



October 15, 2026

Town of Castle Rock Development Services

**Dawson Trail Tract F Utility Conformance Letter**  
**Town of Castle Rock Project No. SDP26-0010**

This letter has been prepared in support of the Dawson Trail Tract F Project Final Construction Documents (CDs) and provides utility information for the proposed development located within Tract F, Dawson Trails Filing No. 2. Tract F is located within Planning Area D of the approved Dawson Trails PDP. The water demands and wastewater flows for this project, combined with Filing 2, Amendment 2, are within the Planning Area D allocations in the approved Filing 2 Infrastructure Utility Report (CD23-0045), as shown in the Sanitary Sewer System and Water System sections of this letter. The purpose of this letter is to demonstrate that the planned improvements associated with this project conform to the Town of Castle Rock's current utility requirements, design criteria, and standard engineering practices.

The Dawson Trail Tract F project is a residential development situated west of Dawson Trail Boulevard in Castle Rock, Colorado. The proposed development will include 324 multifamily residential units, paved alleys, concrete walks and pans, and associated landscaped areas.

The site will be served by Town of Castle Rock water and sanitary sewer utilities. The proposed buildings will require a 6-inch fire service line, a 2-inch domestic water service, and a 6-inch sanitary service. The final meter size will be based on water supply fixture units at the time of building permitting. Sanitary sewer service will be provided by extending an 8-inch sanitary main from the existing 8-inch sanitary stub line located north of the site. A 6-inch sanitary service line will then connect the proposed buildings to the extended 8-inch sanitary main. Easements necessary for utilities will be provided at the time of either platting or at the time of final design/construction documents, in accordance with Town standards.

Sanitary Sewer System

The Site will be serviced by an existing 8" Sanitary line in Blanca Peak Parkway. The sewer calculations used in this letter were based on the following criteria:

- Demand per Dwelling Unit:
  - Multifamily Residential = 130 gpd/du
  - Single Family Residential = 200 gpd/du

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**t e r r a c i n a   d e s i g n**

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- Peak Factor –  $PF = 3.65 * (ADF^{-0.168})$ , max. = 5.0
- Infiltration/inflow –  $I = 0.10 * \text{Average Flow}$
- Peak Design Flow –  $PDF = (PF * ADF) + (\text{Infiltration/Inflow})$

The Master Utility Report named “Final Utility Report for Dawson Trail Filing 2 Infrastructure” by EMK Consultants, dated 2025, anticipated 300 MF & 167 SFD at J-4.06 (0.112 cfs) and 133 SFD at J-4.05 (0.041 cfs) for a combined total 300 MF & 300 SFD (0.153 cfs) to be shared amongst Dawson Trails and Filing 2, Amendment 2 (F2A2). Although anticipated flows have shifted from node J-4.05 to J-4.06, the total combined flows from both developments remain less than anticipated, as shown in the table below.

The adjacent development, Filing 2, Amendment 2, to the west incorporates 256 single-family detached units designed to feed directly into nodes J-4.05 and J-4.06. This residential expansion builds upon the original utility study, which previously allocated 300 multi-family and 167 SFD units to node J-4.06 and 133 SFD to node J-4.05 for a portion of Planning Area D in the “Final Utility Report for Dawson Trails - Filing 2, Amendment 2” by EMK Consultants, dated 2025 (Appendix D).

The calculated sanitary flow for our proposed site has been summarized in the table below in comparison to the Filing 2, Amendment 2 development and the anticipated development of a portion of Planning Area D in the “Final Utility Report for Dawson Trail Tract Fs Filing 2 Infrastructure” by EMK Consultants, dated 2025 (Appendix D). The table below analyzes J4.05 and J4.06 together and shows that F2A2 and Dawson trails are under the expected capacity in the Master Report.

| <b>Development</b>          | <b>ACRES</b> | <b>AVG<br/>DAY<br/>(GPD)</b> | <b>AVG<br/>DAY<br/>(GPM)</b> | <b>PEAK<br/>DESIGN<br/>(GPM)</b> | <b>PEAK<br/>DESIGN<br/>(GPD)</b> | <b>AVG<br/>DAY<br/>(cfs)</b> | <b>PEAK<br/>DESIGN<br/>(cfs)</b> |
|-----------------------------|--------------|------------------------------|------------------------------|----------------------------------|----------------------------------|------------------------------|----------------------------------|
| Proposed Development        | 12.7         | 42,123                       | 29.25                        | 149.18                           | 214,825                          | 0.070                        | 0.332                            |
| Filing 2, Amendment 2       | 56.0         | 44,900                       | 31.18                        | 159.02                           | 228,990                          | 0.069                        | 0.354                            |
| EMK Anticipated Development | 68.7         | 99,000                       | 68.75                        | 350.63                           | 504,900                          | 0.153                        | 0.781                            |
| Excess Capacity             | N/A          | 8,213                        | 5.7                          | 29.1                             | 441,886                          | 0.013                        | 0.065                            |

Based on the comparison in the table above, our proposed site is well within the expectations of the “Final Utility Report for Dawson Trails Filing 2 Infrastructure” by EMK Consultants, dated 2025.

The wastewater system was modeled using Autodesk Storm and Sanitary Analysis (SSA), shown in Appendix C. The runs are included in the Overall Sanitary Sewer Map in Appendix C.

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The upstream reach serving only the clubhouse (P-16, SS MH-08 to SS MH-07) is laid at the 0.40% minimum slope and does not reach the 2.0 ft/s minimum velocity ([1.2] ft/s) due to the low flow from a single building. This reach is the pinch point of the on-site system. Once flows combine at SS MH-07, all downstream reaches exceed 2.0 ft/s.

### Water System

The existing 12-inch water main in Dawson Plaza & 16-inch water main in Dawson Trails Blvd will serve the site. The Site is within Castle Rocks' red water pressure zone. Water usage was estimated using the Town of Castle Rock's standard design criteria for average daily demand (ADD), maximum day demand (MDD), and peak hour demand (PHD).

- The Average Daily Demand is based on 260 gpd/du.
- The Maximum Day Demand was determined by applying a peak day factor of 2.5.
- The Peak Hour Demand was calculated using a peak hour factor of 5.5.

The Master Utility Report named "Final Utility Report for Dawson Trail Filing 2 Infrastructure" by EMK Consultants, dated 2025, anticipated 517 SFE for the portion of Planning Area D on the south side of Blanca Peak Pkwy (523.28 gpm) and 148 SFE for the portion of Planning Area D on the north side of Blanca Peak Pkwy (149.80 gpm) for a combined total of 664 SFE (673.08 gpm) to be shared amongst Dawson Trails and Filing 2, Amendment 2 (F2A2). Although anticipated flows have shifted, the total combined flows from both developments remain less than anticipated, as shown in the table below.

The adjacent property, Filing 2, Amendment 2 development, incorporates a total of 256 single-family detached units. This represents a portion of the originally anticipated single-family equivalents (SFE), which initially allocated a capacity of 665 SFE for the portion of Planning Area D south of Blanca Peak Parkway. The current plan ensures the existing infrastructure can comfortably accommodate the proposed residential site.

The calculated water demand for our proposed site has been summarized in the table below in comparison to the Filing 2, Amendment 2 development and the anticipated development of a portion of Planning Area D in the "Final Utility Report for Dawson Trail Tract Fs Filing 2 Infrastructure" by EMK Consultants, dated 2025 (Appendix D).

| <b>PARCEL</b>         | <b>USE</b>  | <b>DU</b> | <b>AVG DAY<br/>(GPD/DU)</b> | <b>AVG<br/>DAY<br/>(GPD)</b> | <b>AVG<br/>DAY<br/>(GPM)</b> | <b>MAX<br/>DAY<br/>(MDD)<br/>(GPM)</b> | <b>PEAK<br/>HOUR<br/>(PHD)<br/>(GPM)</b> |
|-----------------------|-------------|-----------|-----------------------------|------------------------------|------------------------------|----------------------------------------|------------------------------------------|
| Proposed Development  | Residential | 324       | 260                         | 103,328                      | 71.76                        | 179.39                                 | 394.65                                   |
| Filing 2, Amendment 2 | Residential | 256       | 265                         | 67,840                       | 47.11                        | 117.78                                 | 259.11                                   |

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|                             |             |     |     |         |        |        |        |
|-----------------------------|-------------|-----|-----|---------|--------|--------|--------|
| EMK Anticipated Development | Residential | 665 | 265 | 176,225 | 122.38 | 305.95 | 673.08 |
| Excess Capacity             |             |     |     | 5,057   | 3.51   | 8.78   | 19.32  |

Based on the comparison in the table above, our proposed site is well within the expectations of the "Final Utility Report for Dawson Trails Filing 2 Infrastructure" by EMK Consultants, dated 2025.

On-site water storage must accommodate this emergency fire demand concurrently with the maximum daily domestic use. The peak fire demand requires a fire flow of 2,000 gpm sustained over a 2-hour duration. When combined with the estimated maximum daily domestic, the facility's water system must be capable of meeting both requirements. See table below:

| MAX DAY (MDD) | MAX DAY (MDD) | Fire Flow | Fire Flow | Total Storage |
|---------------|---------------|-----------|-----------|---------------|
| (GPM)         | (MG)          | (GPM)     | (MG)      | (MG)          |
| 179.37        | 0.26          | 2,000     | 0.24      | 0.50          |

The site will feature six fully sprinklered buildings (all Type V-A construction) that vary slightly in size, fire flow ranges from 1,500 to 2,000 gallons per minute (gpm). The water system is designed around the most demanding scenario: sustaining a peak fire flow of 2,000 gpm for 2 hours. See table below:

| Fire Flow   |        |            |            |            |           |                     |          |
|-------------|--------|------------|------------|------------|-----------|---------------------|----------|
| Building    | Type   | Total Area | Cons. Type | Sprinklers | Fire Flow | Fire Flow Reduction | Duration |
| Building 1  | Type 2 | 66,207     | V-A        | Yes        | 4750      | 1,500               | 2-hour   |
| Building 2  | Type 3 | 73,201     | V-A        | Yes        | 4750      | 1,500               | 2-hour   |
| Building 3  | Type 1 | 59,308     | V-A        | Yes        | 4500      | 1,500               | 2-hour   |
| Building 4  | Type 3 | 73,201     | V-A        | Yes        | 4750      | 1,500               | 2-hour   |
| Building 5  | Type 2 | 66,207     | V-A        | Yes        | 4750      | 1,500               | 2-hour   |
| Building 6  | Type 1 | 59,308     | V-A        | Yes        | 4500      | 1,500               | 2-hour   |
| Clubhouse   |        | 6,763      | V-B        | No         | 2000      |                     | 2-hour   |
| Maintenance |        | 693        | V-B        | No         | 1500      |                     | 2-hour   |
| Garage      | Type 1 | 5,631      | V-B        | No         | 2000      |                     | 2-hour   |
| Garage      | Type 2 | 5,284      | V-B        | No         | 2000      |                     | 2-hour   |

See Fire Flow memo in Appendix E for more information regarding the Fire Flow calculations.

If you have any questions, please do not hesitate to call me at 720-854-9456

Sincerely,  
Terracina Design

Martin Metsker, PE

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Project Manager

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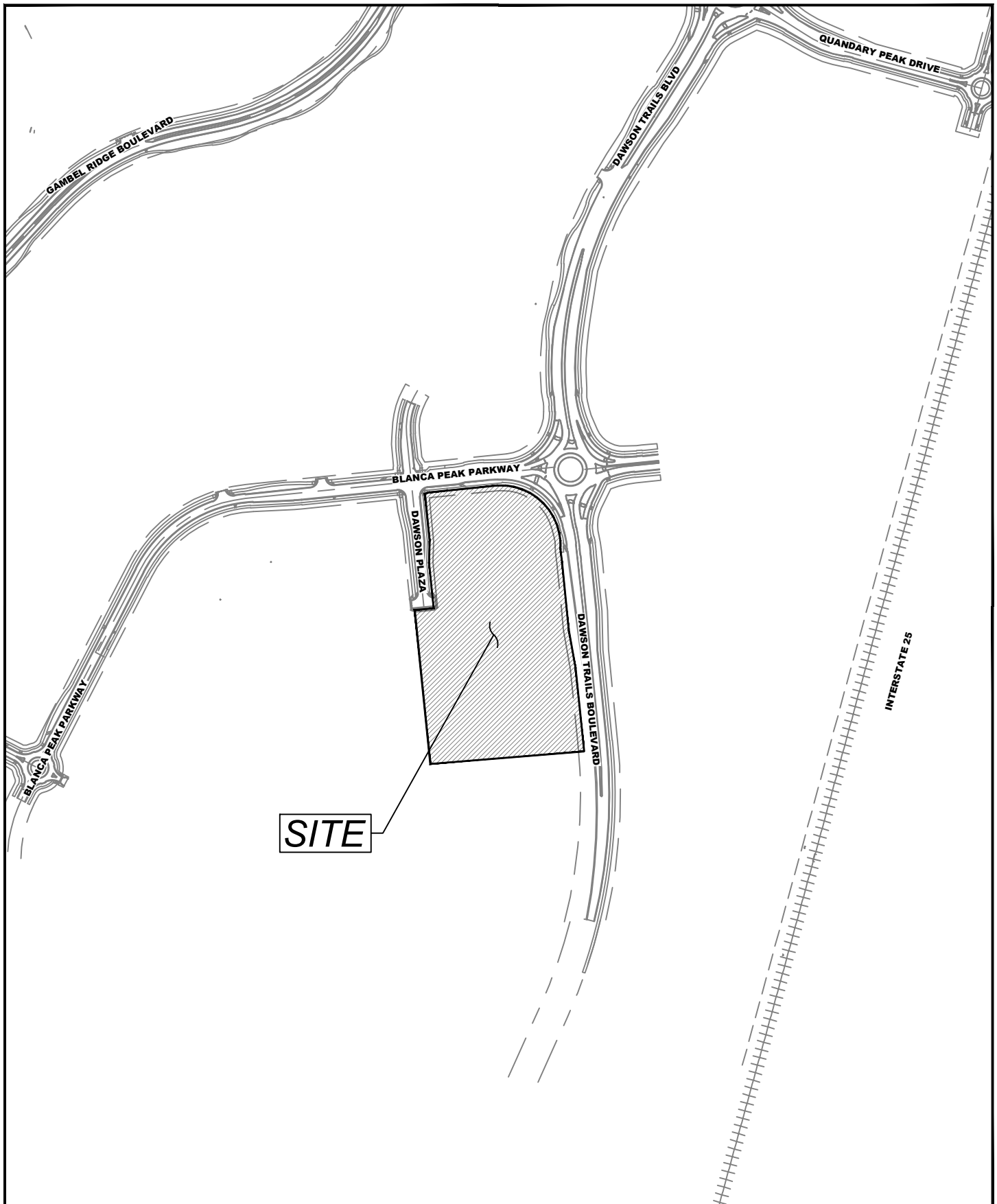
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# **APPENDIX A**

## **GENERAL MAPS**

Vicinity Map

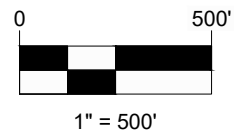
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## DAWSON TRAIL VICINITY MAP

