Final Utility Report

Bella Mesa North – Filing 1

CD26-0003

Variance Request:

TCV25-0036 – Approved 08/21/2025
Maximum static pressure with zero demand when tank is 100% full to exceed 125 PSI

TCV26-0021 – Pending Approval
Watermain dead end to be longer than 400'

TCV26-0022 – Pending Approval
Sanitary sewer to be at a depth greater than 20'

Prepared for:

Cardel Homes
9110 East Nichols Ave, Suite 120
Denver, CO 80112
Contact: Bryan Conway
(303) 662-8942 voice

Prepared by:

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

November 2026
Project No. 17026.004

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: _____

Evan Rumney, P.E.
Registered Professional Engineer
State Of Colorado No. 54401

Owner/Developer's Statement:

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

_____
Name of Developer

_____
Authorized Signature

Table of Contents

Table of Contents 3
General Location and Description 4
Introduction 4
Site Location 4
Description of Property and Land Use 4
Calculated Water Demands 4
Average Day Demands (ADD) 5
Maximum Day Demands (MDD) 5
Peak Hour Demands (PHD) 5
Irrigation Demands 6
Existing Water System 6
Proposed Water System 7
Proposed Distribution System 7
Proposed Supply Facilities 7
Required Fire Flow 7
Land Dedication Requirements 7
Proposed Water System Analysis and Modeling 8
Calculated Wastewater Flows 9
Average Day Wastewater Flows (ADF) 9
Peaking Factor 9
Peak Desing Flows (PDF) 10
Existing Wastewater System 10
Existing Collection System 10
Proposed Wastewater System 10
Proposed Collection System 10
Proposed Wastewater Facilities 10
Land Dedication Requirements 11
Proposed Wastewater System Analysis and Modeling 11
Potential Permitting Requirements 11
References 12

Appendix A – Water Demands
Appendix B – Water Storage
Appendix C – Water Hydraulic Analysis and Modeling
Appendix D – Wastewater Flows
Appendix E – Wastewater Hydraulic Modeling
Appendix F – Maps and Plans
Appendix G – Water Budget Letter
Appendix H – Lift Station Report
Appendix I – Correspondence

General Location and Description

Introduction

This report presents an analysis of the water and wastewater requirements for the Bella Mesa North – Filing 1 subdivision, hereafter referred to as the Site.

Site Location

The Site is located within the overall Bella Meas North project. The overall Bella Mesa North project is located in portions of the Southwest quarter of Section 4, the Southeast quarter of Section 5, the North half of the Northeast quarter of Section 8 and the North half of the Northwest quarter of Section 9, Township 8 South, Range 66 West of the 6th P.M., in the County of Douglas, State of Colorado. See Appendix F for project Vicinity Map.

Description of Property and Land Use

The overall Bella Mesa North development will consist of 525 single-family detached lots, local roadways, open space, supporting infrastructure, two detention ponds, and a sanitary sewer lift station. Filing 1 includes 229 single-family lots, the sanitary sewer lift station, Detention Pond A, and associated roadways and underground utilities. The remaining improvements will be constructed with the future filings.

Filing 1 encompasses approximately 110.5 acres within the overall Bella Mesa North development, which totals approximately 293.2 acres. The Site is located east of Mitchell Gulch and north of Mitchell Street, Castlewood Ranch, and Founders Village Filing 24. Existing site conditions generally slopes to the northwest and consist of native grasses and vegetation. See Appendix F for the Site Utility Plan.

Calculated Water Demands

This report analyzes the water system that services the future Site's 229 SFE's. The proposed water flows for the Site have been calculated using the Town of Castle Rock Water System Design 2018 Criteria Manual. See relevant design criteria below:

Demand per SFE	400 gal/day/SFE (Single Family Residential/Duplex)
Maximum Day Factor	MDF = 2.5
Peak Hour Factor	PHF = 5.5
Maximum Day Demand	MDD = (Domestic ADD*MDF) + Irrigation ADD
Peak Hour Demand	PHD = (Domestic ADD*PHF) + Irrigation ADD
Irrigation Land use Rate	3,750 gal/day/acre

Average Day Demands (ADD)

Average Daily Demands were calculated using 400 gpd/SFE and 229 SFE for the design demand, resulting in an Average Daily Demand of 63.61 gpm excluding irrigation. Approximately 2.24 acres of the Site will be permanently irrigated, using a land use rate of 3,750 gpd/acre for the design demand, resulting in the calculated total irrigation ADD of 5.83 gpm. Total ADD including irrigation was calculated to be 69.44 gpm. For complete calculations see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Average Daily Demand	63.61	91,600	102.61

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Average Daily Demand	69.44	100,000	112.01

Maximum Day Demands (MDD)

Using the Maximum Day Factor of 2.5, the Maximum Day Demand was calculated to be 159.03 gpm, excluding irrigation. Including irrigation, the MDD was calculated to be 164.86 gpm, for complete calculations see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	159.03	229,000	256.51

