	8.0	120.0	28	0.000	0.18
P-15	352	8.0	120.0	2	0.000	0.01
P-16	252	8.0	120.0	-11	0.000	0.07
P-17	205	8.0	120.0	4	0.000	0.03
P-18	389	8.0	120.0	23	0.000	0.14
P-19	735	8.0	120.0	56	0.000	0.36
P-20	532	8.0	120.0	12	0.000	0.07
P-21	449	8.0	120.0	28	0.000	0.18
P-22	182	8.0	120.0	-3	0.000	0.02
P-23	266	8.0	120.0	7	0.000	0.04
P-24	265	8.0	120.0	24	0.000	0.16
P-25	934	8.0	120.0	51	0.000	0.33
P-26	136	8.0	120.0	9	0.000	0.06
P-27	337	8.0	120.0	-3	0.000	0.02
P-28	363	8.0	120.0	5	0.000	0.03
P-29	133	8.0	120.0	-9	0.000	0.05
P-30	169	8.0	120.0	-14	0.000	0.09
P-31	334	8.0	120.0	0	0.000	0.00
P-32	363	8.0	120.0	4	0.000	0.03
P-33	132	8.0	120.0	-8	0.000	0.05
P-34	171	8.0	120.0	6	0.000	0.04
P-35	204	8.0	120.0	6	0.000	0.04

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MSK Consulting model output for overall water system

9/9/2023 at 6:08 AM

WESTSIDE PROPERTY

Dawson Trails Scenario 3 - Ph1, SS, PHD, Feed 2 OFF, PS FF

Water Model Junction Report

Model Run Date: Sept 8, 2023

ADD: 265.0 gpd/SFE

MDD: 2.5 x ADD

PHD 5.5 x ADD

Table B2-2: Water Model Junction Report

Minimum pressure= 6.74

ID	Description (Char)	671.5	Zone (Char)	Phase (Int)	Elevation (ft)	MDD DMD = 308.9 gpm			PHD DMD = 679.7 gpm		
		SFE				Demand (gpm)	Head (ft)	Pressure (psi)	Demand (gpm)	Head (ft)	Pressure (psi)
J10	Blue-Red PS		Red	1	6,381.00	0.00	6,662.31	121.89	0.00	6,662.02	121.77
J100			Red	1	6,549.09	0.00	6,662.38	49.09	0.00	6,662.30	49.05
J102	FH	0.0	Red	1	6,498.44	0.00	6,662.35	71.02	0.00	6,662.20	70.96
J106	FH	0.0	Red	1	6,492.07	0.00	6,662.35	73.78	0.00	6,662.19	73.71
J108	FH	0.0	Red	1	6,496.31	0.00	6,662.32	71.93	0.00	6,662.07	71.82
J14	FH	102.0	Red	1	6,381.00	46.93	6,662.31	121.89	103.24	6,662.01	121.76
J140	FH	233.0	Red	1	6,467.50	107.20	6,662.33	84.42	235.83	6,662.08	84.31
J15		0.0	Red	1	6,381.00	0.00	6,662.31	121.89	0.00	6,662.02	121.77
J16			Red	1	6,370.17	0.00	6,662.31	126.58	0.00	6,662.01	126.45
J161			Red	1	6,377.05	0.00	6,662.31	123.6	0.00	6,662.01	123.47
J22			Red	1	6,433.62	0.00	6,662.30	99.09	0.00	6,661.96	98.94
J24	FH	274.0	Red	1	6,471.80	126.06	6,662.29	82.54	277.33	6,661.92	82.38
J50			Red	1	6,377.00	0.00	6,662.31	123.62	0.00	6,662.01	123.49
J54			Red	1	6,425.00	0.00	6,662.30	102.82	0.00	6,661.99	102.69
J70			Red	1	6,490.00	0.00	6,662.35	74.68	0.00	6,662.18	74.61
J76	Tank		Red	1	6,646.85	0.00	6,662.40	6.74	0.00	6,662.40	6.74
J78	Red-Green PS		Red	1	6,607.50	0.00	6,662.39	23.78	0.00	6,662.36	23.77
J92			Red	1	6,380.00	0.00	6,662.31	122.33	0.00	6,662.02	122.20
J94	FH	62.5	Red	1	6,395.02	28.75	6,662.31	115.82	63.26	6,662.00	115.68
J96	FH	0.0	Red	1	6,444.45	0.00	6,662.30	94.4	0.00	6,661.98	94.25
J98	FH	0.0	Red	1	6,443.18	0.00	6,662.30	94.95	0.00	6,661.97	94.80
		671.5				308.9				679.66	

HGL at Max Day
Demand for Res-J22
and Res-J70 in
model.