TOWN OF CASTLE ROCK DATE: 2/9/2026

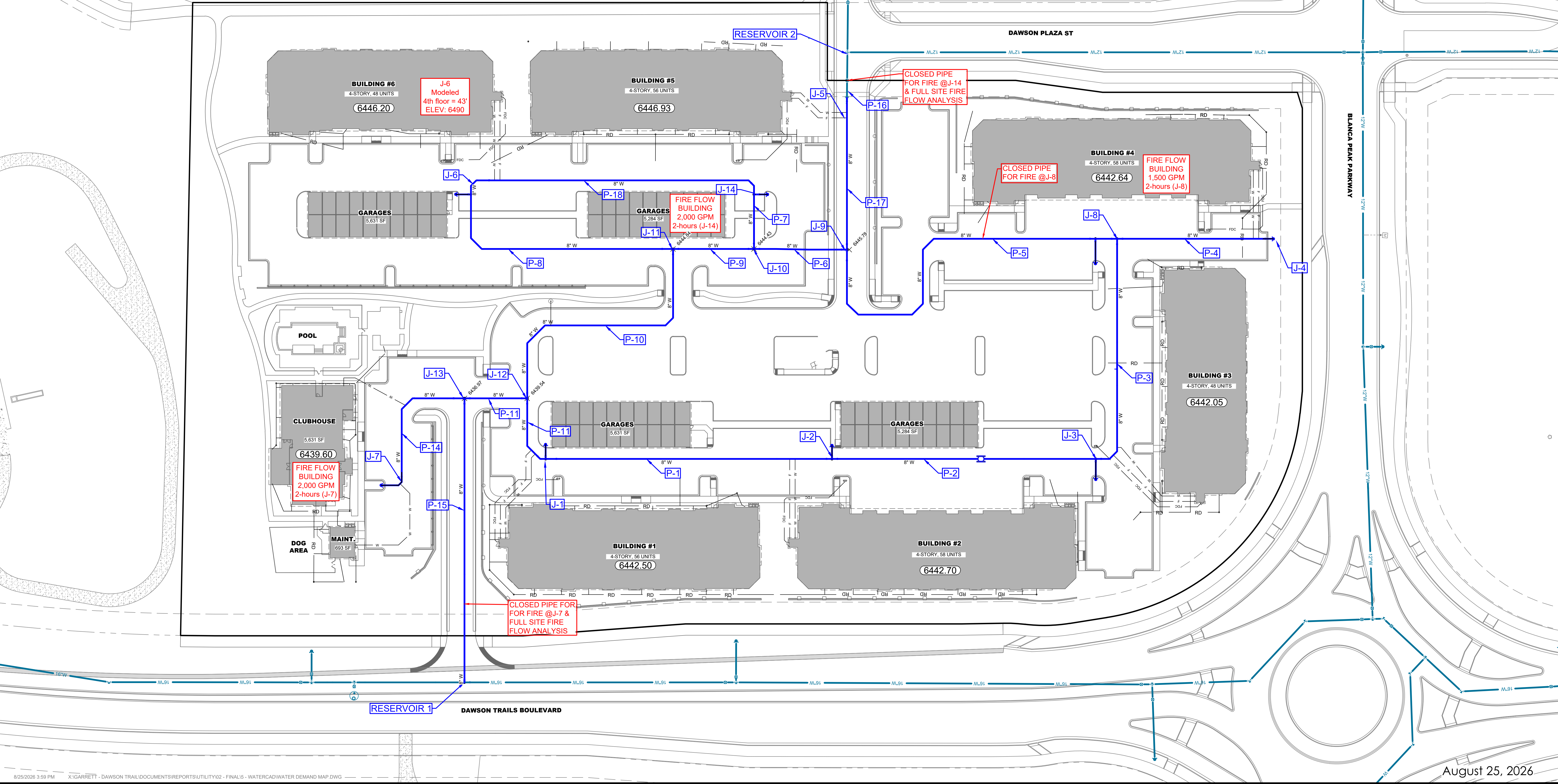


# **APPENDIX B**

## **WATER DEMANDS**

Water CAD Map  
Water Demand Calculations  
Water CAD Junction Table  
Building Fire Flow Calculations  
Water CAD Tables

| Fire Flow   |        |            |            |            |           |                              |
|-------------|--------|------------|------------|------------|-----------|------------------------------|
| Building    | Type   | Total Area | Cons. Type | Sprinklers | Fire Flow | Fire Flow Reduction Duration |
| Building 1  | Type 2 | 66,207     | V-A        | Yes        | 4750      | 1,500 2-hour                 |
| Building 2  | Type 3 | 73,201     | V-A        | Yes        | 4750      | 1,500 2-hour                 |
| Building 3  | Type 1 | 59,308     | V-A        | Yes        | 4500      | 1,500 2-hour                 |
| Building 4  | Type 3 | 73,201     | V-A        | Yes        | 4750      | 1,500 2-hour                 |
| Building 5  | Type 2 | 66,207     | V-A        | Yes        | 4750      | 1,500 2-hour                 |
| Building 6  | Type 1 | 59,308     | V-A        | Yes        | 4500      | 1,500 2-hour                 |
| Clubhouse   |        | 6,763      | V-B        | No         | 2000      | 2-hour                       |
| Maintenance |        | 693        | V-B        | No         | 1500      | 2-hour                       |
| Garage      | Type 1 | 5,631      | V-B        | No         | 2000      | 2-hour                       |
| Garage      | Type 2 | 5,284      | V-B        | No         | 2000      | 2-hour                       |



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August 25, 2026

**Dawson Trail**  
**Water and Sanitary Sewer Utility Conformance Letter**  
**Potable Water Demand Calculation**

8/24/2026

| PARCEL NO.                                                                                | USE          | AC or SF | DWELLING   | ADD/UNIT | ADD/UNIT                    | DEMANDS        |               |               |                      |
|-------------------------------------------------------------------------------------------|--------------|----------|------------|----------|-----------------------------|----------------|---------------|---------------|----------------------|
|                                                                                           |              |          | UNITS (DU) | (GPD/DU) | (GPD/ACorSF) <sup>(2)</sup> | AVG DAY        | AVG DAY       | MAX DAY       | PEAK HOUR (PHD)      |
|                                                                                           |              |          |            |          |                             | (GPD)          | (GPM)         | (MDD)         | (GPM) <sup>(3)</sup> |
| <b><u>Proposed Development</u></b>                                                        |              |          |            |          |                             |                |               |               |                      |
| a) Buildings                                                                              |              |          |            |          |                             |                |               |               |                      |
| Building 1                                                                                | Multi-Family | 0.84     | 56         | 260      | 3750                        | 17,723         | 12.31         | 30.77         | 67.69                |
| Building 2                                                                                | Multi-Family | 0.84     | 58         | 260      | 3750                        | 18,243         | 12.67         | 31.67         | 69.68                |
| Building 3                                                                                | Multi-Family | 0.84     | 48         | 260      | 3750                        | 15,643         | 10.86         | 27.16         | 59.75                |
| Building 4                                                                                | Multi-Family | 0.84     | 58         | 260      | 3750                        | 18,243         | 12.67         | 31.67         | 69.68                |
| Building 5                                                                                | Multi-Family | 0.84     | 56         | 260      | 3750                        | 17,723         | 12.31         | 30.77         | 67.69                |
| Building 6                                                                                | Multi-Family | 0.84     | 48         | 260      | 3750                        | 15,643         | 10.86         | 27.16         | 59.75                |
| Gym/Office/Pool/Dog                                                                       |              | 5631.0   | N/A        |          | 0.02                        | 113            | 0.08          | 0.20          | 0.43                 |
| <b><u>c) Sub-Total (a+b)</u></b>                                                          |              |          | <b>324</b> |          |                             | <b>103,328</b> | <b>71.76</b>  | <b>179.39</b> | <b>394.65</b>        |
|                                                                                           |              |          |            |          |                             |                |               |               |                      |
| <b><u>Filing 2, Amendment 2</u></b>                                                       |              |          |            |          |                             |                |               |               |                      |
| d) Filing 2, Amendment 2                                                                  | Residential  |          | 256        | 265*     | N/A                         | 67,840         | 47.11         | 117.78        | 259.11               |
| <b><u>e) Sub-Total (d)</u></b>                                                            |              |          | <b>256</b> |          | N/A                         | <b>67,840</b>  | <b>47.11</b>  | <b>117.78</b> | <b>259.11</b>        |
| *from "Final Utility Report for Dawson Trails - Filing 2 Amendment 2" by EMK Consultants  |              |          |            |          |                             |                |               |               |                      |
|                                                                                           |              |          |            |          |                             |                |               |               |                      |
| <b><u>Anticipated Development</u></b>                                                     |              |          |            |          |                             |                |               |               |                      |
| d) Anticipated Development                                                                | Residential  |          | 665        | 265*     | N/A                         | 176,225        | 122.38        | 305.95        | 673.08               |
| <b><u>e) Sub-Total (d)</u></b>                                                            |              |          | <b>665</b> |          | N/A                         | <b>176,225</b> | <b>122.38</b> | <b>305.95</b> | <b>673.08</b>        |
| *from "Final Utility Report for Dawson Trails Filing 2 Infrastructure" by EMK Consultants |              |          |            |          |                             |                |               |               |                      |
| <b><u>f) Remaining Demand (e-c)</u></b>                                                   |              |          |            |          |                             | <b>5,057</b>   | <b>3.51</b>   | <b>8.78</b>   | <b>19.32</b>         |

| PEAKING FACTOR  |     |
|-----------------|-----|
| MAX DAY (MDD)   | 2.5 |
| PEAK HOUR (PHD) | 5.5 |

Assumptions:

- (1) Multifamily Land Use (demands based on TOCR standards: 400 gpd/du x 0.65/dwelling unit =260 gpd/du
- (2) Irrigation Demand based on 3,750 gpd/irrigated acre per TOCR Water System Design 2018 Criteria Manual
- (3) Peaking Hour Demands (PHD) determined per TOCR Water section 4.4.1.2 equation: PHD = Domestic ADD x PHF
- Tank Elevations used from Master Filing 2 Red Tank
- Peaking factor of 2.5 was used to obtain MDD
- Peaking factor of 5.5 was used to obtain PHD
- Total irrigated area for the site divided evenly among the 6 buildings

**WaterCAD Table**

| <b>Junction</b> | <b>Notes</b> | <b>Average Day</b> | <b>Max Day</b> | <b>Peak Hour</b> |
|-----------------|--------------|--------------------|----------------|------------------|
| 1               | Building 1   | 12.31              | 30.77          | 67.69            |
| 2               | Building 2   | 12.67              | 31.67          | 69.68            |
| 3               | Building 3   | 10.86              | 27.16          | 59.75            |
| 4               | Building 4   | 12.67              | 31.67          | 69.68            |
| 5               | Building 5   | 12.31              | 30.77          | 67.69            |
| 6               | Building 6   | 10.86              | 27.16          | 59.75            |
| 7               | Clubhouse    | 0.08               | 0.20           | 0.43             |
| Total           |              | 71.76              | 179.39         | 394.65           |

| Fire Flow   |        |            |               |            |              |                        |          |          |
|-------------|--------|------------|---------------|------------|--------------|------------------------|----------|----------|
| Building    | Type   | Total Area | Cons.<br>Type | Sprinklers | Fire<br>Flow | Fire Flow<br>Reduction | Duration | Junction |
| Building 1  | Type 2 | 66,207     | V-A           | Yes        | 4750         | 1,500                  | 2-hour   | NA       |
| Building 2  | Type 3 | 73,201     | V-A           | Yes        | 4750         | 1,500                  | 2-hour   | NA       |
| Building 3  | Type 1 | 59,308     | V-A           | Yes        | 4500         | 1,500                  | 2-hour   | NA       |
| Building 4  | Type 3 | 73,201     | V-A           | Yes        | 4750         | 1,500                  | 2-hour   | J-8      |
| Building 5  | Type 2 | 66,207     | V-A           | Yes        | 4750         | 1,500                  | 2-hour   | NA       |
| Building 6  | Type 1 | 59,308     | V-A           | Yes        | 4500         | 1,500                  | 2-hour   | NA       |
| Clubhouse   |        | 6,763      | V-B           | No         | 2000         |                        | 2-hour   | J-7      |
| Maintenance |        | 693        | V-B           | No         | 1500         |                        | 2-hour   | NA       |
| Garage      | Type 1 | 5,631      | V-B           | No         | 2000         |                        | 2-hour   | J6 J14   |
| Garage      | Type 2 | 5,284      | V-B           | No         | 2000         |                        | 2-hour   | J1-J3    |

## Dawson Trails

### 100% Static Condition

**Reservoir Table - Time: 0.00 hours**

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,680.00       | 0.00                 | 6,680.00             |
| R-2   | 6,680.00       | 0.00                 | 6,680.00             |

**Pipe Table - Time: 0.00 hours**

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |

**Junction Table - Time: 0.00 hours**

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 0.00         | 6,680.00             | 102.74         | B1 Demands & FF                        |
| J-2   | 6,442.70       | 0.00         | 6,680.00             | 102.67         | B2 Demands & FF                        |
| J-3   | 6,442.05       | 0.00         | 6,680.00             | 102.95         | B3 Demands & FF                        |
| J-4   | 6,442.64       | 0.00         | 6,680.00             | 102.69         | B4 Demands                             |
| J-5   | 6,446.93       | 0.00         | 6,680.00             | 100.84         | B5 Demands                             |
| J-6   | 6,490.00       | 0.00         | 6,680.00             | 82.20          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.00         | 6,680.00             | 104.01         | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,680.00             | 102.69         | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,680.00             | 101.34         |                                        |
| J-10  | 6,444.53       | 0.00         | 6,680.00             | 101.88         |                                        |
| J-11  | 6,444.86       | 0.00         | 6,680.00             | 101.73         |                                        |
| J-12  | 6,439.54       | 0.00         | 6,680.00             | 104.04         |                                        |
| J-13  | 6,436.89       | 0.00         | 6,680.00             | 105.18         |                                        |
| J-14  | 6,446.93       | 0.00         | 6,680.00             | 101.71         | B5 Fire Flow                           |

## Dawson Trails

### 20% Static

**Reservoir Table - Time: 0.00 hours**

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 0.00                 | 6,662.00             |
| R-2   | 6,662.00       | 0.00                 | 6,662.00             |

**Pipe Table - Time: 0.00 hours**

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Open             |

**Junction Table - Time: 0.00 hours**

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 0.00         | 6,662.00             | 94.95          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 0.00         | 6,662.00             | 94.88          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 0.00         | 6,662.00             | 95.16          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 0.00         | 6,662.00             | 94.91          | B4 Demands                             |
| J-5   | 6,446.93       | 0.00         | 6,662.00             | 93.05          | B5 Demands                             |
| J-6   | 6,490.00       | 0.00         | 6,662.00             | 74.42          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.00         | 6,662.00             | 96.22          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,662.00             | 94.91          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,662.00             | 93.55          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,662.00             | 94.09          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,662.00             | 93.95          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,662.00             | 96.25          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,662.00             | 97.39          |                                        |
| J-14  | 6,446.93       | 0.00         | 6,662.00             | 93.93          | B5 Fire Flow                           |

## Dawson Trails

### Max Daily Demand (MDD) +Irrigation

#### Reservoir Table - Time: 0.00 hours

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 71.58                | 6,662.00             |
| R-2   | 6,662.00       | 107.82               | 6,662.00             |

#### Pipe Table - Time: 0.00 hours

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 43.50      | 0.28            | 0.000                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 11.83      | 0.08            | 0.000                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | -15.33     | 0.10            | 0.000                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 31.67      | 0.20            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | -47.00     | 0.30            | 0.000                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 30.05      | 0.09            | 0.000                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 13.68      | 0.04            | 0.000                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | -13.48     | 0.09            | 0.000                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | -16.38     | 0.05            | 0.000                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | 2.89       | 0.01            | 0.000                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 74.27      | 0.21            | 0.000                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | -71.38     | 0.20            | 0.000                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.20       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | -71.58     | 0.20            | 0.000                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 107.82     | 0.31            | 0.000                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 77.05      | 0.22            | 0.000                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 13.68      | 0.09            | 0.000                     | Open             |

#### Junction Table - Time: 0.00 hours

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 30.77        | 6,661.99             | 94.95          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 31.67        | 6,661.97             | 94.87          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 27.16        | 6,661.97             | 95.15          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 31.67        | 6,661.97             | 94.89          | B4 Demands                             |
| J-5   | 6,446.93       | 30.77        | 6,662.00             | 93.05          | B5 Demands                             |
| J-6   | 6,490.00       | 27.16        | 6,661.99             | 74.41          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.20         | 6,661.99             | 96.22          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,661.97             | 94.90          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,661.99             | 93.55          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,661.99             | 94.09          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,661.99             | 93.94          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,661.99             | 96.24          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,661.99             | 97.39          |                                        |
| J-14  | 6,446.93       | 0.00         | 6,661.99             | 93.05          | B5 Fire Flow                           |

## Dawson Trails

### Peak Hour Demand (PHD)

**Reservoir Table - Time: 0.00 hours**

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 230.43               | 6,662.00             |
| R-2   | 6,662.00       | 164.24               | 6,662.00             |

**Pipe Table - Time: 0.00 hours**

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 104.13     | 0.66            | 0.000                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 34.45      | 0.22            | 0.000                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | -25.30     | 0.16            | 0.000                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 69.68      | 0.44            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | -94.98     | 0.61            | 0.000                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 1.57       | 0.01            | 0.000                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 27.82      | 0.08            | 0.000                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | -31.93     | 0.20            | 0.000                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | 26.25      | 0.17            | 0.000                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | -58.18     | 0.37            | 0.000                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 171.82     | 0.49            | 0.000                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | -230.00    | 0.65            | 0.000                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.43       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | -230.43    | 0.65            | 0.000                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 164.24     | 1.05            | 0.001                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 96.55      | 0.62            | 0.000                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 27.82      | 0.18            | 0.000                     | Open             |