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	164.86	237,400	265.92

Peak Hour Demands (PHD)

Using the Peak Hour Factor of 5.5, the Peak Hour Demand was calculated to be 349.86 gpm excluding irrigation. Including irrigation, the PHD was calculated to be 355.69 gpm, for complete calculations see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	349.86	503,800	564.32

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	355.69	512,200	573.73

Irrigation Demands

Only permanently irrigated areas were used to calculate the permanent irrigation demand for Bella Mesa North Filing 1. Using a land use rate of 3,750 gpd/acre for the design demand and a total of 2.24 acres of irrigated area, the resulting calculated total irrigation ADD is 5.83 gpm. The permanent irrigation system for Bella Mesa North Filing 1 is divided into three separate irrigation points of connection: POC 1 (1.5" meter), POC 2 (1.5" meter), and POC 3 (1.5" meter). Revised irrigation controller charts and irrigation hydraulic worksheets are included in Appendix I for reference, and a summary of the irrigation meters are provided below:

Irrigation Meter Summary

Irrigation POC	Proposed Meter Tap Size	Highest Permanent Demand Zone	Highest Zone Flow (GPM)
POC 1	1.5"	Zone 1 Drip Ring	26.00
POC 2	1.5"	Zone 32 Area for Drip Line	23.12
POC 3	1.5"	Zone 15 Area for Drip Line	32.90

Temporary irrigation required for native seed establishment is shown separately within the irrigation controller charts and is not included in the permanent irrigation tap sizing. Per the Town of Castle Rock Landscape and Irrigation Performance Standards and Criteria Manual, temporary irrigation for native seed and vegetation establishment may be provided through a Town-issued hydrant meter. The hydrant meter assembly will be removed at the end of the Growing Season and returned to the Town.

Existing Water System

The Site has two existing 12" water main stubs, located at each end of Mitchell Street on the south side of the development, please see Appendix F. Water services for the development are within the Green Zone, which is supplied by tanks near Ridge Road, as designated by the Town of Castle Rock.

Most of the development falls within the Green Zone, except for the northern section and a small portion along the western boundary. The northern section is outside any designated pressure zone, while the small western portion falls within the Red Zone.
The elevation range of the proposed lots is 6575' - 6517'.

Proposed Water System

Proposed Distribution System

The proposed water system for the Site will connect to existing infrastructure at two points along the southern border. Both are existing 12" mains and located in Mitchell Street, one at the southwest corner of the Site and the other located at the southeast corner. The proposed water system will be composed of 12" and 8" diameter PVC and will be routed throughout the Site, being looped to both existing connection points. The combined network will serve a total of 229 SFD lots. Multiple 8" stubs and a 12" stub will be constructed for the future connection points into future Filings. Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer.

Proposed Supply Facilities

The Site is served by the Green Zone Water Tanks 6A and 6C, with the combined capacity of 4.22 MG.

Required storage needed for the Site is based on proposed demands and is calculated below.

Storage Volume = Maximum Day Demand + Fire Flow
= (159.03gpm * 60min/hr * 24hrs) + (1500gmp * 60 min/hr * 2hrs)
= 229,000 gallons + 180,000 gallons
Storage Volume = 409,000 gallons (0.409 MG)

Required Fire Flow

Fire flows shall have been modeled to conform to the latest edition of the International Fire Code (IFC) and shall be confirmed by the Castle Rock Fire and Rescue Department. Please see the Confirmation Memo for Required Fire Flow in Appendix C. There will be no reduction in required fire flows within the model due to the proposed units within the Site not all being sprinklered. Due to this, the minimum fire flow required for the proposed water network is 1,500 gpm for a duration of 2 hours. The Maximum Day plus Fire Flow minimum network pressure was modeled at Junction C5, the point of lowest pressure, and Junction E4, the most remote hydrant location within the network.

Land Dedication Requirements

To support the municipal water supply for the overall Bella Mesa North project, the owner must convey water rights to the Town. The Town will not grant land use approvals for any additional development until this requirement is met. Water rights have already been transferred to the Town, and the Site requires 229 SFE of the total 525 SFE for the overall Bella Mesa North project for domestic supply and a total of 26.2 SFE anticipated for irrigation. Only permanently irrigated areas were used to calculate the anticipated SFE's, which excludes areas such as native grasses. A water credit of 276.2 SFE units was applied

to the water bank when the rights were transferred. Due to this, no additional SFE units will be required for the Site in this phase. The future completion of all phases of the overall Bella Mesa North project will require 275 SFE's total. The Town has agreed to allow the purchase of these additional units at a fee-in-lieu rate, please see the Bella Mesa North and South Water Budget Letter by Redland dated October 10th, 2024 in Appendix G.