HGL at Peak Hour
Demand for Res-J22
and Res-J70 in
model.

Subject: Re: Dawson Trails Parcel D
From: David Takeda <dave@mskwater.com>
Date: 9/11/2023, 9:32 AM
To: David Ott <dott@emkc.com>
CC: gwalter@emkc.com

Gary and David,

Attached are the model results for Phase 1 of the Red Zone.

The two Red Zone Tanks will each have a volume of 1.8 MG. The interior diameter is 118' and the HWL is 22 feet. The finished floor elevation is 6658.

Let me know if you have any questions.

David Takeda, P.E.
MSK Consulting, LLC
303-903-0918
dave@mskwater.com

On Tue, Sep 5, 2023 at 6:29 AM David Ott <dott@emkc.com> wrote:

Tank info from MSK Consulting.

David

Yes, Tank 19 is the red zone tank.

Thank you,

Dave

On 9/4/2023 5:21 AM, David Takeda wrote:

David,

I can get you the pressures for those four junctions. Can you confirm that Tank #19 is the Red Zone tank? We have not been using numbers as identifiers. Thanks.

David Takeda, P.E.

MSK Consulting, LLC
303-903-0918
dave@mskwater.com

From: David Ott <dott@emkc.com>
Sent: Friday, September 1, 2023 12:57 PM
To: dave@mskwater.com
Cc: gwalter@emkc.com
Subject: Re: Dawson Trails Parcel D

Hi Dave -

I am interested in results at J70, J108, J24 and J22 of the figure below. Specifically, the HGL or pressure/elevation at these nodes for Castle Rock's 4 scenarios below (static 20% full, static 100% full, Max day demand + fire flow, and Peak hour demand). I am planning to use these results to plug into my WaterCAD model for Tract D. Also, do you have any of the proposed dimensions, elevations or volumes on Tank 19?

APPENDIX D
Wastewater Flows

Wastewater Flow Calculations - Dawson Trails Tract D

Single Family Res and Duplexes	Average Daily Flow (gpd/du) (gpd/du)	Average Daily Flow (gpd)	Average Daily Flow (MGD)	Peaking Factor	I/I allowance (MGD)	Peak Daily Flow (PDF) (MGD)
256	200	51200	0.0512	5	0.00512	0.26112

4.4.1.1 Wastewater System Average Daily Flow (ADF)

Land Use	Typical ADF/Unit	Typical SFEs/Unit
Single Family Residential and Duplexes	200 gpd/dwelling unit	1.00/dwelling unit
Multi-Family Residential (Townhomes and Condos)	130 gpd/dwelling unit	0.65/dwelling unit
Retail/Offices	0.1 gpd/SF	0.0005/SF
Hotels/Motels	75 gpd/room	0.375/room
Restaurants	1.5 gpd/SF	0.0075/SF
Car Washes	5,000 gpd/acre	25.0/acre
Industrial/Other Commercial	600 gpd/acre	3.0/acre
Institutional	400 gpd/acre	2.0/acre
Churches	300 gpd/church	1.5/church
Gym/Fitness Center	0.5 gpd/SF	0.00125 SFE/SF
Irrigated Land	0 gpd/acre	0.0/acre
<u>Rates for Typical Douglas County School Sizes:</u>		
Elementary (10 ac, 675 Students)	3,375 gpd/school	16.88/school
Middle (25 ac, 850 students)	8,500 gpd/school	42.50/school
High (50 ac, 1700 students)	17,000 gpd/school	85.00/school
<u>Rates for Alternate School Sizes:</u>		
Elementary	5 gpd/student	0.025/student
Middle	10 gpd/student	0.050/student
High	10 gpd/student	0.050/student

4.4.1.2 Peaking Factor

The portion of the Peak Design Flow calculation exclusive of I/I shall be determined by multiplying the ADF in the preceding section by a peaking factor (PF). The PF is a function of ADF, and shall be computed as follows: $PF = 3.65 \times [(ADF)^{0.168}]$.