**Junction Table - Time: 0.00 hours**

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 67.69        | 6,661.93             | 94.92          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 69.68        | 6,661.85             | 94.81          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 59.75        | 6,661.83             | 95.09          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 69.68        | 6,661.82             | 94.83          | B4 Demands                             |
| J-5   | 6,446.93       | 67.69        | 6,661.93             | 93.02          | B5 Demands                             |
| J-6   | 6,490.00       | 59.75        | 6,661.90             | 74.37          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.43         | 6,661.95             | 96.20          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,661.84             | 94.84          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,661.91             | 93.51          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,661.91             | 94.05          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,661.91             | 93.91          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,661.94             | 96.22          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,661.95             | 97.37          |                                        |
| J-14  | 6,446.93       | 0.00         | 6,661.91             | 93.01          | B5 Fire Flow                           |

## Dawson Trails

### Fire Flow at J-14 + MDD + P-16 Closed

#### Reservoir Table - Time: 0.00 hours

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 2,179.40             | 6,662.00             |
| R-2   | 6,662.00       | 0.00                 | 6,662.00             |

#### Pipe Table - Time: 0.00 hours

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 720.98     | 4.60            | 0.012                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 689.31     | 4.40            | 0.011                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | 662.15     | 4.23            | 0.010                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 31.67      | 0.20            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | 630.48     | 4.02            | 0.009                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 599.71     | 3.83            | 0.008                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 1,422.40   | 9.08            | 0.041                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | -604.76    | 3.86            | 0.008                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | 822.69     | 5.25            | 0.015                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | -1,427.45  | 9.11            | 0.041                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 751.75     | 4.80            | 0.012                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | -2,179.20  | 13.91           | 0.090                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.20       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | -2,179.40  | 13.91           | 0.090                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Closed           |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | -30.77     | 0.20            | 0.000                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | -577.60    | 3.69            | 0.008                     | Open             |

#### Junction Table - Time: 0.00 hours

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 30.77        | 6,632.46             | 82.17          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 31.67        | 6,629.40             | 80.78          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 27.16        | 6,626.61             | 79.85          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 31.67        | 6,624.60             | 78.73          | B4 Demands                             |
| J-5   | 6,446.93       | 30.77        | 6,622.32             | 75.88          | B5 Demands                             |
| J-6   | 6,490.00       | 27.16        | 6,620.61             | 56.51          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.20         | 6,638.24             | 85.94          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,624.60             | 78.73          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,622.32             | 76.38          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,621.62             | 76.62          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,622.67             | 76.93          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,633.31             | 83.84          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,638.24             | 87.11          |                                        |
| J-14  | 6,446.93       | 2,000.00     | 6,618.73             | 74.33          | B5 Fire Flow                           |

## Dawson Trails

### Fire Flow at J-8 + MDD + P-5 Closed

**Reservoir Table - Time: 0.00 hours**

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 947.73               | 6,662.00             |
| R-2   | 6,662.00       | 731.67               | 6,662.00             |

**Pipe Table - Time: 0.00 hours**

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | 1,590.50   | 10.15           | 0.050                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | 1,558.83   | 9.95            | 0.048                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | 1,531.67   | 9.78            | 0.047                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 31.67      | 0.20            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Closed           |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 700.90     | 4.47            | 0.011                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 181.89     | 1.16            | 0.001                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | 154.73     | 0.99            | 0.001                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | -519.01    | 3.31            | 0.006                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | 673.74     | 4.30            | 0.010                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | 1,621.27   | 10.35           | 0.052                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | -947.53    | 6.05            | 0.019                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 0.20       | 0.00            | 0.000                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | -947.73    | 6.05            | 0.019                     | Open             |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 731.67     | 4.67            | 0.012                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 700.90     | 4.47            | 0.011                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 181.89     | 1.16            | 0.001                     | Open             |

**Junction Table - Time: 0.00 hours**

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 30.77        | 6,652.31             | 90.76          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 31.67        | 6,639.10             | 84.97          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 27.16        | 6,626.43             | 79.77          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 31.67        | 6,616.95             | 75.42          | B4 Demands                             |
| J-5   | 6,446.93       | 30.77        | 6,660.96             | 92.60          | B5 Demands                             |
| J-6   | 6,490.00       | 27.16        | 6,658.68             | 72.98          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 0.20         | 6,656.92             | 94.02          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 1,500.00     | 6,616.95             | 75.42          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,659.91             | 92.64          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,658.96             | 92.77          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,658.51             | 92.44          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,655.86             | 93.59          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,656.92             | 95.20          |                                        |
| J-14  | 6,446.93       | 0.00         | 6,658.90             | 91.71          | B5 Fire Flow                           |

## Dawson Trails

### Fire Flow at J-7 + MDD + P-15 Closed

#### Reservoir Table - Time: 0.00 hours

| Label | Elevation (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-------|----------------|----------------------|----------------------|
| R-1   | 6,662.00       | 0.00                 | 6,662.00             |
| R-2   | 6,662.00       | 2,179.40             | 6,662.00             |

#### Pipe Table - Time: 0.00 hours

| Label | Length (Scaled) (ft) | Start Node | Stop Node | Dia (in) | Mat. | Hazen | Flow (gpm) | Velocity (ft/s) | Headloss Gradient (ft/ft) | Status (Initial) |
|-------|----------------------|------------|-----------|----------|------|-------|------------|-----------------|---------------------------|------------------|
| P-1   | 264                  | J-1        | J-2       | 8.0      | PVC  | 120   | -726.39    | 4.64            | 0.012                     | Open             |
| P-2   | 263                  | J-2        | J-3       | 8.0      | PVC  | 120   | -758.06    | 4.84            | 0.013                     | Open             |
| P-3   | 203                  | J-3        | J-8       | 8.0      | PVC  | 120   | -785.22    | 5.01            | 0.014                     | Open             |
| P-4   | 142                  | J-8        | J-4       | 8.0      | PVC  | 120   | 31.67      | 0.20            | 0.000                     | Open             |
| P-5   | 253                  | J-8        | J-9       | 8.0      | PVC  | 120   | -816.89    | 5.21            | 0.015                     | Open             |
| P-6   | 86                   | J-9        | J-10      | 8.0      | PVC  | 120   | 1,331.74   | 8.50            | 0.036                     | Open             |
| P-7   | 71                   | J-10       | J-14      | 8.0      | PVC  | 120   | 337.98     | 2.16            | 0.003                     | Open             |
| P-8   | 247                  | J-6        | J-11      | 8.0      | PVC  | 120   | 310.82     | 1.98            | 0.002                     | Open             |
| P-9   | 72                   | J-11       | J-10      | 8.0      | PVC  | 120   | -993.76    | 6.34            | 0.021                     | Open             |
| P-10  | 260                  | J-11       | J-12      | 8.0      | PVC  | 120   | 1,304.58   | 8.33            | 0.035                     | Open             |
| P-11  | 69                   | J-12       | J-1       | 8.0      | PVC  | 120   | -695.62    | 4.44            | 0.011                     | Open             |
| P-12  | 55                   | J-12       | J-13      | 8.0      | PVC  | 120   | 2,000.20   | 12.77           | 0.076                     | Open             |
| P-14  | 121                  | J-13       | J-7       | 8.0      | PVC  | 120   | 2,000.20   | 12.77           | 0.076                     | Open             |
| P-15  | 265                  | J-13       | R-1       | 8.0      | PVC  | 120   | 0.00       | 0.00            | 0.000                     | Closed           |
| P-16  | 88                   | R-2        | J-5       | 8.0      | PVC  | 120   | 2,179.40   | 13.91           | 0.090                     | Open             |
| P-17  | 96                   | J-5        | J-9       | 8.0      | PVC  | 120   | 2,148.63   | 13.71           | 0.087                     | Open             |
| P-18  | 245                  | J-14       | J-6       | 8.0      | PVC  | 120   | 337.98     | 2.16            | 0.003                     | Open             |

#### Junction Table - Time: 0.00 hours

| Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) | Notes                                  |
|-------|----------------|--------------|----------------------|----------------|----------------------------------------|
| J-1   | 6,442.53       | 30.77        | 6,632.90             | 82.36          | B1 Demands & FF                        |
| J-2   | 6,442.70       | 31.67        | 6,635.99             | 83.63          | B2 Demands & FF                        |
| J-3   | 6,442.05       | 27.16        | 6,639.32             | 85.35          | B3 Demands & FF                        |
| J-4   | 6,442.64       | 31.67        | 6,642.07             | 86.28          | B4 Demands                             |
| J-5   | 6,446.93       | 30.77        | 6,654.15             | 89.66          | B5 Demands                             |
| J-6   | 6,490.00       | 27.16        | 6,641.76             | 65.66          | B6 Demands & FF / Modeled at 4th floor |
| J-7   | 6,439.60       | 2,000.20     | 6,618.69             | 77.48          | Clubhouse Demands                      |
| J-8   | 6,442.64       | 0.00         | 6,642.07             | 86.29          | B4 Fire Flow                           |
| J-9   | 6,445.78       | 0.00         | 6,645.76             | 86.52          |                                        |
| J-10  | 6,444.53       | 0.00         | 6,642.66             | 85.72          |                                        |
| J-11  | 6,444.86       | 0.00         | 6,641.16             | 84.93          |                                        |
| J-12  | 6,439.54       | 0.00         | 6,632.15             | 83.34          |                                        |
| J-13  | 6,436.89       | 0.00         | 6,627.95             | 82.66          |                                        |
| J-14  | 6,446.93       | 0.00         | 6,642.46             | 84.60          | B5 Fire Flow                           |

**Dawson Trails**  
**Fire Flow Analysis + P-16 Closed**  
**Fire Flow Results Table - Time: 0.00 hours**

| Label | Fire Flow (Needed) (gpm) | Velocity of Maximum Pipe (ft/s) | Pipe w/ Maximum Velocity | Fire Flow (Available) (gpm) | Flow (Total Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Pressure (Calculated Zone Lower Limit) (psi) | Pressure (Calculated System Lower Limit) (psi) | Junction w/ Minimum Pressure (System) |
|-------|--------------------------|---------------------------------|--------------------------|-----------------------------|---------------------------|------------------------------|--------------------------------------|----------------------------------------------|------------------------------------------------|---------------------------------------|
| J-1   | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,030.77                  | 2,031.77                     | 80.75                                | 61.47                                        | 61.47                                          | J-6                                   |
| J-7   | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,000.20                  | 2,001.20                     | 81.92                                | 64.08                                        | 64.08                                          | J-6                                   |
| J-2   | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,031.67                  | 2,032.67                     | 76.94                                | 60.38                                        | 60.38                                          | J-6                                   |
| J-3   | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,027.16                  | 2,028.16                     | 75.70                                | 59.47                                        | 59.47                                          | J-6                                   |
| J-6   | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,027.16                  | 2,028.16                     | 54.61                                | 75.24                                        | 75.24                                          | J-14                                  |
| J-14  | 2,000.00                 | 13.92                           | P-15                     | 2,001.00                    | 2,000.00                  | 2,001.00                     | 74.31                                | 56.49                                        | 56.49                                          | J-6                                   |
| J-8   | 1,500.00                 | 10.73                           | P-15                     | 1,501.00                    | 1,500.00                  | 1,501.00                     | 82.92                                | 64.74                                        | 64.74                                          | J-6                                   |
| J-11  | 0.00                     | 1.15                            | P-15                     | 1.00                        | 0.00                      | 1.00                         | 93.80                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-4   | 0.00                     | 1.15                            | P-15                     | 1.00                        | 31.67                     | 32.67                        | 94.75                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-5   | 0.00                     | 1.15                            | P-15                     | 1.00                        | 30.77                     | 31.77                        | 92.90                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-9   | 0.00                     | 1.15                            | P-15                     | 1.00                        | 0.00                      | 1.00                         | 93.40                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-10  | 0.00                     | 1.15                            | P-15                     | 1.00                        | 0.00                      | 1.00                         | 93.94                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-12  | 0.00                     | 1.15                            | P-15                     | 1.00                        | 0.00                      | 1.00                         | 96.12                                | 74.27                                        | 74.27                                          | J-6                                   |
| J-13  | 0.00                     | 1.15                            | P-15                     | 1.00                        | 0.00                      | 1.00                         | 97.29                                | 74.27                                        | 74.27                                          | J-6                                   |

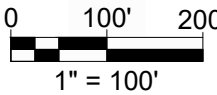
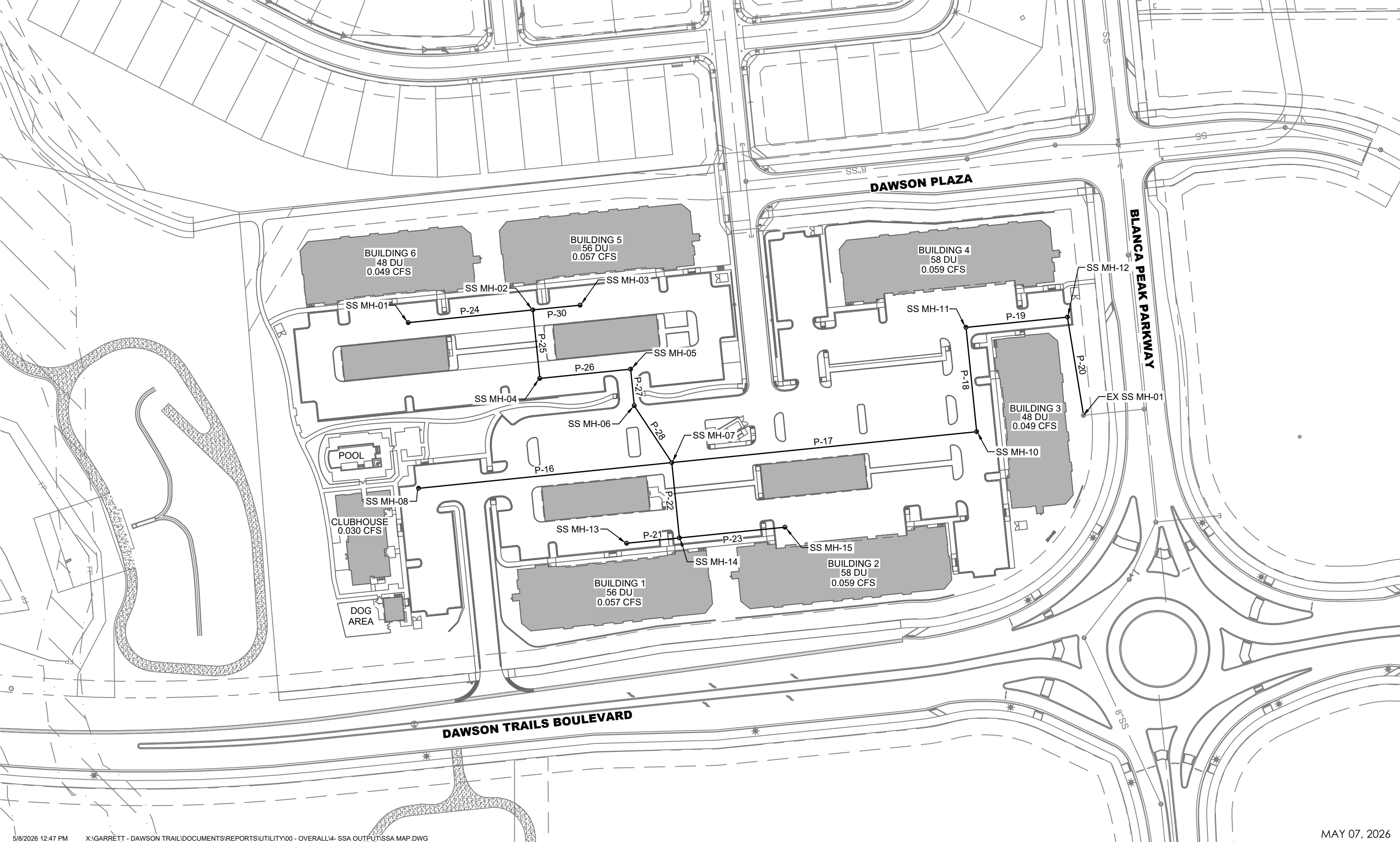
**Fire Flow Analysis + P-15 Closed**  
**Fire Flow Results Table - Time: 0.00 hours**