Proposed water infrastructure not located within public right-of-way will be within a dedicated utility easement for access and maintenance. The minimum width of the easement is 20' for one utility, 30' for two utilities, and 40' for three utilities per the Town of Castle Rock Water System Design 2018 Criteria Manual. These will be dedicated on the final plat. Any future development of the existing water infrastructure needed to serve the Site is the responsibility of the developer.

Proposed Water System Analysis and Modeling

The proposed water analysis and modeling has been done in accordance with The Town of Castle Rock criteria. It requires the water distribution pipe system to deliver Maximum Day plus Fire Flows demand with a minimum dynamic pressure of 20 psi and a maximum velocity of 15 fps. The Town also requires the system to deliver Peak Hour demands with a minimum pressure of 25 psi and a maximum velocity of 10 fps under the same conditions. In addition, the minimum static pressure with zero demand criteria (20% tank stage) is 43 psi and the maximum static pressure with zero demand criteria (100% tank stage) is 125 psi.

Different flow models were completed and compared to the corresponding Town criteria. The models consisted of Average Day, Maximum Day, Maximum Day plus Fire Flow, Peak Hour, and both minimum and maximum static pressures with zero demand. The minimum static pressure (20% tank stage) HGL elevation used in the model was 6805', and the maximum static pressure (100% tank stage) HGL used in the model was 6824'.

Each model contains two outputs. The first being the Junction Report, which is used to check water pressure in the model against the Town's criteria. The second is the Pipe Report, which is used to check velocities and head loss against the Town's criteria. Full results for each scenario can be found in Appendix C.

The proposed water distribution system within the Site has met the Town of Castle Rocks criteria, with the exception of the maximum static pressure at 100% tank stage discussed further below. The Maximum Day plus Fire Flow minimum network pressure was modeled at Junction C5, the point of lowest pressure, and Junction E4, the most remote hydrant location within the network. When Junction C5 was modeled the maximum velocity was 4.86 fps, and when Junction E4 was modeled the maximum velocity was 9.57 fps. This meets the Towns criteria of a minimum dynamic pressure of 20 psi and maximum velocity of 15 fps.

The Peak Hour minimum network pressure was modeled to be 103 psi at Junction C5 and C6, and the maximum velocity was modelled to be 0.67 fps. This meets the Towns criteria of a minimum dynamic pressure of 35 psi and maximum velocity of 10 fps.

The minimum static pressure (20% tank stage) network was modeled to be 103 psi at Junction C5 and C6. This meets the Towns criteria of a minimum static pressure of 43 psi.

The maximum static pressure (100% tank stage) network was modeled to be 134 psi at Junction L10. This does not meet the Towns criteria of a maximum static pressure of 125 psi. The reason for this being that the westerly portion of the Site is located within a range of elevations that fall within Castle Rocks Red Pressure Zone, while the existing stubs provided for the Site utilize Green Zone Tanks. Due to this range of elevations, pressures within the westerly portion of the Site exceed the maximum static pressures criteria. Single-family detached lots that fall within these high-pressure areas will have to utilize water service lines fitted with pressure regulating valves (PRVs) to maintain adequate pressure. A Technical Criteria Variance application has been submitted due to exceeding the Towns criteria for maximum static pressure, please see Appendix C.

Calculated Wastewater Flows

This report analyzes the sanitary sewer system that services the Site's 229 units. The proposed wastewater flows for the Site have been calculated using the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual. See relevant design criteria below:

Demand per SFE	200 gal/day/SFE (Single Family Residential/Duplex)
Peak Factor	PF = 5.0
Infiltration/Inflow	I/I = 0.10*ADF
Peak Design Flow	PDF = (ADF*PF) + (I/I)

Average Day Wastewater Flows (ADF)

Average Daily Flows were calculated using 200 gpd/SFE and 229 SFE for the design basin, resulting in an Average Daily Flow of 31.81 gpm, for complete calculations see Appendix D.

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Cubic Feet Per Second (cfs)
Average Daily Flow	31.81	45,800	0.07

Peaking Factor

A maximum peaking factor of 5.0 was used to determine a Peak Design Flow for the Site. This demand includes infiltration/inflow demands, for complete calculations see Appendix D.

Peak Desing Flows (PDF)

Using the Peaking Factor of 5.0, the Peak Design Flow was calculated to be 159.03 gpm. Including Infiltration/Inflow the Peak Design Flow was calculated to be 162.21 gpm, for complete calculations see Appendix D.

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Cubic Feet Per Second (cfs)
Peak Design Flow	159.03	229,000	0.35
Peak Design Flow w/ Infiltration	162.21	233,580	0.36

Existing Wastewater System

Existing Collection System

An existing 6" sanitary sewer force main is located within Mitchell Street, at the southern boundary of the Site. The 6" force main runs north and west eventually connecting into an 18" gravity sanitary sewer main running east-west. The existing 6" force main stub in Mithcell Street will provide a connection point for the Site. All wastewater ultimately discharges into a 12" gravity sanitary sewer main southwest of Mesa Middle School. The Town of Castle Rock Wastewater Master Plan, dated 2022, references the Bella Mesa (Founders Village F24) development as a future site that anticipates the construction of a new lift station and associated force/gravity sanitary sewer mains. See page 23 of the Town's Master Plan for more information.