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

4.4.1.3 Peak Design Flow Rate

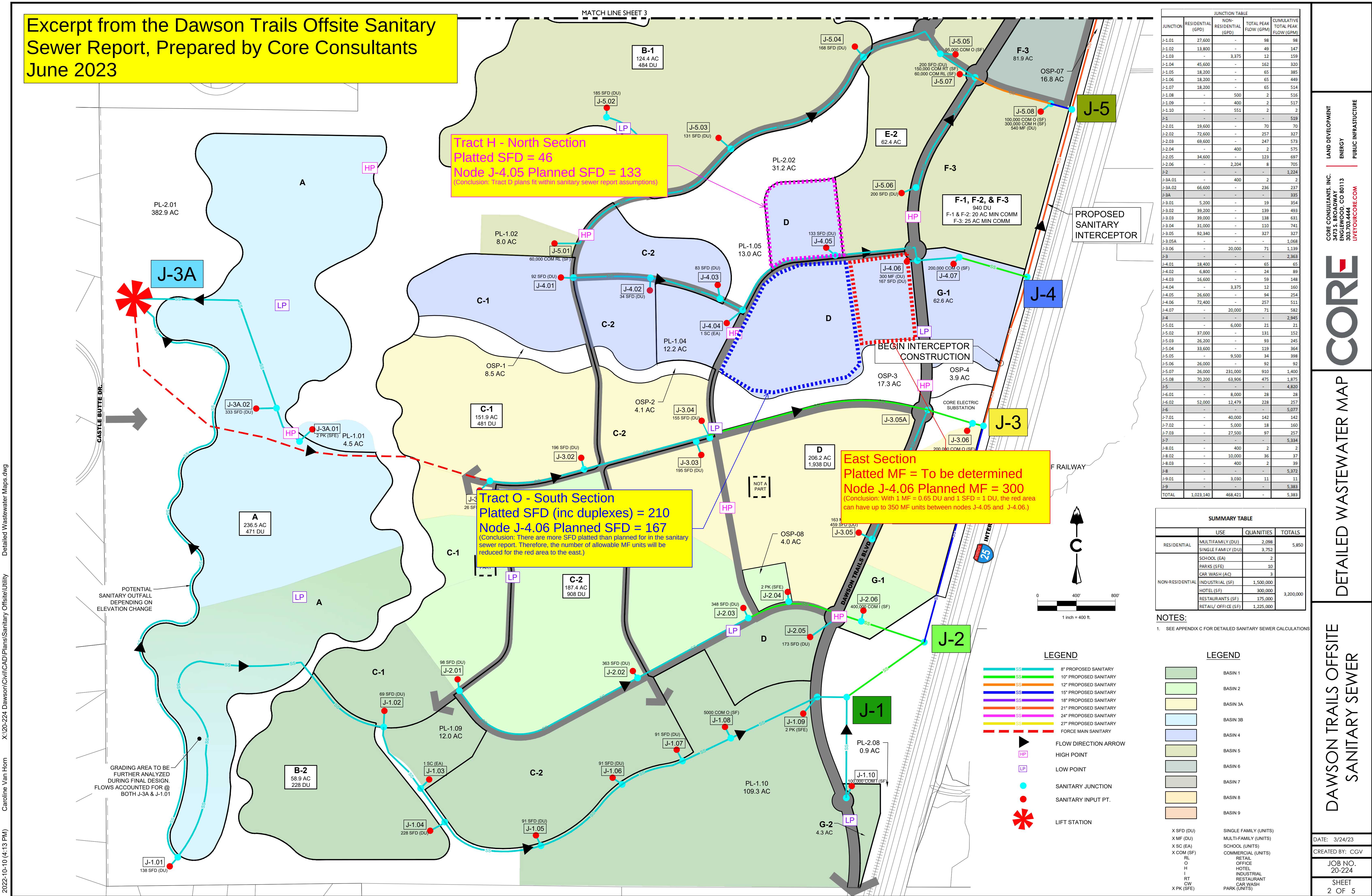
The Peak Design Flow (PDF) shall be computed at all pertinent design points throughout the system, and used to size the corresponding wastewater facilities. The PDF shall be determined by multiplying the ADF by the calculated peaking factor (PF), plus an I/I allowance equal to ten percent of the ADF as expressed by the following formula:

$$PDF = \text{peak base flow} + \text{I/I allowance} = (ADF \times PF) + (0.1 \times ADF)$$

Once computed, the PDF shall be used to determine the sizes of the facilities in accordance with the criteria established below.