| Label | Fire Flow (Needed) (gpm) | Velocity of Maximum Pipe (ft/s) | Pipe w/ Maximum Velocity | Fire Flow (Available) (gpm) | Flow (Total Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Pressure (Calculated Zone Lower Limit) (psi) | Pressure (Calculated System Lower Limit) (psi) | Junction w/ Minimum Pressure (System) |
|-------|--------------------------|---------------------------------|--------------------------|-----------------------------|---------------------------|------------------------------|--------------------------------------|----------------------------------------------|------------------------------------------------|---------------------------------------|
| J-1   | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,030.77                  | 2,031.77                     | 81.56                                | 65.79                                        | 65.79                                          | J-6                                   |
| J-2   | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,031.67                  | 2,032.67                     | 80.72                                | 66.21                                        | 66.21                                          | J-6                                   |
| J-3   | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,027.16                  | 2,028.16                     | 81.75                                | 66.58                                        | 66.58                                          | J-6                                   |
| J-6   | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,027.16                  | 2,028.16                     | 62.55                                | 83.35                                        | 83.35                                          | J-14                                  |
| J-14  | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,000.00                  | 2,001.00                     | 82.55                                | 64.55                                        | 64.55                                          | J-6                                   |
| J-7   | 2,000.00                 | 13.92                           | P-16                     | 2,001.00                    | 2,000.20                  | 2,001.20                     | 77.47                                | 65.65                                        | 65.65                                          | J-6                                   |
| J-8   | 1,500.00                 | 10.73                           | P-16                     | 1,501.00                    | 1,500.00                  | 1,501.00                     | 87.78                                | 69.76                                        | 69.76                                          | J-6                                   |
| J-10  | 0.00                     | 1.15                            | P-16                     | 1.00                        | 0.00                      | 1.00                         | 94.02                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-13  | 0.00                     | 1.15                            | P-16                     | 1.00                        | 0.00                      | 1.00                         | 97.32                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-4   | 0.00                     | 1.15                            | P-16                     | 1.00                        | 31.67                     | 32.67                        | 94.83                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-5   | 0.00                     | 1.15                            | P-16                     | 1.00                        | 30.77                     | 31.77                        | 93.02                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-9   | 0.00                     | 1.15                            | P-16                     | 1.00                        | 0.00                      | 1.00                         | 93.49                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-11  | 0.00                     | 1.15                            | P-16                     | 1.00                        | 0.00                      | 1.00                         | 93.88                                | 74.35                                        | 74.35                                          | J-6                                   |
| J-12  | 0.00                     | 1.15                            | P-16                     | 1.00                        | 0.00                      | 1.00                         | 96.17                                | 74.35                                        | 74.35                                          | J-6                                   |

# **APPENDIX C**

## **SANITARY DEMANDS**

Storm & Sanitary Analysis Map  
Sanitary Demand Calculations  
Storm & Sanitary Analysis Output Tables



**Dawson Trail**  
**Water and Sanitary Sewer Utility Conformance Letter**  
**Sanitary Sewer Demand Calculation**

5/8/2026

Peaking Factor = 5.0

| PARCEL                                                                                    | USE                    | SF    | DU     | DEMAND                  |           |           |                         |             |            | Peaking Factor Check |        |                   |
|-------------------------------------------------------------------------------------------|------------------------|-------|--------|-------------------------|-----------|-----------|-------------------------|-------------|------------|----------------------|--------|-------------------|
|                                                                                           |                        |       |        | AVG DAY                 | AVG DAY   | AVG DAY   | PEAK DESIGN             | PEAK DESIGN | AVG DAY    | PEAK DESIGN          | ADF    | Calc              |
| Filing 19 - Lot 2 North                                                                   |                        |       | (EA)   | (GPD/DU) <sup>(1)</sup> | (GPD)     | (GPM)     | (GPM) <sup>(2)(3)</sup> | (GPD)       | (cfs)      | (cfs)                | (MGD)  | PF <sup>(4)</sup> |
| 0.007                                                                                     |                        |       |        |                         |           |           |                         |             |            |                      |        | 8.35              |
| Proposed Development                                                                      |                        |       |        |                         |           |           |                         |             |            |                      |        |                   |
| a. Proposed Dawson Trail                                                                  | Buidling 1             |       | 56     | 130                     | 7,280.00  | 5.06      | 25.78                   | 37,128.00   | 0.011      | 0.0574               |        |                   |
|                                                                                           | Buidling 2             |       | 58     | 130                     | 7,540.00  | 5.24      | 26.70                   | 38,454.00   | 0.012      | 0.0595               |        |                   |
|                                                                                           | Buidling 3             |       | 48     | 130                     | 6,240.00  | 4.33      | 22.10                   | 31,824.00   | 0.010      | 0.0492               |        |                   |
|                                                                                           | Buidling 4             |       | 58     | 130                     | 7,540.00  | 5.24      | 26.70                   | 38,454.00   | 0.012      | 0.0595               |        |                   |
|                                                                                           | Buidling 5             |       | 56     | 130                     | 7,280.00  | 5.06      | 25.78                   | 37,128.00   | 0.011      | 0.0574               |        |                   |
|                                                                                           | Buidling 6             |       | 48     | 130                     | 6,240.00  | 4.33      | 22.10                   | 31,824.00   | 0.010      | 0.0492               |        |                   |
|                                                                                           | Gym/Office/Pool/Dog    | 7,534 |        | 0.5                     | 3,767.00  | 2.62      | 13.34                   | 19,211.70   | 0.006      | 0.0297               |        |                   |
| Sub-Total                                                                                 |                        |       | 7534.0 | 324.00                  | N/A       | 45,887.00 | 31.87                   | 162.52      | 234,023.70 | 0.07                 | 0.3621 |                   |
| Filing 2, Amendment 2                                                                     |                        |       |        |                         |           |           |                         |             |            |                      |        |                   |
| b. Filing 2, Amendment 2                                                                  | Multi-Family           |       | 90.00  | 130                     | 11,700.00 | 8.13      | 41.44                   | 59,670.00   | 0.018      | 0.0923               |        |                   |
|                                                                                           | Single-Family Detached |       | 166.00 | 200                     | 33,200.00 | 23.06     | 117.58                  | 169,320.00  | 0.051      | 0.2620               |        |                   |
| Sub-Total                                                                                 |                        |       | 0.0    | 256                     | N/A       | 44,900.00 | 31.18                   | 159.02      | 228,990.00 | 0.069                | 0.3543 |                   |
| *from "Final Utility Report for Dawson Trails - Filing 2 Amendment 2" by EMK Consultants  |                        |       |        |                         |           |           |                         |             |            |                      |        |                   |
| Anticipated Development                                                                   |                        |       |        |                         |           |           |                         |             |            |                      |        |                   |
| c. Anticipated Development                                                                | Multi-Family           |       | 300.00 | 130                     | 39,000.00 | 27.08     | 138.13                  | 198,900.00  | 0.060      | 0.3077               |        |                   |
|                                                                                           | Single-Family Detached |       | 300.00 | 200                     | 60,000.00 | 41.67     | 212.50                  | 306,000.00  | 0.093      | 0.4735               |        |                   |
| Sub-Total                                                                                 |                        |       | 0.0    | 600                     | N/A       | 99,000.00 | 68.75                   | 350.63      | 504,900.00 | 0.153                | 0.7812 |                   |
| *from "Final Utility Report for Dawson Trails Filing 2 Infrastructure" by EMK Consultants |                        |       |        |                         |           |           |                         |             |            |                      |        |                   |
| e. Proposed Dawson Trail (a)                                                              |                        |       | 324.0  | 130.0                   | 45,887.00 | 31.9      | 162.5                   | 234,023.70  | 0.071      | 0.3621               |        |                   |
| f. Filing 2, Amendment 2 (b)                                                              |                        |       | 256.0  | N/A                     | 44,900.00 | 31.2      | 159.0                   | 228,990.00  | 0.069      | 0.3543               |        |                   |
| g. Anticipated Development (c)                                                            |                        |       | 600.0  | N/A                     | 99,000.00 | 68.8      | 350.6                   | 504,900.00  | 0.153      | 0.7812               |        |                   |
| Remaining Demand (g-e-f)                                                                  |                        |       | 1180.0 | N/A                     | 8,213.00  | 5.7       | 29.1                    | 41,886.30   | 0.013      | 0.0648               |        |                   |

Assumptions:

(1) Residential (demands based on dwelling units: Multifamily Residential = 130 gpd/du / Single Family Residential = 200 gpd/du)

(2) Peaking Factor of 5 used

(3) Peak Design Flow determined from TOCR Wastewater section 4.4.1.3 equation: PDF = peak base flow + I/I allowance = (ADF\*PF) + (0.1\*ADF)

(4) Peaking Factor check from TOCR Wastewater section 4.4.1.2 equation: PF = 3.65 (ADF^(-0.168)); Max PF = 5.0

**STORM & SANITARY ANALYSIS OUTPUT TABLES PEAK + INFILTRATION SANITARY ANALYSIS**

**Conduit Table**

| SN | Element ID | From (Inlet) Node | To (Outlet) Node | Length | Inlet Invert Elevation | Outlet Invert Elevation | Average Slope | Pipe Diameter or Height | Manning's Roughness | Peak Flow | Max Flow Velocity | Design Flow Capacity | Max Flow Depth | Percent Full |
|----|------------|-------------------|------------------|--------|------------------------|-------------------------|---------------|-------------------------|---------------------|-----------|-------------------|----------------------|----------------|--------------|
|    |            |                   |                  | (ft)   | (ft)                   | (ft)                    | (%)           | (inches)                |                     | (cfs)     | (ft/sec)          | (cfs)                | (ft)           | (%)          |
| 2  | P-16       | SS MH-08          | SS MH-07         | 309.14 | 6432.19                | 6428.74                 | 1.1200        | 8.040                   | 0.0110              | 0.03      | 1.65              | 1.51                 | 0.07           | 10.45%       |
| 3  | P-17       | SS MH-07          | SS MH-10         | 372.13 | 6428.44                | 6426.95                 | 0.4000        | 8.040                   | 0.0110              | 0.25      | 2.22              | 0.90                 | 0.24           | 35.82%       |
| 4  | P-18       | SS MH-10          | SS MH-11         | 127.50 | 6426.65                | 6426.14                 | 0.4000        | 8.040                   | 0.0110              | 0.30      | 2.33              | 0.90                 | 0.26           | 38.81%       |
| 5  | P-19       | SS MH-11          | SS MH-12         | 123.85 | 6425.84                | 6425.34                 | 0.4000        | 8.040                   | 0.0110              | 0.36      | 2.44              | 0.90                 | 0.29           | 43.28%       |
| 6  | P-20       | SS MH-12          | EX SS MH-01      | 120.94 | 6425.04                | 6424.56                 | 0.4000        | 8.040                   | 0.0110              | 0.36      | 2.44              | 0.90                 | 0.29           | 43.28%       |
| 7  | P-21       | SS MH-13          | SS MH-14         | 64.47  | 6430.96                | 6429.96                 | 1.5600        | 8.040                   | 0.0110              | 0.06      | 2.34              | 1.79                 | 0.08           | 11.94%       |
| 8  | P-22       | SS MH-14          | SS MH-07         | 92.01  | 6429.66                | 6428.74                 | 1.0000        | 8.040                   | 0.0110              | 0.12      | 2.46              | 1.43                 | 0.13           | 19.40%       |
| 9  | P-23       | SS MH-15          | SS MH-14         | 128.82 | 6431.25                | 6429.96                 | 1.0000        | 8.040                   | 0.0110              | 0.06      | 2.02              | 1.43                 | 0.09           | 13.43%       |
| 10 | P-24       | SS MH-01          | SS MH-02         | 152.13 | 6435.50                | 6433.74                 | 1.1500        | 8.040                   | 0.0110              | 0.05      | 2.01              | 1.54                 | 0.08           | 11.94%       |
| 11 | P-25       | SS MH-02          | SS MH-04         | 83.47  | 6433.44                | 6432.61                 | 1.0000        | 8.040                   | 0.0110              | 0.11      | 2.40              | 1.43                 | 0.12           | 17.91%       |
| 12 | P-26       | SS MH-04          | SS MH-05         | 110.83 | 6432.31                | 6431.20                 | 1.0000        | 8.040                   | 0.0110              | 0.11      | 2.40              | 1.43                 | 0.12           | 17.91%       |
| 13 | P-27       | SS MH-05          | SS MH-06         | 44.64  | 6430.90                | 6430.26                 | 1.4400        | 8.040                   | 0.0110              | 0.11      | 2.70              | 1.71                 | 0.11           | 16.42%       |
| 14 | P-28       | SS MH-06          | SS MH-07         | 82.84  | 6429.96                | 6428.75                 | 1.4600        | 8.040                   | 0.0110              | 0.11      | 2.72              | 1.73                 | 0.11           | 16.42%       |
| 15 | P-30       | SS MH-03          | SS MH-02         | 57.65  | 6434.36                | 6433.74                 | 1.0800        | 8.040                   | 0.0110              | 0.06      | 2.04              | 1.48                 | 0.09           | 13.43%       |

**STORM & SANITARY ANALYSIS OUTPUT TABLES PEAK + INFILTRATION SANITARY**

**Outfall Table**

| SN | Element ID  | Description | Invert Elevation<br><br>(ft) | Peak Inflow<br><br>(cfs) | Maximum HGL Depth Attained<br><br>(ft) | Maximum HGL Elevation Attained<br><br>(ft) |
|----|-------------|-------------|------------------------------|--------------------------|----------------------------------------|--------------------------------------------|
| 1  | EX SS MH-01 | 4' DIA MH   | 6424.26                      | 0.36                     | 0.59                                   | 6424.84                                    |

**STORM & SANITARY ANALYSIS OUTPUT TABLES PEAK + INFILTRATION SANITARY*****Junction Table***

| SN | Element<br>ID | Description | Invert<br>Elevation<br><br>(ft) | Ground/Rim<br>(Max)<br>Elevation<br><br>(ft) | Peak<br>Inflow<br><br>(cfs) | Maximum<br>HGL<br>Depth<br>Attained<br>(ft) |
|----|---------------|-------------|---------------------------------|----------------------------------------------|-----------------------------|---------------------------------------------|
| 1  | SS MH-01      | 4' DIA MH   | 6435.27                         | 6444.75                                      | 0.05                        | 0.31                                        |
| 2  | SS MH-02      | 4' DIA MH   | 6433.44                         | 6445.40                                      | 0.11                        | 0.39                                        |
| 3  | SS MH-03      | 4' DIA MH   | 6434.36                         | 6444.75                                      | 0.06                        | 0.09                                        |
| 4  | SS MH-04      | 4' DIA MH   | 6432.31                         | 6444.51                                      | 0.11                        | 0.42                                        |
| 5  | SS MH-05      | 4' DIA MH   | 6430.90                         | 6444.49                                      | 0.11                        | 0.42                                        |
| 6  | SS MH-06      | 4' DIA MH   | 6429.96                         | 6442.50                                      | 0.11                        | 0.41                                        |
| 7  | SS MH-07      | 4' DIA MH   | 6428.44                         | 6440.99                                      | 0.25                        | 0.43                                        |
| 8  | SS MH-08      | 4' DIA MH   | 6432.19                         | 6438.07                                      | 0.03                        | 0.07                                        |
| 10 | SS MH-10      | 4' DIA MH   | 6426.65                         | 6439.90                                      | 0.30                        | 0.54                                        |
| 11 | SS MH-11      | 4' DIA MH   | 6425.84                         | 6440.78                                      | 0.36                        | 0.56                                        |
| 12 | SS MH-12      | 4' DIA MH   | 6425.04                         | 6440.40                                      | 0.36                        | 0.59                                        |
| 13 | SS MH-13      | 4' DIA MH   | 6430.96                         | 6440.64                                      | 0.06                        | 0.08                                        |
| 14 | SS MH-14      | 4' DIA MH   | 6429.66                         | 6441.32                                      | 0.12                        | 0.39                                        |
| 15 | SS MH-15      | 4' DIA MH   | 6431.25                         | 6441.63                                      | 0.06                        | 0.09                                        |

# **APPENDIX D**

## **References**

Excerpts From "Final Utility Report For Dawson Trails Filing 2 Infrastructure"  
By EMK Consultants, Dated 2025

Excerpts From "Final Utility Report For Dawson Trails - Filing 2 Amendment  
2" By EMK Consultants, Dated 2025

# FINAL UTILITY REPORT

## FOR

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

#### Prepared for:

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



DEVELOPMENT SERVICES  
**APPROVED**

By tkucewesky  
on 10/21/2025  
Approved-CD23-0045 Util Rpt.pdf  
Record Document on File

#### Prepared by:



EMK Consultants, Inc.  
7006 S. Alton Way, Bldg F  
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Contact: Gary A. Walter  
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EMK Job No 13466

July 2025



## D. Phasing

The utilities proposed with this Final Utility Report will be completed in one phase. The Overall Utility & Phasing Map for all of Dawson Trails Development can be found in Appendix E. The timeline of each phase is not yet determined. The phasing of the water infrastructure is an approximation and is subject to change based on the developer's discretion and further analysis during final design. The general phasing of the development transpires in a North to South and East to West direction, rising from the Blue, Red, then Green Zone as well as associated infrastructure for each.