Proposed Wastewater System

Proposed Collection System

It is anticipated that the Site will be serviced by 8" in diameter sanitary sewer mains throughout the Site. Due to topographical constraints, the Site will consist of both gravity and pressurized systems. Internally to the Site, gravity mains will convey wastewater to the northwest. At which point a proposed lift station will pump flows south to connect to the existing 6" force main stub located within Mitchell Street. Some gravity sewer will exceed 20 feet in depth, requiring materials outlined in the Town's Wastewater Collection Design Criteria Manual as well as a variance from the Town of Castle Rock.

Proposed Wastewater Facilities

The Town of Castle Rock requires further investigation of the 6" force main to ensure its integrity and function. This will include but is not limited to, underground video observation of force main and manholes. Design of the force main and lift station will be required to conform to the Town of Castle Rock Wastewater Collection Systems Design Criteria Manual.

It is the responsibility of the owner to construct the proposed lift station as part of the initial facilities necessary for the Site. The lift station must be operational before the first building permit will be issued for the Site. The lift station will be located at the northwestern corner of the Site and will be owned and maintained by the Town of Castle Rock. For more information regarding the proposed lift station, please see the "Sunset Point Lift Station – Preliminary Engineering Report" in Appendix H.

Land Dedication Requirements

Sanitary sewer infrastructure not located within public right-of-way will be within a dedicated utility easement for access and maintenance. The minimum width of the easement is 20' per the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual. Any future development of the existing wastewater infrastructure needed to serve the Site is the responsibility of the developer.

Proposed Wastewater System Analysis and Modeling

The proposed wastewater analysis and modeling has been done in accordance with The Town of Castle Rock criteria. HydroFlow Express was used to analyze the sanitary pipe capacity and velocities for the development. See Appendix E for results of the modeling. Design constraints considered in the model are as follows:

Manning's Coefficient (PVC)	0.011
Maximum Velocity at Peak Design Flow	10 fps
Minimum Velocity at Peak Design Flow	2 fps
Minimum Pipe Slope (8 in)	0.4%
Maximum Pipe Slope (8in)	7.5%
Full Flow Capacity	75%

Average Day and Peak Design Flow scenarios were modeled to analyze the proposed pipe capacities and velocities. Both minimum and maximum velocity requirements were met at Peak Design Flows.

Peak Design Flow was calculated to be 0.36 cfs, the resulting pipe velocity was modeled to be 2.34 fps at a minimum pipe slope of 0.4%, this meets the Town's minimum velocity criteria. The pipe velocity was also modeled to be 6.73 fps at a maximum pipe slope of 7.5%, this meets the Town's maximum velocity criteria.

Potential Permitting Requirements

Permits for the proposed development will be applied for through the Town of Castle Rock and the State of Colorado, where applicable. Permits will be in place prior to the start of construction.

References

1. *Town of Castle Rock Water System Design 2018 Criteria Manual*, dated December 4, 2018.

2. *Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual*, dated December 4, 2018.

3. *Town of Castle Rock, 2022 Wastewater Master Plan*, dated 2022.

4. *Town of Castle Rock, 2023 Water Master Plan*, dated 2023.

5. *2018 International Fire Code (IFC), dated 2018.*

Appendix A – Water Demands

Bella Mesa North - Filing 1 **Redland**
Final Utility Report 6/1/2026

Water Demands

Maximum Day Demand (MDD)	2.5
Peak Hour Demand (PHD)	5.5

Redistential Only

Phase (SF -Residential)	Use	Dwelling Units	Area (AC)	Equivalent (SFE/DU)	SFE	Avg Day Demand (GPD/DU)	Avg Day (GPM/SFE)	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Peak Hour Demand (GPM)
1	SF	229	104.63	1.00	229.00	400	0.28	91,600.00	63.61	159.03	349.86
Totals:	-	229	104.63	-	229.00	-	0.28	91,600.00	63.61	159.03	349.86

*Per Town Of Castle Rock Water System Desing 2018 Criteria Manual, Section 4.4.1

229,000.00

Irrigation

Phase	Use	Irrigated Area (AC)	Land Use Rate (GPD/AC)	Avg Day Demand (GPD)	Avg Day Demand (GPM)
1	IRR	2.24	3,750.00	8,400.00	5.83

*Per Town Of Castle Rock Water System Desing 2018 Criteria Manual, Section 4.4.1

Residential & Irrigation

Phase	Use	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Peak Hour Demand (GPM)
1	SF & IRR	100,000.00	69.44	164.86	355.69