APPENDIX E
Wastewater Hydraulic Modeling

Excerpt from the Dawson Trails Offsite Sanitary Sewer Report, Prepared by Core Consultants June 2023



JUNCTION TABLE				
JUNCTION	RESIDENTIAL (GPD)	NON-RESIDENTIAL (GPD)	TOTAL PEAK FLOW (GPM)	CUMULATIVE TOTAL PEAK FLOW (GPM)
J-1.01	27,600	-	98	98
J-1.02	13,800	-	48	147
J-1.03	-	3,375	12	159
J-1.04	45,600	-	162	320
J-1.05	18,200	-	65	385
J-1.06	18,200	-	65	449
J-1.07	18,200	-	65	514
J-1.08	-	500	2	516
J-1.09	-	400	2	517
J-1.10	-	551	2	519
J-1	-	-	-	519
J-2.01	19,600	-	70	70
J-2.02	72,600	-	257	327
J-2.03	69,600	-	247	573
J-2.04	-	400	2	575
J-2.05	34,600	-	123	697
J-2.06	-	2,204	8	705
J-2	-	-	-	1,224
J-3A.01	-	400	2	2
J-3A.02	66,600	-	236	237
J-3A	-	-	-	335
J-3.01	5,200	-	19	354
J-3.02	39,200	-	139	493
J-3.03	39,000	-	138	631
J-3.04	31,000	-	110	741
J-3.05	92,340	-	327	327
J-3.05A	-	-	-	1,068
J-3.06	-	20,000	71	1,139
J-3	-	-	-	2,363
J-4.01	18,400	-	65	65
J-4.02	6,800	-	24	89
J-4.03	16,600	-	59	148
J-4.04	-	3,375	12	160
J-4.05	26,600	-	94	254
J-4.06	72,400	-	257	511
J-4.07	-	20,000	71	582
J-4	-	-	-	2,945
J-5.01	-	6,000	21	21
J-5.02	37,000	-	131	152
J-5.03	26,200	-	93	245
J-5.04	33,600	-	119	364
J-5.05	-	9,500	34	398
J-5.06	26,000	-	92	92
J-5.07	26,000	231,000	910	1,400
J-5.08	70,200	63,906	475	1,875
J-5	-	-	-	4,820
J-6.01	-	8,000	28	28
J-6.02	52,000	12,479	228	257
J-6	-	-	-	5,077
J-7.01	-	40,000	142	142
J-7.02	-	5,000	18	160
J-7.03	-	27,500	97	257
J-7	-	-	-	5,334
J-8.01	-	400	2	2
J-8.02	-	10,000	36	37
J-8.03	-	400	2	39
J-8	-	-	-	5,372
J-9.01	-	3,030	11	11
J-9	-	-	-	5,383
TOTAL	1,023,140	468,421	-	5,383

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

LAND DEVELOPMENT
ENERGY
PUBLIC INFRASTRUCTURE

CORE CONSULTANTS, INC.
3472 S. BROADWAY
DENVER, CO 80113
303.703.4444
LIVE@OURCORE.COM

CORE

DETAILED WASTEWATER MAP

DAWSON TRAILS OFFSITE
SANITARY SEWER

DATE: 3/24/23
CREATED BY: CGV
JOB NO.: 20-224
SHEET 2 OF 5

APPENDIX F
Maps and Plans

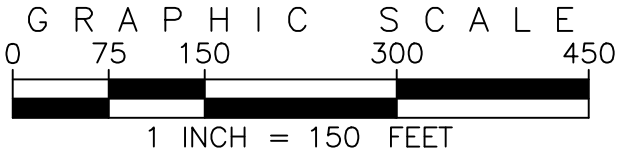


DAWSON TRAILS - TRACT O AND H
SITE LOCATION MAP
(NTS)