## E. Demand Categories, Design Criteria

Water consumption demands from Section 4.4.1 Design Demands were used for the Average Day Demands (ADD) and peaking factors as shown in Table 2.1: Water System Design Values from the Town of Castle Rock Water System Design 2018 Criteria Manual. Please see Appendix B for Filing 2 demand calculations.

**Table 2.1: Water System Design Values**

| Criteria                                                          | Value                     |
|-------------------------------------------------------------------|---------------------------|
| <b>Average Day Demand (ADD) per SFE</b>                           | 265 gallons per day (gpd) |
| <b>Maximum Daily Demand (MDD) Factor</b>                          | 2.5 times ADD             |
| <b>Peak Hour Demand (PHD) Factor</b>                              | 5.5 times ADD             |
| <b>Minimum Static Pressure with Zero Demand (20% Tank Stage)</b>  | 48.92 psi                 |
| <b>Minimum Static Pressure with Zero Demand (100% Tank Stage)</b> | 56.72 psi                 |
| <b>Minimum Dynamic Pressures (based on 20% Tank Stage)</b>        |                           |
| <b>Max Daily Demand + Fire Flow</b>                               | 20 psi                    |
| <b>Peak Hour Demand</b>                                           | 35 psi                    |

The following Single-Family Equivalents were used to calculate water demands.

**Table 2.2: Single Family Equivalents**

| Criteria                                                   | Value                |
|------------------------------------------------------------|----------------------|
| <b>Single Family Residential and Duplexes</b>              | 1.0 / dwelling unit  |
| <b>Multi-family Residential (Townhomes and Apartments)</b> | 0.65 / dwelling unit |
| <b>Industrial / Commercial</b>                             | 3.0 / acre           |
| <b>Schools</b>                                             | Varies               |
| <b>Parks</b>                                               | 9.38 SF/acre         |

Parameters used with the model of the Dawson Trails Water System are now as follows:

- **Average Day Demand (ADD)** is the total water use during a year divided by the number of days in a year (365).
- **Maximum Day Demand (MDD)** is the average demand in the month with the overall highest usage during the year (typically July or August). MDD is used to size water pipelines when combined with fire flows. MDD is also used to size water storage tanks (along with fire flow volumes).
- **Peak Hour Demand (PHD)** is the highest hourly demand occurring during the year. PHD is used to evaluate the required size of distribution pipelines. Known irrigation demands were applied to all junctions for public area irrigation and are consistent with



the force main(s) will be built in this phase with stub outs on both ends to provide connections for Phase 6 development.

#### Phase 5

Phase 5 of the Dawson Trails development will entail gravity main lines conveying flow east, connecting to existing stub outs at the upstream end of Junctions 1, 2, and 3's main lines constructed in Phase 3. A stub out for Phase 6 at the upstream end of Junction 1 and 2's main line should be constructed. A portion of the force main(s) will be built in this phase, if deemed necessary, with stub outs on both ends to provide connections for Phase 6 development.

#### Phase 6

Phase 6 of the Dawson Trails development will include gravity mains conveying flows either to the north to the lift station(s) or east to existing sanitary sewer mains, depending on the final grading. A force main conveying flows from the lift station(s) to the existing gravity main on the Site will be constructed. Efforts will be made to minimize the number of lift stations required to service the development as operation and maintenance costs will be assessed. Flows developed from Phase 6 development have been accounted for in both Junction 1 and 3's runs.

### **E. Demand Categories, Design Criteria**

Wastewater demands, were taken from 4.4.1.1 Wastewater System Average Daily Flow (ADF) of the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual.

**Table 3.1 – Wastewater Collection System Evaluation Parameters**

| Flow Parameters                        |                                                  |
|----------------------------------------|--------------------------------------------------|
| <b>Average Daily Flow (ADF)</b>        | 200 gpd / dwelling unit                          |
| <b>Peaking Factor (PF)</b>             | $PF = 3.65 * [(ADF)^{-0.168}]$<br>Maximum PF = 5 |
| <b>Infiltration and Inflow (I/I)</b>   | $I/I = 0.1 * ADF$                                |
| <b>Peak Design Flow (PDF)</b>          | $PDF = ADF * PF + (I/I)$                         |
| Gravity Flow Pipe Parameters           |                                                  |
| <b>Minimum Pipe Size</b>               | 8-inch                                           |
| <b>Manning's Roughness Coefficient</b> | 0.011                                            |
| <b>Minimum Velocity</b>                | 2.0 ft/s                                         |
| <b>Maximum Velocity</b>                | 10.0 ft/s                                        |
| <b>Maximum Flow in Pipe (d/D)</b>      | 0.75                                             |
| Force Main Parameters                  |                                                  |
| <b>Minimum Pipe Size</b>               | 4-inch                                           |
| <b>Minimum Velocity</b>                | 3.0 ft/s                                         |
| <b>Maximum Velocity</b>                | 7.0 ft/s                                         |

The following Single-Family Equivalents were used to calculate Sanitary Demands.

| Criteria                                                   | Value                |
|------------------------------------------------------------|----------------------|
| <b>Single Family Residential and Duplexes</b>              | 1.0 / dwelling unit  |
| <b>Multi-family Residential (Townhomes and Apartments)</b> | 0.65 / dwelling unit |
| <b>Industrial / Commercial</b>                             | 3.0 / acre           |
| <b>Schools</b>                                             | Varies               |
| <b>Parks</b>                                               | No demand            |

EXCERPTS FROM "FINAL UTILITY  
REPORT FOR DAWSON TRAILS  
FILING 2 INFRASTRUCTURE" BY EMK  
CONSULTANTS, DATED 2025.

**Dawson Trails for Westside**

**Potable Water Model**

Water Demands-Buildout

Date: December 2024

MSK Project #: 52-001-01

Calc'd by: DLT

**PRELIMINARY**

6/26/24

**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 at Buildout (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          | 90.0           | 23,850           | 59,625           | 41.4           | 91.1           |                     |                      |                      | J28      |
| 2                                  | F-1           | Blue          | 4.0            | 1,060            | 2,650            | 1.8            | 4.0            | 4.89                | 18,323.6             | 12.7                 | J18      |
| 3                                  | F-1           | Blue          | 3.0            | 795              | 1,988            | 1.4            | 3.0            |                     |                      |                      | J20      |
| 4                                  | F-1           | Blue          | 33.0           | 8,745            | 21,863           | 15.2           | 33.4           |                     |                      |                      | J20      |
| 5                                  | E-1           | Blue          | 20.0           | 5,300            | 13,250           | 9.2            | 20.2           |                     |                      |                      | J12      |
| <b>Blue Zone Totals</b>            |               |               | <b>150.0</b>   | <b>39,750</b>    | <b>99,375</b>    | <b>69.0</b>    | <b>151.8</b>   | <b>4.9</b>          | <b>18,323.6</b>      | <b>12.7</b>          |          |
| 6                                  | F-2 (Ph. 1)   | Red           | 0.0            | 0                | 0                | 0.0            | 0.0            | 2.29                | 8,595.6              | 6.0                  | J10      |
| 7                                  | F-2 (Ph. 1)   | Red           | 102.0          | 27,030           | 67,575           | 46.9           | 103.2          |                     |                      |                      | J14      |
| 8                                  | F-3 (Ph. 1)   | Red           | 509.0          | 134,885          | 337,213          | 234.2          | 515.2          |                     |                      |                      | J94      |
| 9                                  | F-3           | Red           | 678.0          | 179,670          | 449,175          | 311.9          | 686.2          |                     |                      |                      | J96      |
| 10                                 | B-1 (Ph. 1)   | Red           | 245.0          | 64,925           | 162,313          | 112.7          | 248.0          |                     |                      |                      | J140     |
| 11                                 | D (Ph. 1)     | Red           | 470.0          | 124,550          | 311,375          | 216.2          | 475.7          |                     |                      |                      | J98      |
| 12                                 | D             | Red           | 148.0          | 39,220           | 98,050           | 68.1           | 149.8          |                     |                      |                      | J24      |
| 13                                 | D             | Red           | 517.0          | 137,005          | 342,513          | 237.9          | 523.3          | 13.7                | 51,363.8             | 35.7                 | J112     |
| 14                                 | D             | Red           | 688.0          | 182,320          | 455,800          | 316.5          | 696.4          | 13.7                | 51,363.8             | 35.7                 | J114     |
| 15                                 | D             | Red           | 2.0            | 530              | 1,325            | 0.9            | 2.0            | 13.7                | 51,363.8             | 35.7                 | J120     |
| 16                                 | D             | Red           | 216.0          | 57,240           | 143,100          | 99.4           | 218.6          | 13.7                | 51,363.8             | 35.7                 | J102     |
| 17                                 | D             | Red           | 384.0          | 101,760          | 254,400          | 176.7          | 388.7          | 13.7                | 51,363.8             | 35.7                 | J58      |
| 18                                 | D             | Red           | 191.0          | 50,615           | 126,538          | 87.9           | 193.3          | 13.7                | 51,363.8             | 35.7                 | J118     |
| 19                                 | C-2           | Red           | 17.0           | 4,505            | 11,263           | 7.8            | 17.2           | 13.7                | 51,363.8             | 35.7                 | J108     |
| 20                                 | C-2           | Red           | 102.0          | 27,030           | 67,575           | 46.9           | 103.2          | 13.7                | 51,363.8             | 35.7                 | J106     |
| 21                                 | C-2           | Red           | 114.0          | 30,210           | 75,525           | 52.4           | 115.4          | 13.7                | 51,363.8             | 35.7                 | J126     |
| 22                                 | C-2           | Red           | 189.0          | 50,085           | 125,213          | 87.0           | 191.3          | 13.7                | 51,363.8             | 35.7                 | J124     |
| 23                                 | C-2           | Red           | 25.0           | 6,625            | 16,563           | 11.5           | 25.3           | 13.7                | 51,363.8             | 35.7                 | J66      |
| 24                                 | C-2           | Red           | 5.0            | 1,325            | 3,313            | 2.3            | 5.1            | 13.7                | 51,363.8             | 35.7                 | J122     |
| 25                                 | G-1           | Red           | 68.0           | 18,020           | 45,050           | 31.3           | 68.8           | 13.7                | 51,363.8             | 35.7                 | J110     |
| 26                                 | G-1           | Red           | 101.0          | 26,765           | 66,913           | 46.5           | 102.2          | 13.7                | 51,363.8             | 35.7                 | J116     |
| 27                                 | G-2           | Red           | 13.0           | 3,445            | 8,613            | 6.0            | 13.2           | 13.7                | 51,363.8             | 35.7                 | J64      |
| <b>Red Zone Totals</b>             |               |               | <b>4,784.0</b> | <b>1,267,760</b> | <b>3,169,400</b> | <b>2,201.0</b> | <b>4,842.1</b> | <b>207.7</b>        | <b>779,051.8</b>     | <b>541.0</b>         |          |
| 28                                 | B-1           | Green         | 239.0          | 63,335           | 158,338          | 110.0          | 241.9          | 8.8                 | 33,142.5             | 23.0                 | J134     |
| 29                                 | C-2           | Green         | 169.0          | 44,785           | 111,963          | 77.8           | 171.1          | 8.8                 | 33,142.5             | 23.0                 | J130     |
| 30                                 | C-2           | Green         | 334.0          | 88,510           | 221,275          | 153.7          | 338.1          | 8.8                 | 33,142.5             | 23.0                 | J44      |
| 31                                 | C-2           | Green         | 17.0           | 4,505            | 11,263           | 7.8            | 17.2           | 8.8                 | 33,142.5             | 23.0                 | J74      |
| 32                                 | C-1           | Green         | 92.0           | 24,380           | 60,950           | 42.3           | 93.1           | 8.8                 | 33,142.5             | 23.0                 | J132     |
| 33                                 | C-1           | Green         | 222.0          | 58,830           | 147,075          | 102.1          | 224.7          | 8.8                 | 33,142.5             | 23.0                 | J128     |
| 34                                 | C-1           | Green         | 167.0          | 44,255           | 110,638          | 76.8           | 169.0          | 8.8                 | 33,142.5             | 23.0                 | J42      |
| 35                                 | B-2           | Green         | 228.0          | 60,420           | 151,050          | 104.9          | 230.8          | 8.8                 | 33,142.5             | 23.0                 | J138     |
| 36                                 | A             | Green         | 333.0          | 88,245           | 220,613          | 153.2          | 337.0          | 8.8                 | 33,142.5             | 23.0                 | J136     |
| 37                                 | A             | Green         | 2.0            | 530              | 1,325            | 0.9            | 2.0            | 8.8                 | 33,142.5             | 23.0                 | J48      |
| 38                                 | A             | Green         | 138.0          | 36,570           | 91,425           | 63.5           | 139.7          | 8.8                 | 33,142.5             | 23.0                 | J62      |
| <b>Green Zone Totals</b>           |               |               | <b>1,941.0</b> | <b>514,365</b>   | <b>1,285,913</b> | <b>893.0</b>   | <b>1,964.6</b> | <b>97.2</b>         | <b>364,567.5</b>     | <b>253.2</b>         |          |
| <b>Buildout Totals (All Zones)</b> |               |               | <b>6,875.0</b> | <b>1,821,875</b> | <b>4,554,688</b> | <b>3,163.0</b> | <b>6,958.6</b> | <b>309.9</b>        | <b>1,161,942.9</b>   | <b>806.9</b>         |          |

**Note:**

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

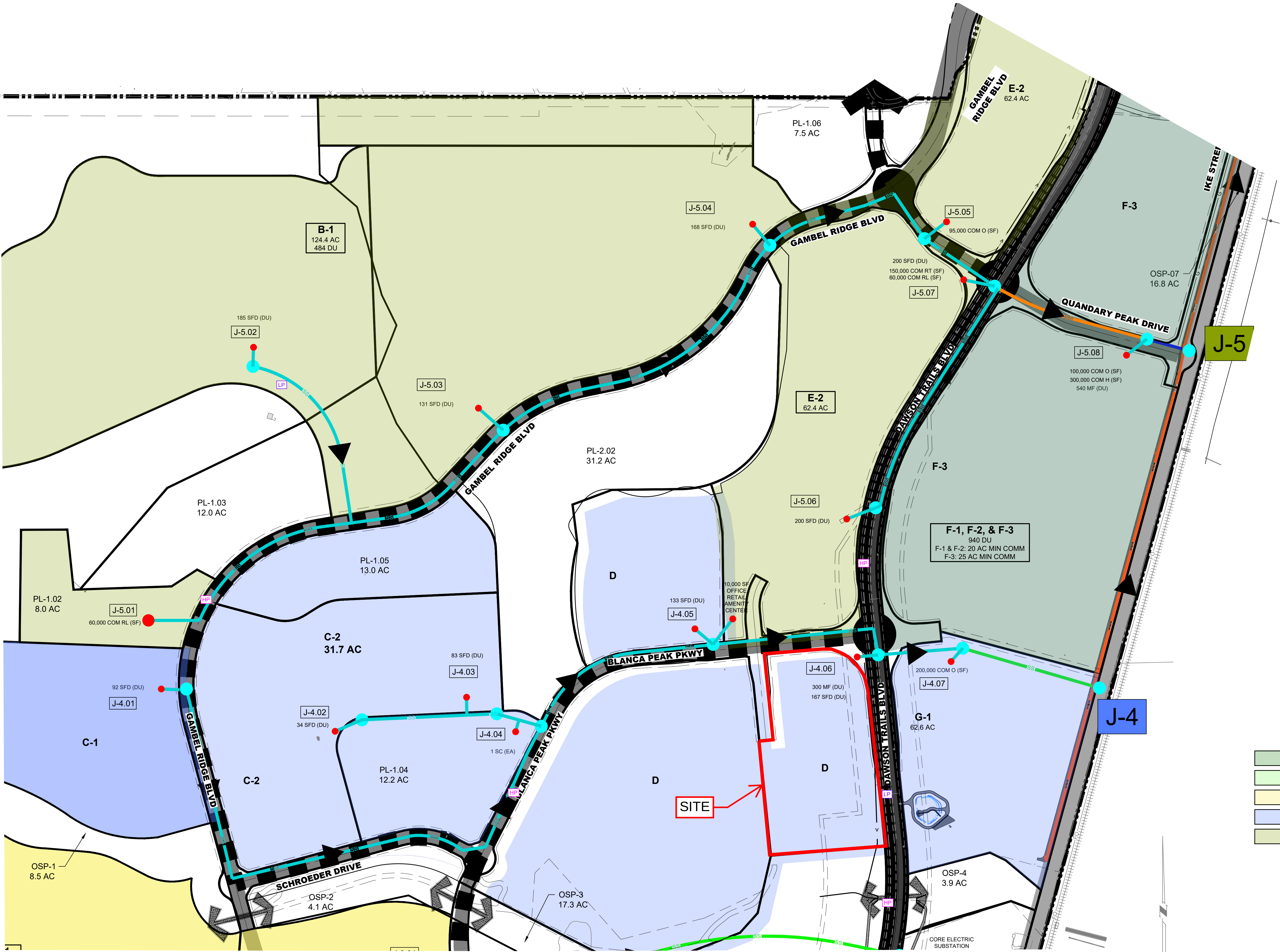
**Red Zone BPS Buildout Pumping Capacity:**