*Per Town Of Castle Rock Water System Desing 2018 Criteria Manual, Section 4.4.1

Appendix B – Water Storage

Bella Mesa North - Filing 1 **Redland**

Final Utility Report 6/1/2026

Water Storage

Maximum Day Demand (MDD) 2.5

Type	Use	Dwelling Units	Area (AC)	Equivalent (SFE/DU)	SFE	Avg Day Demand (GPD/DU)	Avg Day (GPM/SFE)	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Total (gallons)
Bella Mesa North	SF	229	104.63	1.00	229.00	400	0.28	91,600.00	63.61	159.03	229,000.00
Fire Flow (1500 gpm @ 2 hrs)											180,000.00
Totals:											409,000.00

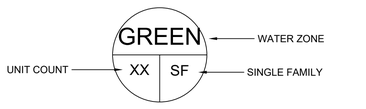
*Per Town Of Castle Rock Water System Design 2018 Criteria Manual, Section 4.4.1

Appendix C – Water Hydraulic Analysis and Modeling

L:\2017\17026 - Bella Mesa\CADD\Exhibits\17026.004 - Sunset Point\Filing 1\17026.004 - Filing 1 - Overall Water Map - Final Utility Report Exhibit.dwg Tab: Layout1 Jan 05, 2026 - 8:35am liudw1g



LEGEND:



PROPOSED WATER BASIN

N

0 75' 150' 300'

SCALE: 1" = 150'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

DATE	NO.	NOTES

PROJECT NO: 17026.004	
DATE	NO.

BELLA MESA NORTH - FILING 1

EXHIBIT

OVERALL WATER MAP

SHEET

1 OF 1

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 100%

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,824.00	126
J-B2	6,533.99	0	6,824.00	125
J-B3	6,548.84	0	6,824.00	119
J-B4	6,557.42	0	6,824.00	115
J-B5	6,565.21	0	6,824.00	112
J-C1	6,544.27	0	6,824.00	121
J-C2	6,546.33	0	6,824.00	120
J-C3	6,553.21	0	6,824.00	117
J-C4	6,561.66	0	6,824.00	114
J-C5	6,566.37	0	6,824.00	111
J-C6	6,568.06	0	6,824.00	111
J-C7	6,543.80	0	6,824.00	121
J-C8	6,534.75	0	6,824.00	125
J-C9	6,528.49	0	6,824.00	128
J-C10	6,526.65	0	6,824.00	129
J-D1	6,522.51	0	6,824.00	130
J-E1	6,527.57	0	6,824.00	128
J-E2	6,523.59	0	6,824.00	130
J-E3	6,518.44	0	6,824.00	132
J-E4	6,514.86	0	6,824.00	134
J-F1	6,533.99	0	6,824.00	125
J-F2	6,529.69	0	6,824.00	127
J-F3	6,526.75	0	6,824.00	129
J-H2	6,528.26	0	6,824.00	128
J-J1	6,554.69	0	6,824.00	117
J-P1	6,549.00	0	6,824.00	119
J-P2	6,554.43	0	6,824.00	117
J-P3	6,558.26	0	6,824.00	115
J-R1	6,545.43	0	6,824.00	121
J-R2	6,552.17	0	6,824.00	118
J-R3	6,559.94	0	6,824.00	114

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,824.00	0	6,824.00
R-2	6,824.00	0	6,824.00

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 100%

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	0	0.00	0.00
P-2	172	J-C1	J-C2	8.0	PVC	120.0	0	0.00	0.00
P-7	200	J-C6	R-2	12.0	PVC	120.0	0	0.00	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	0	0.00	0.00
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	0	0.00	0.00
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	0	0.00	0.00
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	0	0.00	0.00
P-10	254	J-C2	J-P1	8.0	PVC	120.0	0	0.00	0.00
P-11	442	J-P1	J-P2	8.0	PVC	120.0	0	0.00	0.00
P-12	333	J-P2	J-P3	8.0	PVC	120.0	0	0.00	0.00
P-13	262	J-P3	J-C4	8.0	PVC	120.0	0	0.00	0.00
P-15	842	J-C1	J-B1	12.0	PVC	120.0	0	0.00	0.00
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	0	0.00	0.00
P-42	344	J-B5	J-B4	12.0	PVC	120.0	0	0.00	0.00
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	0	0.00	0.00
P-60	405	J-B3	J-B2	12.0	PVC	120.0	0	0.00	0.00
P-61	138	J-B2	J-B1	12.0	PVC	120.0	0	0.00	0.00
P-62	300	J-B1	J-F3	8.0	PVC	120.0	0	0.00	0.00
P-63	265	J-F3	J-E3	8.0	PVC	120.0	0	0.00	0.00
P-64	312	J-E3	J-E2	8.0	PVC	120.0	0	0.00	0.00
P-65	290	J-E2	J-E1	8.0	PVC	120.0	0	0.00	0.00
P-66	493	J-E1	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-67	287	J-C8	J-C9	8.0	PVC	120.0	0	0.00	0.00
P-68	388	J-C9	J-D1	8.0	PVC	120.0	0	0.00	0.00
P-69	361	J-D1	J-E1	8.0	PVC	120.0	0	0.00	0.00
P-70	265	J-E1	J-F1	8.0	PVC	120.0	0	0.00	0.00
P-71	351	J-F1	J-C7	8.0	PVC	120.0	0	0.00	0.00
P-72	406	J-C7	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-73	207	J-C7	J-C1	8.0	PVC	120.0	0	0.00	0.00
P-74	309	J-F1	J-F2	8.0	PVC	120.0	0	0.00	0.00
P-75	293	J-F2	J-F3	8.0	PVC	120.0	0	0.00	0.00
P-76	183	J-B2	J-R1	8.0	PVC	120.0	0	0.00	0.00