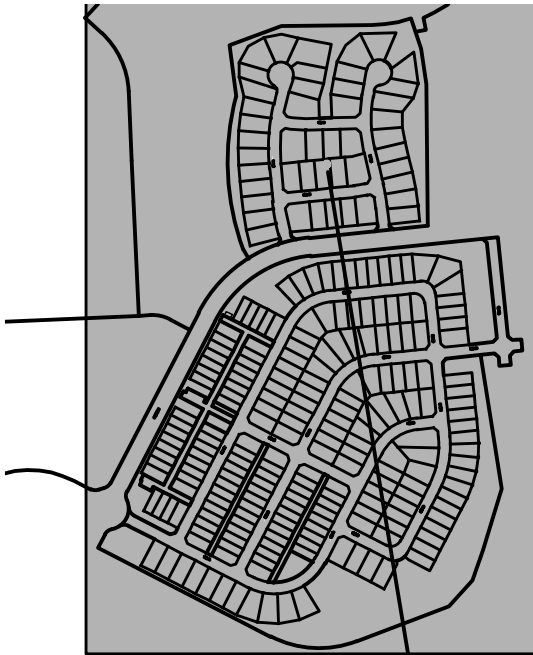


SITE DEVELOPMENT PLAN
DAWSON TRAILS FILING NO. 2 – TRACTS O & H

LOCATED IN A PART OF THE EAST HALF OF SECTION 28 & WEST HALF OF
SECTION 27, TOWNSHIP 8 SOUTH, RANGE 67 WEST OF THE 6TH P.M., TOWN OF
CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO



KEY MAP



THIS SHEET

LEGEND

- SECTION/ALIQUOT LINE
- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- CENTER/RANGE LINE
- LOT/PARCEL LINE
- EASEMENT LINE
- SETBACK LINE
- UTILITY EASEMENT
- MINOR SKYLINE AREA
- MODERATE SKYLINE AREA
- PROPOSED CURB & GUTTER
- SIDEWALK
- TRAIL
- SIGHT TRIANGLE
- SIGHT EASEMENT
- PARKING SPACE LINE
- IDENTIFICATION SIGNS
- STOP SIGN
- RAMP

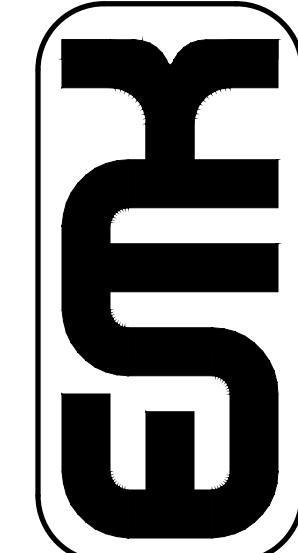
UTILITIES LEGEND

- PROPOSED STORM SEWER, INLET, MANHOLE, & FLARED END SECTION
- EXISTING STORM SEWER, INLET, MANHOLE, & FLARED END SECTION
- PROPOSED SANITARY SEWER & MANHOLE
- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED WATER MAIN, FIRE HYDRANT, TEE, VALVE, & REDUCER
- EXISTING WATER MAIN, FIRE HYDRANT, VALVE, & REDUCER
- PROPOSED BEND W/THRUST BLOCK, CHECK VALVE, & PLUG W/ BLOWOFF
- EXISTING BEND W/THRUST BLOCK, CHECK VALVE, & PLUG W/ BLOWOFF
- 4" SANITARY SEWER SERVICE
- 3/4" WATER SERVICE

SITE DEVELOPMENT PLAN

DAWSON TRAILS FILING NO. 2 – TRACTS O & H
TOWN OF CASTLE ROCK PROJECT NO. SDP23-0040

EMK CONSULTANTS, INC.
LAND DEVELOPMENT
ENGINEERING & SURVEYING
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NO.	DESCRIPTION	DATE	BY
1	SUBMITTAL-01	2024-01-02	
2	SUBMITTAL-02	2024-07-30	
3	SUBMITTAL-03	2024-12-05	

DESIGNED BY:	GAW
DRAWN BY:	JDS
CHECKED BY:	GAW
APPROVED BY:	ERM

DAWSON TRAILS FILING NO. 2 TRACTS O & H	GENERAL UTILITY PLAN
--	----------------------

DATE: 01/22/2025
JOB NO: 13393.00

SCALE
HORIZONTAL 1"=150'
VERTICAL N/A