Total Max Day flow: 4,455,313 gpd (Red and Green Zones)

| PROJECT: DAWSON TRAILS<br><br>12/20/24 CGV      Date Initials |               |        |                     |                     |                     | Town of Castle Rock Criteria                                                                                                                                                                        |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            | Unit Conversions                                                 |                                | Design Criteria                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     |                                  |                |                 |                                           |                            |                            |                                             |                                        |                                           |                          |                            |                                  |  |  |
|---------------------------------------------------------------|---------------|--------|---------------------|---------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------|-----------------|-------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------|----------------------------|------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------|-----------------------------|------------------------------|---------------------|---------------------|---------------------|----------------------------------|----------------|-----------------|-------------------------------------------|----------------------------|----------------------------|---------------------------------------------|----------------------------------------|-------------------------------------------|--------------------------|----------------------------|----------------------------------|--|--|
|                                                               |               |        |                     |                     |                     | Single Family Residential and Duplexes<br>Multi-Family Residential (Townhomes and Condos)<br>Retail/ Offices*<br>Restaurants*<br>Hotel**<br>Industrial***<br>Car Wash<br>Elementary School<br>Parks |                      |                          |                 |             |               | Typical ADF/ Unit<br>200 GPD/DU<br>130 GPD/DU<br>0.1 GPD/SF<br>1.5 GPD/SF<br>75 GPD/Room<br>600 GPD/AC<br>5,000 GPD/AC<br>3,375 GPD/School<br>200 GPD/SFE |                  |                        |                            | 0.18 GPD/SF<br>0.01 GPD/SF                                       |                                | *Restaurant area anticipated to be 10-15% of the allocated<br>restaurant, retail and office space<br>**Assuming 115 rooms/ hotel and average 48,000 SF hotel/<br>***Assuming 40% building area |                       |                             |                             |                              |                     |                     |                     |                                  |                |                 |                                           |                            |                            |                                             |                                        |                                           |                          |                            |                                  |  |  |
| Pipe (in)                                                     |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | Slope                            |                | Capacity (gpm)  |                                           |                            |                            |                                             |                                        |                                           |                          |                            |                                  |  |  |
| 8                                                             |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | Min                              |                | Max             |                                           | Min                        |                            | Max                                         |                                        |                                           |                          |                            |                                  |  |  |
| 10                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.40%                            |                | 7.50%           |                                           | 374                        |                            | 1,619                                       |                                        |                                           |                          |                            |                                  |  |  |
| 12                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.28%                            |                | 5.50%           |                                           | 536                        |                            | 2,514                                       |                                        |                                           |                          |                            |                                  |  |  |
| 15                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.22%                            |                | 4.50%           |                                           | 780                        |                            | 3,698                                       |                                        |                                           |                          |                            |                                  |  |  |
| 18                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.15%                            |                | 3.50%           |                                           | 1,224                      |                            | 5,913                                       |                                        |                                           |                          |                            |                                  |  |  |
| 21                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.11%                            |                | 2.50%           |                                           | 1,705                      |                            | 8,126                                       |                                        |                                           |                          |                            |                                  |  |  |
| 24                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.09%                            |                | 2.00%           |                                           | 2,326                      |                            | 10,964                                      |                                        |                                           |                          |                            |                                  |  |  |
| 27                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.08%                            |                | 1.80%           |                                           | 3,131                      |                            | 14,850                                      |                                        |                                           |                          |                            |                                  |  |  |
| 30                                                            |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.07%                            |                | 1.50%           |                                           | 4,009                      |                            | 18,559                                      |                                        |                                           |                          |                            |                                  |  |  |
|                                                               |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | 0.06%                            |                | 1.30%           |                                           | 4,916                      |                            | 22,882                                      |                                        |                                           |                          |                            |                                  |  |  |
| PROJECTED FLOW DETERMINATION                                  |               |        |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              |                     |                     |                     | SEWER DESIGN                     |                |                 |                                           |                            |                            |                                             |                                        |                                           |                          |                            |                                  |  |  |
| DESIGN POINT                                                  |               |        |                     |                     |                     | RESIDENTIAL                                                                                                                                                                                         |                      |                          | NON-RESIDENTIAL |             |               |                                                                                                                                                           |                  |                        |                            | PEAK FLOW                                                        |                                |                                                                                                                                                                                                | INFILTRATION & INFLOW |                             | CUMULATIVE TOTAL FLOW       |                              |                     |                     |                     |                                  | Pipe Size (in) | Number of Pipes | Approximate Design Pipe Slope (ft/100 ft) | Min Pipe Slope (ft/100 ft) | Max Pipe Slope (ft/100 ft) | Capacity (gpm) @ 75% depth @ Min Pipe Slope | Capacity (gpm) @ 75% depth @ Max Slope | Capacity @ 75% depth (gpm) @ Design Slope | Capacity Remaining (gpm) | Percent Capacity (75% Max) |                                  |  |  |
| Design Point Location                                         | PLANNING AREA | Phase  | Contributing Flow 1 | Contributing Flow 2 | Contributing Flow 3 | Multi Family (DU's)                                                                                                                                                                                 | Single Family (DU's) | Average Daily Flow (GPD) | School (EA.)    | Parks (SFE) | Car Wash (AC) | Industrial (Gross SF)                                                                                                                                     | Hotel (Gross SF) | Restaurants (Gross SF) | Retail / Office (Gross SF) | Average Daily Flow (GPD)                                         | Total Average Daily Flow (GPD) | Total Average Flow (gpm)                                                                                                                                                                       | Peak Hour Flow (gpm)  | Infiltration & Inflow (GPD) | Infiltration & Inflow (gpm) | Total Peak Sewage Flow (gpm) | Contributing Flow 1 | Contributing Flow 2 | Contributing Flow 3 | Cumulative Total Peak Flow (gpm) |                |                 |                                           |                            |                            |                                             |                                        |                                           |                          |                            | Cumulative Total Peak Flow (cfs) |  |  |
|                                                               |               |        |                     |                     |                     | a                                                                                                                                                                                                   | b                    | c                        | d               | dd          | ddd           | e                                                                                                                                                         | ee               | f                      | ff                         | g                                                                | h                              | i                                                                                                                                                                                              | j                     | k                           | m                           | n                            | o                   | p                   | q                   | r                                | rr             | s               | t                                         | u                          | w                          | x                                           | y                                      | z                                         | aa                       | bb                         | cc                               |  |  |
|                                                               |               |        |                     |                     |                     | Map                                                                                                                                                                                                 | Map                  | 130*a + 200*b            | Map             | Map         | Map           | Map                                                                                                                                                       | Map              | Map                    | Map                        | 3.375*d + 200*dd + 5,000*ddd + 0.05*e + 0.18*ee + 1.5*f + 0.1*ff | c + g                          | h/24/60                                                                                                                                                                                        | i * 5                 | 0.1*h                       | k/(24*60)                   | j + m                        | r                   | r                   | r                   | n+o+p+q                          | r / 0.1337*60  |                 |                                           |                            |                            |                                             |                                        |                                           | aa - r                   |                            |                                  |  |  |
| J-4.01                                                        | C-1           | 1B & 2 |                     |                     |                     |                                                                                                                                                                                                     | 92                   | 18,400                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 18,400                         | 12.78                                                                                                                                                                                          | 63.89                 | 1,840                       | 1.28                        | 65.2                         |                     |                     |                     | 65.2                             | 0.15           | 8               | 1                                         | 2.50                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 932                      | 867                        | 18%                              |  |  |
| J-4.02                                                        | C-2           | 1B     | J-4.01              |                     |                     |                                                                                                                                                                                                     | 34                   | 6,800                    |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 6,800                          | 4.72                                                                                                                                                                                           | 23.61                 | 680                         | 0.47                        | 24.1                         | 65.2                |                     |                     | 89.3                             | 0.20           | 8               | 1                                         | 2.50                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 932                      | 843                        | 21%                              |  |  |
| J-4.03                                                        | C-2           | 1B     | J-4.02              |                     |                     |                                                                                                                                                                                                     | 83                   | 16,600                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 16,600                         | 11.53                                                                                                                                                                                          | 57.64                 | 1,660                       | 1.15                        | 58.8                         | 89.3                |                     |                     | 148.1                            | 0.33           | 8               | 1                                         | 2.50                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 932                      | 784                        | 27%                              |  |  |
| J-4.04                                                        | PL-1.04       | 1B     | J-4.03              |                     |                     |                                                                                                                                                                                                     |                      |                          | 1               |             |               |                                                                                                                                                           |                  |                        |                            | 3.375                                                            | 3.375                          | 2.34                                                                                                                                                                                           | 11.72                 | 338                         | 0.23                        | 12.0                         | 148.1               |                     |                     | 160.1                            | 0.36           | 8               | 1                                         | 2.00                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 834                      | 674                        | 29%                              |  |  |
| J-4.05                                                        | D             | 1B     | J-4.04              |                     |                     |                                                                                                                                                                                                     | 133                  | 26,600                   |                 |             |               |                                                                                                                                                           |                  |                        | 10,000                     | 1,000                                                            | 27,600                         | 19.17                                                                                                                                                                                          | 95.83                 | 2,760                       | 1.92                        | 97.8                         | 160.1               |                     |                     | 257.9                            | 0.57           | 8               | 1                                         | 2.00                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 834                      | 576                        | 38%                              |  |  |
| J-4.06                                                        | D             | 1B     | J-4.05              |                     |                     | 300                                                                                                                                                                                                 | 167                  | 72,400                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 72,400                         | 50.28                                                                                                                                                                                          | 251.39                | 7,240                       | 5.03                        | 256.5                        | 257.9               |                     |                     | 514.4                            | 1.15           | 8               | 1                                         | 1.00                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 590                      | 75                         | 69%                              |  |  |
| J-4.07                                                        | G-1           | 1B     | J-4.06              |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        | 200,000                    | 20,000                                                           | 20,000                         | 13.89                                                                                                                                                                                          | 69.44                 | 2,000                       | 1.39                        | 70.9                         | 514.4               |                     |                     | 585.3                            | 1.30           | 10              | 1                                         | 1.00                       | 0.28                       | 5.50                                        | 536                                    | 2514                                      | 1,069                    | 484                        | 50%                              |  |  |
| J-4                                                           |               |        | J-4.07              | J-3                 |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              | 585.3               | 2362.8              |                     | 2948.1                           | 6.57           | 21              | 1                                         | 0.20                       | 0.09                       | 2.00                                        | 2326                                   | 10964                                     | 3,458                    | 510                        | 67%                              |  |  |
| J-5.01                                                        | PL-1.02       | 4      |                     |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        | 60,000                     | 6,000                                                            | 6,000                          | 4.17                                                                                                                                                                                           | 20.83                 | 600                         | 0.42                        | 21.3                         |                     |                     |                     | 21.3                             | 0.05           | 8               | 1                                         | 0.40                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 373                      | 352                        | 16%                              |  |  |
| J-5.02                                                        | B-1           | 4      | J-5.01              |                     |                     |                                                                                                                                                                                                     | 185                  | 37,000                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 37,000                         | 25.69                                                                                                                                                                                          | 128.47                | 3,700                       | 2.57                        | 131.1                        | 21.3                |                     |                     | 152.4                            | 0.34           | 8               | 1                                         | 0.40                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 373                      | 221                        | 44%                              |  |  |
| J-5.03                                                        | B-1           | 1B     | J-5.02              |                     |                     |                                                                                                                                                                                                     | 131                  | 26,200                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 26,200                         | 18.19                                                                                                                                                                                          | 90.97                 | 2,620                       | 1.82                        | 92.8                         | 152.4               |                     |                     | 245.2                            | 0.55           | 8               | 1                                         | 2.00                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 834                      | 589                        | 36%                              |  |  |
| J-5.04                                                        | B-1           | 1B     | J-5.03              |                     |                     |                                                                                                                                                                                                     | 168                  | 33,600                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 33,600                         | 23.33                                                                                                                                                                                          | 116.67                | 3,360                       | 2.33                        | 119.0                        | 245.2               |                     |                     | 364.2                            | 0.81           | 8               | 1                                         | 2.00                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 834                      | 470                        | 45%                              |  |  |
| J-5.05                                                        | E-2           | 1B     | J-5.04              |                     |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        | 95,000                     | 9,500                                                            | 9,500                          | 6.60                                                                                                                                                                                           | 32.99                 | 950                         | 0.66                        | 33.7                         | 364.2               |                     |                     | 397.9                            | 0.89           | 8               | 1                                         | 1.50                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 722                      | 324                        | 51%                              |  |  |
| J-5.06                                                        | E-2           | 1B     |                     |                     |                     | 200                                                                                                                                                                                                 |                      | 26,000                   |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  | 26,000                         | 18.06                                                                                                                                                                                          | 90.28                 | 2,600                       | 1.81                        | 92.1                         |                     |                     |                     | 92.1                             | 0.21           | 8               | 1                                         | 0.50                       | 0.40                       | 7.50                                        | 374                                    | 1619                                      | 417                      | 325                        | 32%                              |  |  |
| J-5.07                                                        | E-2           | 1B     | J-5.05              | J-5.06              |                     | 200                                                                                                                                                                                                 |                      | 26,000                   |                 |             |               |                                                                                                                                                           |                  | 150,000                | 60,000                     | 231,000                                                          | 257,000                        | 178.47                                                                                                                                                                                         | 892.36                | 25,700                      | 17.85                       | 910.3                        | 397.9               | 92.1                |                     | 1400.3                           | 3.12           | 12              | 1                                         | 0.75                       | 0.22                       | 4.50                                        | 780                                    | 3698                                      | 1,506                    | 105                        | 72%                              |  |  |
| J-5.08                                                        | F-3           | 1B     | J-5.07              |                     |                     | 540                                                                                                                                                                                                 |                      | 70,200                   |                 |             |               |                                                                                                                                                           | 300,000          |                        | 100,000                    | 63,906                                                           | 134,106                        | 93.13                                                                                                                                                                                          | 465.65                | 13,411                      | 9.31                        | 475.0                        | 1400.3              |                     |                     | 1875.3                           | 4.18           | 15              | 1                                         | 1.00                       | 0.15                       | 3.50                                        | 1224                                   | 5913                                      | 3,152                    | 1,277                      | 53%                              |  |  |
| J-5                                                           |               |        | J-5.08              | J-4                 |                     |                                                                                                                                                                                                     |                      |                          |                 |             |               |                                                                                                                                                           |                  |                        |                            |                                                                  |                                |                                                                                                                                                                                                |                       |                             |                             |                              | 1875.3              | 2948.1              |                     | 4823.4                           | 10.75          | 21              | 1                                         | 0.50                       | 0.09                       | 2.00                                        | 2326                                   | 10964                                     | 5,467                    | 644                        | 69%                              |  |  |

EXCERPTS FROM "FINAL UTILITY REPORT FOR DAWSON TRAILS FILING 2 INFRASTRUCTURE" BY EMK CONSULTANTS, DATED 2025.