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 100%

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	0	0.00	0.00
P-78	333	J-R2	J-R3	8.0	PVC	120.0	0	0.00	0.00
P-79	288	J-R3	J-B5	8.0	PVC	120.0	0	0.00	0.00
P-80	258	J-P3	J-R2	8.0	PVC	120.0	0	0.00	0.00
P-81	201	J-R2	J-B3	8.0	PVC	120.0	0	0.00	0.00
P-85	127	J-C10	J-C9	8.0	PVC	120.0	0	0.00	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	0	0.00	0.00

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 20%

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,805.00	118
J-B2	6,533.99	0	6,805.00	117
J-B3	6,548.84	0	6,805.00	111
J-B4	6,557.42	0	6,805.00	107
J-B5	6,565.21	0	6,805.00	104
J-C1	6,544.27	0	6,805.00	113
J-C2	6,546.33	0	6,805.00	112
J-C3	6,553.21	0	6,805.00	109
J-C4	6,561.66	0	6,805.00	105
J-C5	6,566.37	0	6,805.00	103
J-C6	6,568.06	0	6,805.00	103
J-C7	6,543.80	0	6,805.00	113
J-C8	6,534.75	0	6,805.00	117
J-C9	6,528.49	0	6,805.00	120
J-C10	6,526.65	0	6,805.00	120
J-D1	6,522.51	0	6,805.00	122
J-E1	6,527.57	0	6,805.00	120
J-E2	6,523.59	0	6,805.00	122
J-E3	6,518.44	0	6,805.00	124
J-E4	6,514.86	0	6,805.00	126
J-F1	6,533.99	0	6,805.00	117
J-F2	6,529.69	0	6,805.00	119
J-F3	6,526.75	0	6,805.00	120
J-H2	6,528.26	0	6,805.00	120
J-J1	6,554.69	0	6,805.00	108
J-P1	6,549.00	0	6,805.00	111
J-P2	6,554.43	0	6,805.00	108
J-P3	6,558.26	0	6,805.00	107
J-R1	6,545.43	0	6,805.00	112
J-R2	6,552.17	0	6,805.00	109
J-R3	6,559.94	0	6,805.00	106

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	0	6,805.00
R-2	6,805.00	0	6,805.00

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 20%

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	0	0.00	0.00
P-2	172	J-C1	J-C2	8.0	PVC	120.0	0	0.00	0.00
P-7	200	J-C6	R-2	12.0	PVC	120.0	0	0.00	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	0	0.00	0.00
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	0	0.00	0.00
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	0	0.00	0.00
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	0	0.00	0.00
P-10	254	J-C2	J-P1	8.0	PVC	120.0	0	0.00	0.00
P-11	442	J-P1	J-P2	8.0	PVC	120.0	0	0.00	0.00
P-12	333	J-P2	J-P3	8.0	PVC	120.0	0	0.00	0.00
P-13	262	J-P3	J-C4	8.0	PVC	120.0	0	0.00	0.00
P-15	842	J-C1	J-B1	12.0	PVC	120.0	0	0.00	0.00
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	0	0.00	0.00
P-42	344	J-B5	J-B4	12.0	PVC	120.0	0	0.00	0.00
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	0	0.00	0.00
P-60	405	J-B3	J-B2	12.0	PVC	120.0	0	0.00	0.00
P-61	138	J-B2	J-B1	12.0	PVC	120.0	0	0.00	0.00
P-62	300	J-B1	J-F3	8.0	PVC	120.0	0	0.00	0.00
P-63	265	J-F3	J-E3	8.0	PVC	120.0	0	0.00	0.00
P-64	312	J-E3	J-E2	8.0	PVC	120.0	0	0.00	0.00
P-65	290	J-E2	J-E1	8.0	PVC	120.0	0	0.00	0.00
P-66	493	J-E1	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-67	287	J-C8	J-C9	8.0	PVC	120.0	0	0.00	0.00
P-68	388	J-C9	J-D1	8.0	PVC	120.0	0	0.00	0.00
P-69	361	J-D1	J-E1	8.0	PVC	120.0	0	0.00	0.00
P-70	265	J-E1	J-F1	8.0	PVC	120.0	0	0.00	0.00
P-71	351	J-F1	J-C7	8.0	PVC	120.0	0	0.00	0.00
P-72	406	J-C7	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-73	207	J-C7	J-C1	8.0	PVC	120.0	0	0.00	0.00
P-74	309	J-F1	J-F2	8.0	PVC	120.0	0	0.00	0.00
P-75	293	J-F2	J-F3	8.0	PVC	120.0	0	0.00	0.00
P-76	183	J-B2	J-R1	8.0	PVC	120.0	0	0.00	0.00