EXCERPTS FROM "FINAL UTILITY REPORT FOR DAWSON TRAILS FILING 2 INFRASTRUCTURE" BY EMK CONSULTANTS, DATED 2025.



| 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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(303)694-1920



OVERALL WASTEWATER MAP  
(1 OF 1)

DAWSON TRAILS

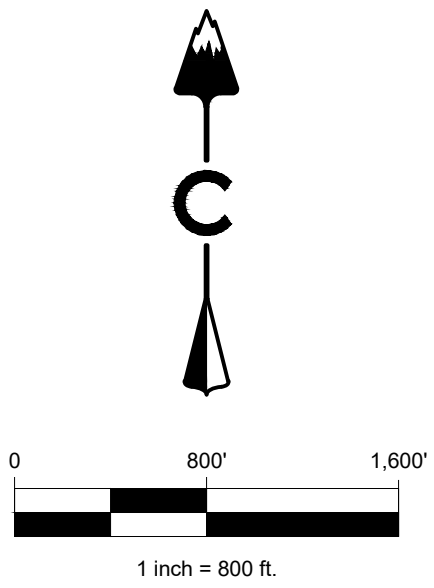
8/15/2024

CREATED BY: CGV

JOB NO.  
20-224

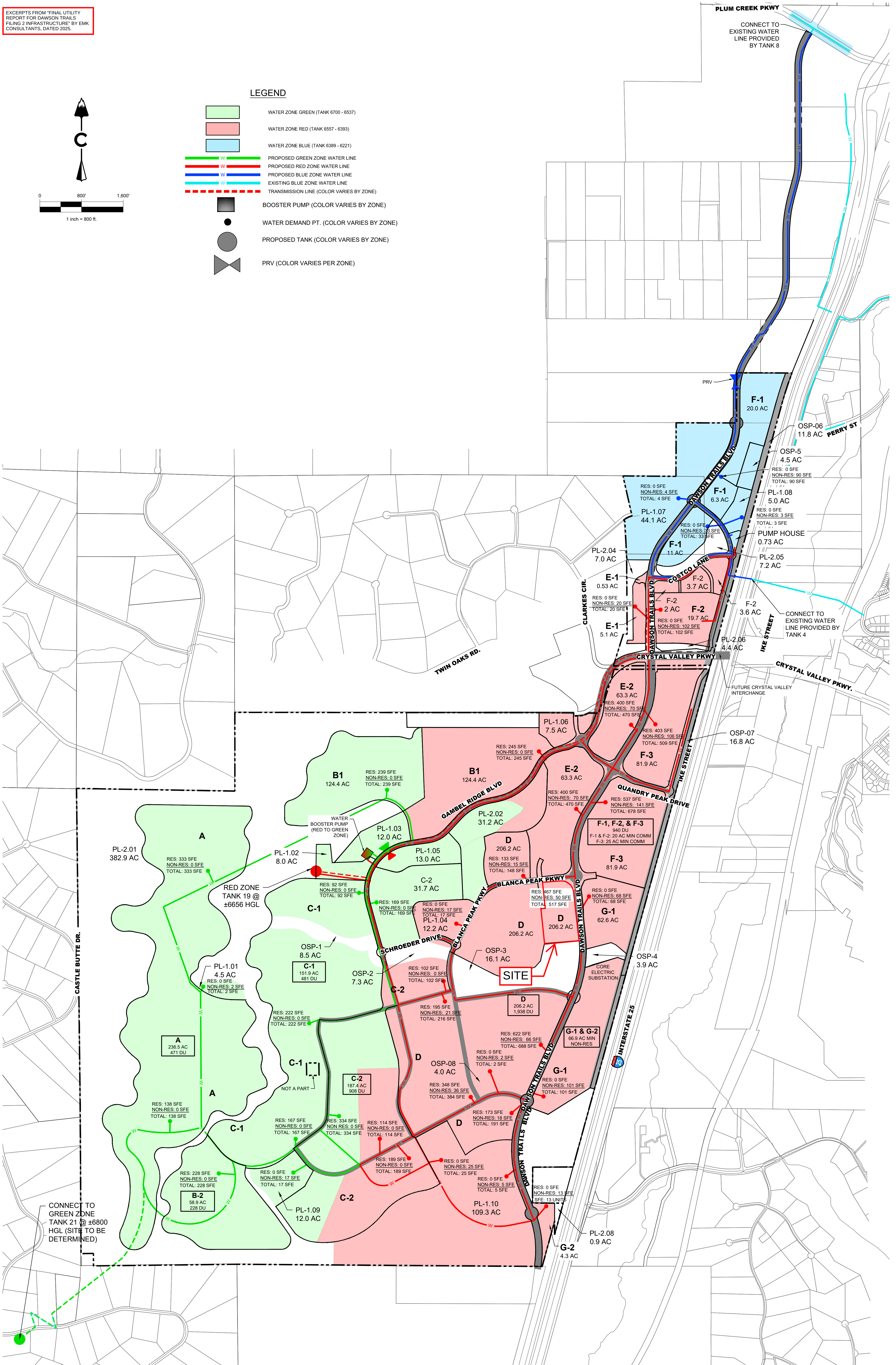
SHEET  
1 OF 1

EXCERPTS FROM "FINAL UTILITY REPORT FOR DAWSON TRAILS FILING 2 INFRASTRUCTURE" BY EMK CONSULTANTS, DATED 2025.



LEGEND

- WATER ZONE GREEN (TANK 6700 - 6537)
- WATER ZONE RED (TANK 6557 - 6393)
- WATER ZONE BLUE (TANK 6389 - 6221)
- PROPOSED GREEN ZONE WATER LINE
- PROPOSED RED ZONE WATER LINE
- PROPOSED BLUE ZONE WATER LINE
- EXISTING BLUE ZONE WATER LINE
- TRANSMISSION LINE (COLOR VARIES BY ZONE)
- BOOSTER PUMP (COLOR VARIES BY ZONE)
- WATER DEMAND PT. (COLOR VARIES BY ZONE)
- PROPOSED TANK (COLOR VARIES BY ZONE)
- PRV (COLOR VARIES PER ZONE)



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PUBLIC INFRASTRUCTURE

DAWSON TRAILS

OVERALL WATER MAP

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



Excerpt from the "Final Utility Report For  
Dawson Trails - Filing 2, Amendment 2" by  
EMK Consultants, dated 2025.

**FINAL UTILITY REPORT  
FOR  
DAWSON TRAILS – FILING 2, AMENDMENT 2**

Castle Rock, Colorado  
Town of Castle Rock Project CD25-0009

February 26, 2025  
Revised: August 8, 2025  
Revised: November 10, 2025  
Revised: December 11, 2025

EMK Job. No. 13393

Prepared For:  
**ACM Dawson Trails VIII JV LLC**  
8350 East Crescent Parkway, Suite 200  
Greenwood Village, CO 80111  
Attention: Lawrence Jacobson  
303-748-5466  
[ljacobson@westsideinv.com](mailto:ljacobson@westsideinv.com)

Prepared By:  
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7006 S. Alton Way, Bldg F  
Centennial, CO 80112  
Contact: Eric R. McDaniel  
Phone: (303) 694-1520

## UTILITY REPORT APPROVAL BLOCKS

### Engineer's Statement:

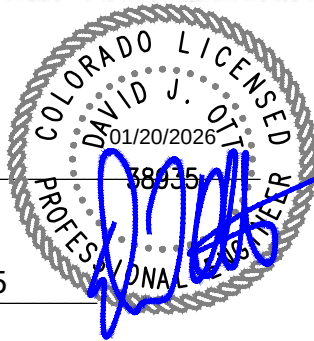
The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Castle Rock criteria and is in conformance with the master utility plans for 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. 38935

(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.

ACH Dawson Trails VIII JV LLC

Name of Developer

Authorized Signature



DEVELOPMENT SERVICES

**APPROVED**

By jkirkpatrick  
on 01/21/2026

APPROVED-CD25-0009 Final Util Rpt.pdf  
Record Document on File

## **I. Project Location and Description**

### **A. Site Location**

Filing 2, Amendment 2 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, Township 8 South, Range 67 West of the 6<sup>th</sup> 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 Filing 2, Amendment 2.

### **B. Description of Property and Land Use**

Filing 2, Amendment 2 covers 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 Filing 2, Amendment 2. 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.

The common irrigation system for Parcel D will serve 8.01 acres of common space landscape, including 4.12 acres of permanent irrigation, and 3.89 acres of temporary native seed irrigation. Four (4) irrigation taps are proposed for Parcel D: one 3/4-inch tap with a maximum flow rate of 10 gallons per minute; and three 1-inch taps with a maximum flow rate of 18 gallons per minute each. See Appendix for irrigation watering chart and hydraulic calculations.

### **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 is added per the criteria at 3750 gpd/acre.

### **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 is added per the criteria at 3750 gpd/acre.

### **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 Blanca Peak Parkway that runs through Tract O and H. Eight-inch distribution pipes in the northern and southern sections of Filing 2, Amendment 2 will connect to this 12-inch watermain. Both the north and south systems will have two connection points to provide looping. Filing 2, Amendment 2 is included in an overall area identified as area 47 in Figure 3.7 of the *Town of Castle Rock Water Master Plan 2023*. Filing 2, Amendment 2 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 Filing 2, Amendment 2 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 Filing 2, Amendment 2 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 Filing 2, Amendment 2 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 (approved fire flow is 1000 gpm for 1 hour) 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 10.3 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 1.5 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 Filing 2, Amendment 2 will tie into an 8-inch sanitary main proposed in Blanca Peak Parkway to be constructed by others. Capacity of this main has been analyzed in the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer*. A figure from this report included in Appendix E indicates that the proposed Filing 2, Amendment 2 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 Filing 2, Amendment 2 for the east area of future development.

All streets in Filing 2, Amendment 2 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 Filing 2, Amendment 2 development.

### **C. Land Dedication Requirements**

No land dedication is required for wastewater facilities in Filing 2, Amendment 2.

## **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*. 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*. 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*. 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 EMK Consultants, July 2025.
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.

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: 11/10/2025

| Junction ID | Blocks to Junction | Number of Dwelling Units | Average Day (gal/day) | Average Day (gpm) | Irrigation Average Day (gal/day) | Irrigation 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               | 5700                             | 4.0                          | 5700                  | 4.0               | 5700                | 4.0             | Irrigation POC #10 (1.52 acres, 18 gpm highest flowrate) |
| 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               | 13050                            | 9.1                          | 24975                 | 17.3              | 39285               | 27.3            | Irrigation POC #11 (3.48 acres, 18 gpm highest flowrate) |
| 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               | 10613                            | 7.4                          | 10612.5               | 7.4               | 10612.5             | 7.4             | Irrigation POC #13 (2.83 acres, 18 gpm highest flowrate) |
| 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               | 638                              | 0.4                          | 638                   | 0.4               | 638                 | 0.4             | Irrigation POC #12 (0.17 acres, 10 gpm highest flowrate) |
| 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
  - 4. Irrigation applied at 3750 gpd/irrigated acre

| Water Storage Calculations                 |                          |                       |                               |
|--------------------------------------------|--------------------------|-----------------------|-------------------------------|
|                                            | Gallons per Minute (GPM) | Gallons Per Day (GPD) | Million Gallons per Day (MGD) |
| Total Max Day Demand                       | 138.6                    | 199601                | 0.200                         |
| Required Fire Flow (1,000 gpm for 120 min) | 1000                     | 120000                | 0.12                          |
| Required Storage                           |                          | 319601                | 0.320                         |
| Required Storage without Fire Flow         |                          | 199601                | 0.200                         |

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.

# WATERCAD SCHEMATIC - DAWSON TRAILS TRACT O AND H



Wastewater Flow Calculations - Dawson Trails Tract D

| Single Family Res and Duplexes | Average Daily Flow (gpd/du)<br>(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:

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

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

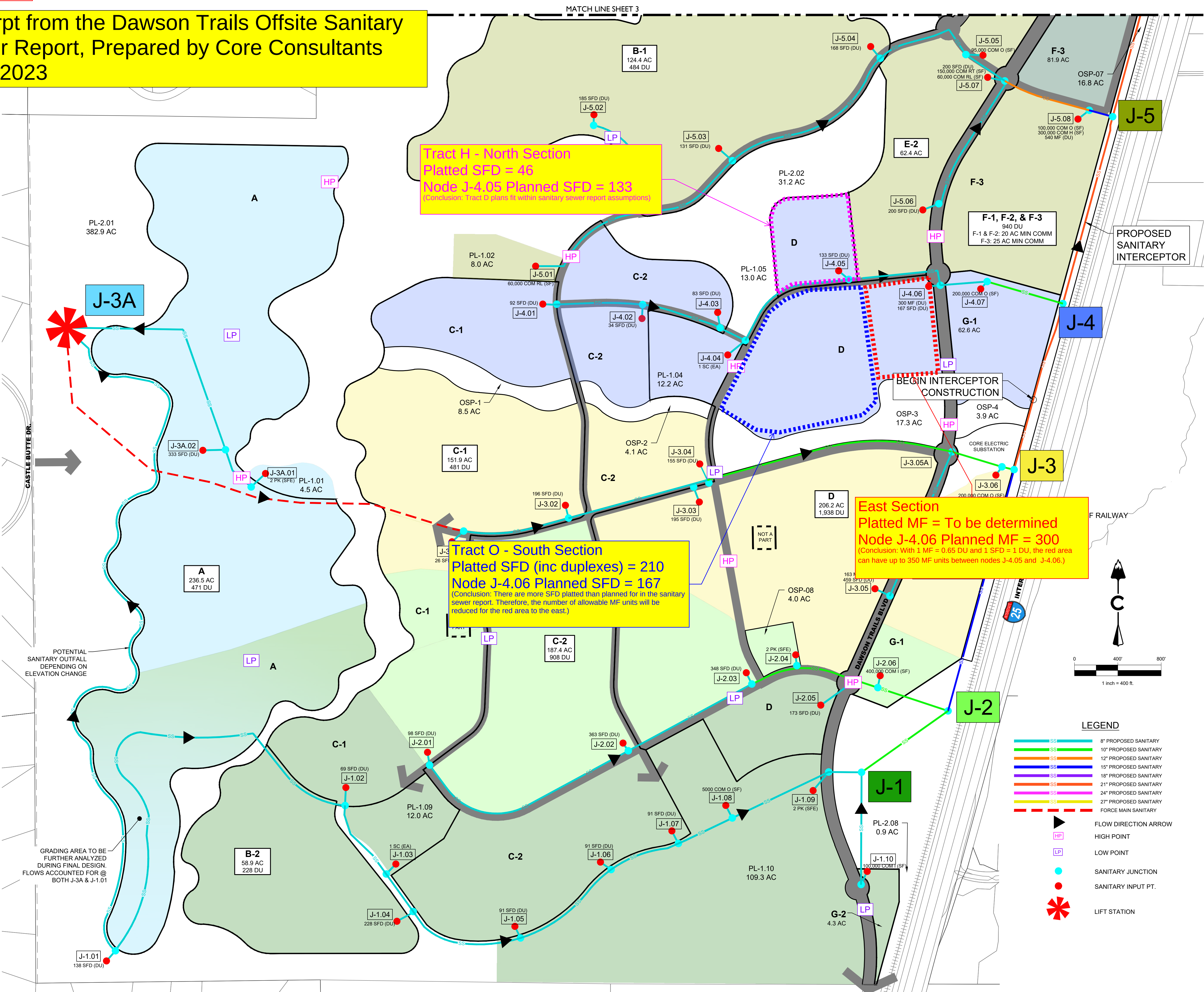
Excerpt from the Dawson Trails Offsite Sanitary Sewer Report, Prepared by Core Consultants June 2023

Detailed Wastewater Maps.dwg

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Caroline Van Horn

2022-10-10 4:13 PM



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

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

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

**LEGEND**

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

**LEGEND**

- BASIN 1
- BASIN 2
- BASIN 3A
- BASIN 3B
- BASIN 4
- BASIN 5
- BASIN 6
- BASIN 7
- BASIN 8
- BASIN 9
- SINGLE FAMILY (UNITS)
- MULTI-FAMILY (UNITS)
- SCHOOL (UNITS)
- COMMERCIAL (UNITS)
- RETAIL OFFICE
- HOTEL
- INDUSTRIAL
- RESTAURANT
- CAR WASH
- PARK (UNITS)
- X SFD (DU)
- X MF (DU)
- X SC (EA)
- X COM (SF)
- RL
- O
- H
- I
- RT
- CW
- X PK (SFE)