Bella Mesa North - WaterCAD Output Tables
Static Conditions - 20%

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	0	0.00	0.00
P-78	333	J-R2	J-R3	8.0	PVC	120.0	0	0.00	0.00
P-79	288	J-R3	J-B5	8.0	PVC	120.0	0	0.00	0.00
P-80	258	J-P3	J-R2	8.0	PVC	120.0	0	0.00	0.00
P-81	201	J-R2	J-B3	8.0	PVC	120.0	0	0.00	0.00
P-85	127	J-C10	J-C9	8.0	PVC	120.0	0	0.00	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	0	0.00	0.00

Bella Mesa North - WaterCAD Output Tables
Average Day Conditions

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,805.00	118
J-B2	6,533.99	0	6,805.00	117
J-B3	6,548.84	0	6,805.00	111
J-B4	6,557.42	0	6,805.00	107
J-B5	6,565.21	0	6,805.00	104
J-C1	6,544.27	0	6,805.00	113
J-C2	6,546.33	3	6,805.00	112
J-C3	6,553.21	6	6,805.00	109
J-C4	6,561.66	2	6,805.00	105
J-C5	6,566.37	3	6,805.00	103
J-C6	6,568.06	0	6,805.00	103
J-C7	6,543.80	4	6,805.00	113
J-C8	6,534.75	4	6,804.99	117
J-C9	6,528.49	4	6,804.99	120
J-C10	6,526.65	2	6,804.99	120
J-D1	6,522.51	3	6,804.99	122
J-E1	6,527.57	3	6,804.99	120
J-E2	6,523.59	3	6,804.99	122
J-E3	6,518.44	3	6,804.99	124
J-E4	6,514.86	1	6,804.99	126
J-F1	6,533.99	3	6,804.99	117
J-F2	6,529.69	4	6,804.99	119
J-F3	6,526.75	3	6,804.99	120
J-H2	6,528.26	0	6,805.00	120
J-J1	6,554.69	0	6,805.00	108
J-P1	6,549.00	3	6,805.00	111
J-P2	6,554.43	4	6,805.00	108
J-P3	6,558.26	2	6,805.00	107
J-R1	6,545.43	4	6,805.00	112
J-R2	6,552.17	2	6,805.00	109
J-R3	6,559.94	3	6,805.00	106

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	37	6,805.00
R-2	6,805.00	30	6,805.00

Bella Mesa North - WaterCAD Output Tables
Average Day Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	37	0.10	0.00
P-2	172	J-C1	J-C2	8.0	PVC	120.0	9	0.06	0.00
P-7	200	J-C6	R-2	12.0	PVC	120.0	-30	0.08	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	3	0.02	0.00
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	-3	0.02	0.00
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	-7	0.04	0.00
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	-10	0.06	0.00
P-10	254	J-C2	J-P1	8.0	PVC	120.0	3	0.02	0.00
P-11	442	J-P1	J-P2	8.0	PVC	120.0	1	0.01	0.00
P-12	333	J-P2	J-P3	8.0	PVC	120.0	-3	0.02	0.00
P-13	262	J-P3	J-C4	8.0	PVC	120.0	-1	0.01	0.00
P-15	842	J-C1	J-B1	12.0	PVC	120.0	9	0.03	0.00
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	20	0.06	0.00
P-42	344	J-B5	J-B4	12.0	PVC	120.0	13	0.04	0.00
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	13	0.04	0.00
P-60	405	J-B3	J-B2	12.0	PVC	120.0	9	0.02	0.00
P-61	138	J-B2	J-B1	12.0	PVC	120.0	7	0.02	0.00
P-62	300	J-B1	J-F3	8.0	PVC	120.0	15	0.10	0.00
P-63	265	J-F3	J-E3	8.0	PVC	120.0	8	0.05	0.00
P-64	312	J-E3	J-E2	8.0	PVC	120.0	3	0.02	0.00
P-65	290	J-E2	J-E1	8.0	PVC	120.0	0	0.00	0.00
P-66	493	J-E1	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-67	287	J-C8	J-C9	8.0	PVC	120.0	5	0.03	0.00
P-68	388	J-C9	J-D1	8.0	PVC	120.0	-1	0.01	0.00
P-69	361	J-D1	J-E1	8.0	PVC	120.0	-4	0.02	0.00
P-70	265	J-E1	J-F1	8.0	PVC	120.0	-6	0.04	0.00
P-71	351	J-F1	J-C7	8.0	PVC	120.0	-7	0.04	0.00
P-72	406	J-C7	J-C8	8.0	PVC	120.0	8	0.05	0.00
P-73	207	J-C7	J-C1	8.0	PVC	120.0	-19	0.12	0.00
P-74	309	J-F1	J-F2	8.0	PVC	120.0	-2	0.01	0.00
P-75	293	J-F2	J-F3	8.0	PVC	120.0	-5	0.03	0.00
P-76	183	J-B2	J-R1	8.0	PVC	120.0	2	0.01	0.00