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



# **APPENDIX E**

## **Supporting Documents**

PCWRA Form  
Fire Flow Memo



## 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.

**Garrett Multifamily Dawson Trails - PA D - Tract F**

---

Name of Project

**Dawson Trails Filing 2- PA D - Tract F**

---

Address of property, if known

**Sean Reisman**

Digitally signed by Sean Reisman  
DN: C=US,  
E=sreisman@thegarrettco.com, CN=Sean  
Reisman  
Date: 2026.05.05 15:11:09-06'00'

**5/5/2026**

---

Signature

Date

100 North Wilcox Street, Castle Rock, CO 80104 P: 303.660.1015 F: 303.660.1024

EXCELLENCE • DEDICATION • SERVICE



Castle Rock Fire and Rescue Department  
300 Perry Street  
Castle Rock, CO 80104

04/28/2026

RE: Garrett Dawson Trails SDP26-0010 - Confirmation Memo of Required Fire Flow

To Life Safety Division,

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

Building Name: Type 1 Building

Building Address:

Total Fire Flow Calculation Area: 59,308 square feet

Building Construction Type: V-A

Are fire sprinklers provided throughout this building? Yes, 13R

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

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 4,500 gpm at 20-psi Flow Duration: 4-hours

If applicable, Calculated Fire Flow including reduction for sprinklers **1500 gpm at 20-psi**  
Flow Duration: **2 hours**

Building Name: Type 2 Building

Building Address:

Total Fire Flow Calculation Area: 66,207 square feet

Building Construction Type: V-A

Are fire sprinklers provided throughout this building? Yes, 13R

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

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 4,750 gpm at 20-psi Flow Duration: 4-hours

If applicable, Calculated Fire Flow including reduction for sprinklers: **1500 gpm at 20-psi**  
Flow Duration: **2 hours**

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Building Name: Type 3 Building

Building Address:

Total Fire Flow Calculation Area: 73,201 square feet

Building Construction Type: V-A

Are fire sprinklers provided throughout this building? Yes, 13R

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

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 4,750 gpm at 20-psi Flow Duration: 4-hours

If applicable, Calculated Fire Flow including reduction for sprinklers: 1500 gpm at 20-psi  
Flow Duration: 2 hours

Building Name: Clubhouse Building

Building Address:

Total Fire Flow Calculation Area: 5,631 square feet

Building Construction Type: V-B

Are fire sprinklers provided throughout this building? No

Are you proposing a reduction in Required Fire Flow for fire sprinklers? No

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 2,000 gpm at 20-psi Flow Duration: 2-hours

Building Name: Maintenance Building

Building Address:

Total Fire Flow Calculation Area: 693 square feet

Building Construction Type: V-B

Are fire sprinklers provided throughout this building? No

Are you proposing a reduction in Required Fire Flow for fire sprinklers? No

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 1,500 gpm at 20-psi Flow Duration: 2-hours

Building Name: Detached Garage Building – Type 1

Building Address:

Total Fire Flow Calculation Area: 5,631 square feet

Building Construction Type: V-B

Are fire sprinklers provided throughout this building? No

Are you proposing a reduction in Required Fire Flow for fire sprinklers? No

Are Fire walls provided in this building? No

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Reference Appendix B, Table B105.1

Required Fire Flow: 2,000 gpm at 20-psi Flow Duration: 2-hours

Building Name: Detached Garage Building – Type 2

Building Address:

Total Fire Flow Calculation Area: 5,284 square feet

Building Construction Type: V-B

Are fire sprinklers provided throughout this building? No

Are you proposing a reduction in Required Fire Flow for fire sprinklers? No

Are Fire walls provided in this building? No

Reference Appendix B, Table B105.1

Required Fire Flow: 2,000 gpm at 20-psi Flow Duration: 2-hours

Reference Appendix C, Table C105.1

Required Number of Fire Hydrants: 1 Maximum Average Spacing: 400

Maximum Distance from Fire Hydrant to Building: N/A feet, as a fire truck would drive (Note in sprinkled buildings, a hydrant shall be located within 100-ft of the FDC)

Design Engineers Signature: \_\_\_\_\_ Date: 4/28/2026

The determined Required Fire Flow, Number of Fire Hydrants and Hydrant Spacing as shown above satisfy the fire protection requirements of the Castle Rock Fire and Rescue Department.

Final fire hydrant placement will be determined and approved during the Site Development (SDP) and/or Construction Document (CD) review phase.

Castle Rock Fire Signature: **Kevin Sullivan** Digitally signed by Kevin Sullivan  
DN: cn=US, e=ksullivan@crfd.gov, o=Castle Rock Fire and  
Rescue Department, cn=Kevin Sullivan  
Reason: I agree to the terms defined by the placement of my  
signature on this document  
Date: 2026.05.06 18:28:22 -0600 Date: **08-30-2024**

Fire Department Plan Review Number: **Fire Flow #2026-0012**

Supplemental Information (DO NOT INCLUDE WITH REVIEW SUBMITTAL):

Fire Flow Calculation Area or Fire Area (2018 IFC, Definitions) – The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or horizontal assemblies of a building. If a fire wall/barrier is included, then the total fire flow calculation area provided on the memo shall include the total square footage on “each side” of the wall.

Reduction for Fire Sprinklers (2018 IFC, Section B105.2) –A reduction in fire flow up to 75% may be granted by the Fire Code Official for the installation of an NFPA 13 or NFPA 13R fire sprinkler, whether

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they are required or not. Any reduction must be approved by the Fire Code Official (Fire Marshal) after review of the building, water distribution system, and use of the building.

Example: If the building requires 5000-gpm per Table B105, and the building is sprinklered, then the required fire flow may be reduced to 2500-gpm. The required number of hydrants and spacing will be determined by the reduced fire flow. The minimum flow accepted for commercial building is 1500-gpm. When reducing the fire flows, you will occasionally end up with an odd number such as 1825-gpm, in these cases you should round up to the nearest 250-gpm.

Multiple Buildings on One Site – If multiple buildings are proposed on one site (ie. Apartment Complex), then each “building” shall be evaluated based on the largest building and a single memo using the recommended format repeated for each individual structure.

Alayna Moore [AMoore@crgov.com](mailto:AMoore@crgov.com)

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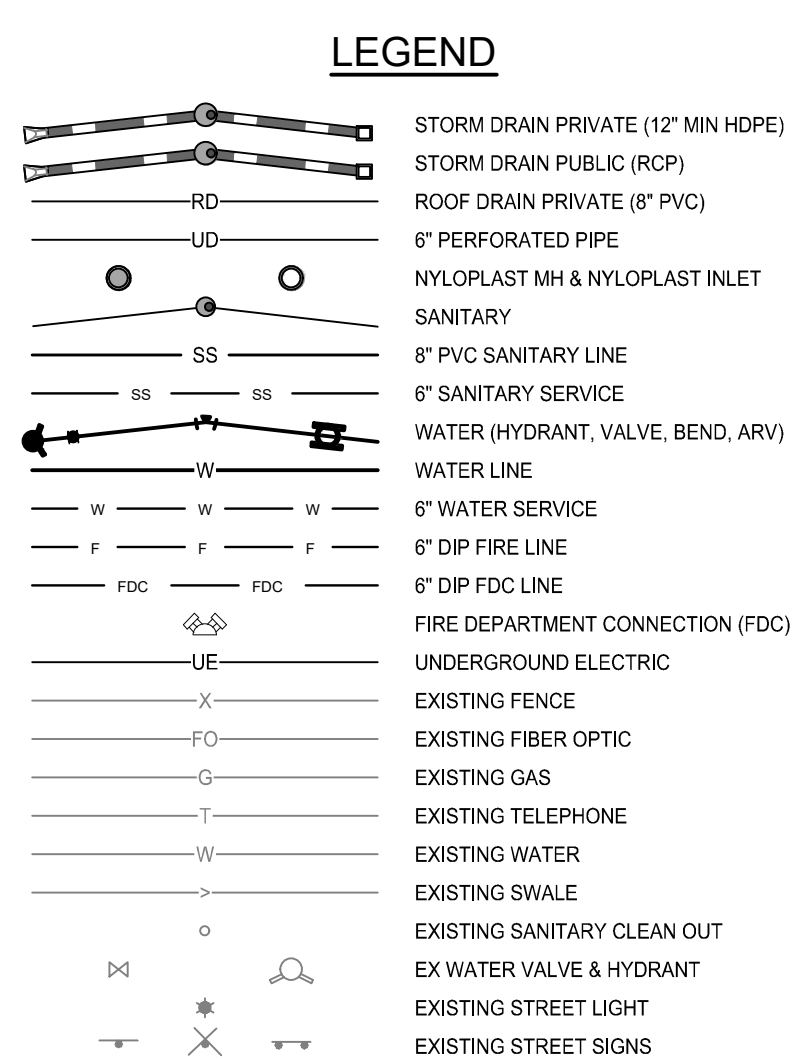
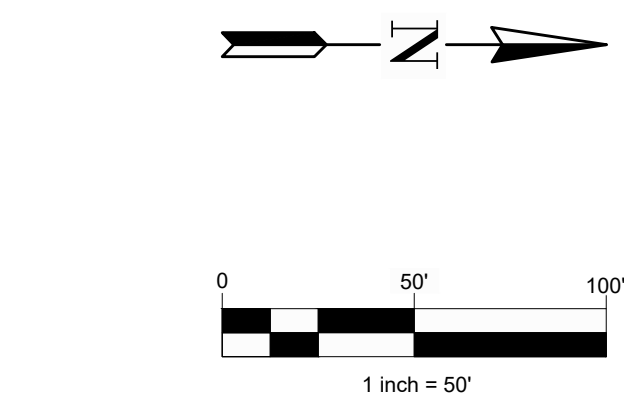
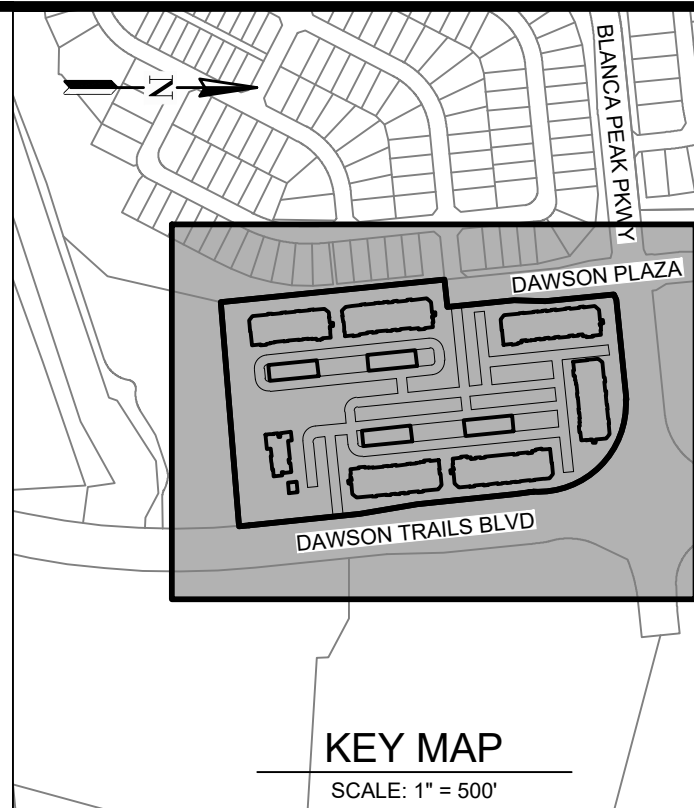
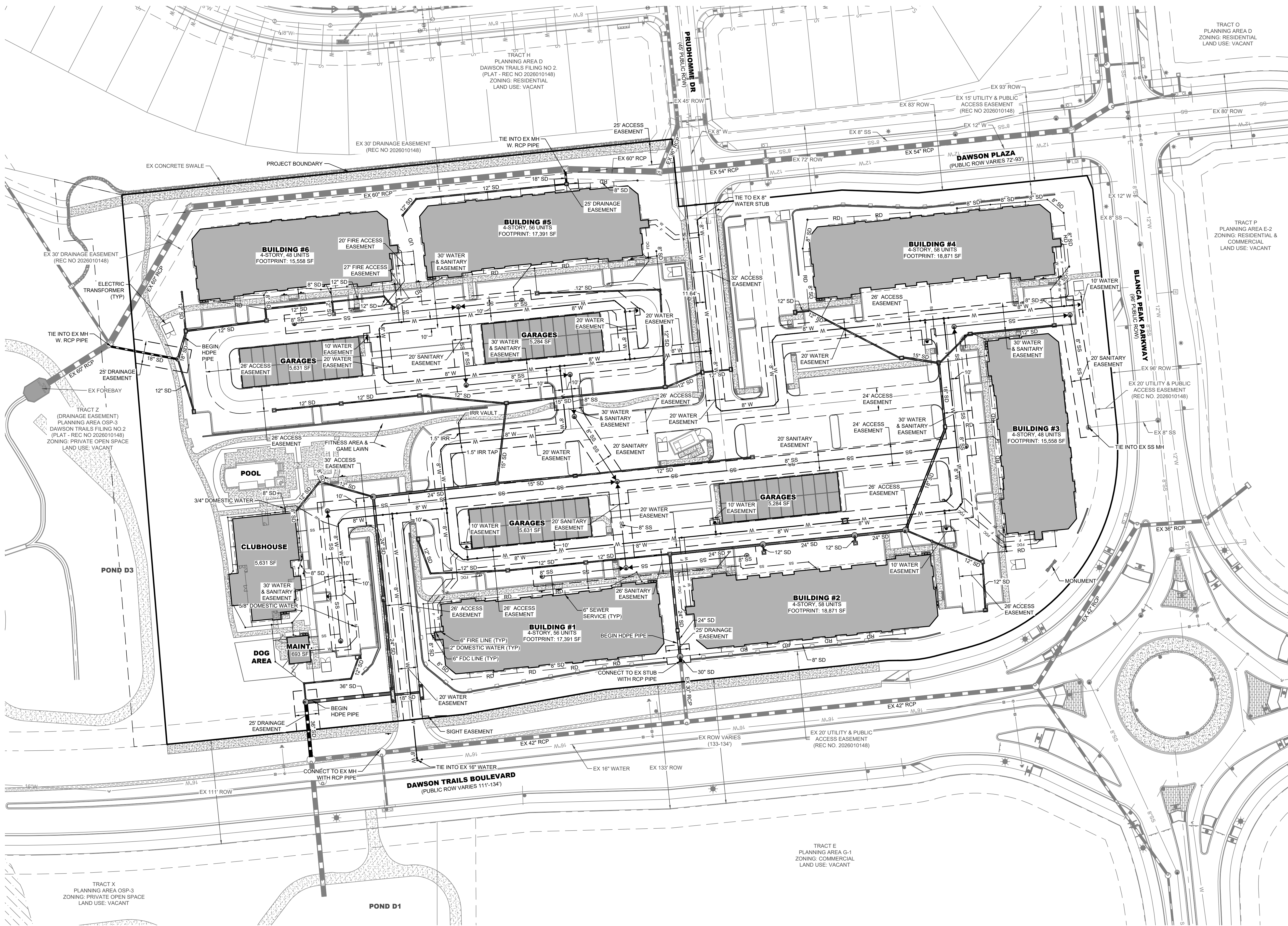
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# **APPENDIX F**

## **Plans**

Overall Utility Plan

SITE DEVELOPMENT PLAN  
 TRACT F, DAWSON TRAILS FILING NO. 2  
 A PORTION OF SECTION 27 & 28, TOWNSHIP 8 SOUTH, RANGE 67 WEST  
 TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO



- 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 LOWERING OF TOWN CRITICAL INFRASTRUCTURE WILL REQUIRE A TIME AND MATERIALS PERMIT (TMM) WITH FEES REQUIRED PRIOR TO CONSTRUCTION.

terracina

design

PLANNING

CIVIL ENGINEERING

LANDSCAPE ARCHITECTURE

DATE

BY

04/16/2026

JF

05/09/2026

JF

06/11/2026

JF

10/16/2026

JF

REVISION DESCRIPTION

#

1

2

3

4

1ST SUBMITTAL

2ND SUBMITTAL

3RD SUBMITTAL

4TH SUBMITTAL

NOT FOR CONSTRUCTION

TRACT F, DAWSON TRAILS FILING NO. 2

CASTLE ROCK, COLORADO

SITE DEVELOPMENT PLAN

OVERALL UTILITY PLAN

Know what's below.

Call before you dig.

811

TRACT F, DAWSON TRAILS FILING NO. 2

SITE DEVELOPMENT PLAN

PROJECT # SDP26-0010

SHEET

8 OF 36