Bella Mesa North - WaterCAD Output Tables
Average Day Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	-1	0.01	0.00
P-78	333	J-R2	J-R3	8.0	PVC	120.0	-4	0.03	0.00
P-79	288	J-R3	J-B5	8.0	PVC	120.0	-7	0.04	0.00
P-80	258	J-P3	J-R2	8.0	PVC	120.0	-5	0.03	0.00
P-81	201	J-R2	J-B3	8.0	PVC	120.0	-4	0.03	0.00
P-85	127	J-C10	J-C9	8.0	PVC	120.0	-2	0.01	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	-1	0.01	0.00

Bella Mesa North - WaterCAD Output Tables
Max Day Conditions

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,804.99	118
J-B2	6,533.99	0	6,804.99	117
J-B3	6,548.84	0	6,804.99	111
J-B4	6,557.42	0	6,804.99	107
J-B5	6,565.21	0	6,804.99	104
J-C1	6,544.27	0	6,804.99	113
J-C2	6,546.33	6	6,804.99	112
J-C3	6,553.21	16	6,804.98	109
J-C4	6,561.66	6	6,804.99	105
J-C5	6,566.37	8	6,804.99	103
J-C6	6,568.06	1	6,805.00	103
J-C7	6,543.80	9	6,804.97	113
J-C8	6,534.75	9	6,804.97	117
J-C9	6,528.49	10	6,804.97	120
J-C10	6,526.65	4	6,804.96	120
J-D1	6,522.51	6	6,804.97	122
J-E1	6,527.57	7	6,804.97	120
J-E2	6,523.59	8	6,804.97	122
J-E3	6,518.44	8	6,804.97	124
J-E4	6,514.86	3	6,804.97	126
J-F1	6,533.99	6	6,804.97	117
J-F2	6,529.69	9	6,804.97	119
J-F3	6,526.75	6	6,804.97	120
J-H2	6,528.26	0	6,804.99	120
J-J1	6,554.69	0	6,804.99	108
J-P1	6,549.00	6	6,804.98	111
J-P2	6,554.43	11	6,804.98	108
J-P3	6,558.26	6	6,804.99	107
J-R1	6,545.43	9	6,804.99	112
J-R2	6,552.17	6	6,804.99	109
J-R3	6,559.94	7	6,804.99	106

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	92	6,805.00
R-2	6,805.00	74	6,805.00

Bella Mesa North - WaterCAD Output Tables
Max Day Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	92	0.26	0.01
P-2	172	J-C1	J-C2	8.0	PVC	120.0	23	0.15	0.00
P-7	200	J-C6	R-2	12.0	PVC	120.0	-74	0.21	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	8	0.05	0.00
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	-8	0.05	0.00
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	-16	0.11	0.00
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	-24	0.15	0.01
P-10	254	J-C2	J-P1	8.0	PVC	120.0	9	0.06	0.00
P-11	442	J-P1	J-P2	8.0	PVC	120.0	2	0.02	0.00
P-12	333	J-P2	J-P3	8.0	PVC	120.0	-9	0.06	0.00
P-13	262	J-P3	J-C4	8.0	PVC	120.0	-3	0.02	0.00
P-15	842	J-C1	J-B1	12.0	PVC	120.0	22	0.06	0.00
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	49	0.14	0.00
P-42	344	J-B5	J-B4	12.0	PVC	120.0	33	0.09	0.00
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	33	0.09	0.00
P-60	405	J-B3	J-B2	12.0	PVC	120.0	22	0.06	0.00
P-61	138	J-B2	J-B1	12.0	PVC	120.0	17	0.05	0.00
P-62	300	J-B1	J-F3	8.0	PVC	120.0	39	0.25	0.02
P-63	265	J-F3	J-E3	8.0	PVC	120.0	19	0.12	0.00
P-64	312	J-E3	J-E2	8.0	PVC	120.0	8	0.05	0.00
P-65	290	J-E2	J-E1	8.0	PVC	120.0	1	0.00	0.00
P-66	493	J-E1	J-C8	8.0	PVC	120.0	0	0.00	0.00
P-67	287	J-C8	J-C9	8.0	PVC	120.0	11	0.07	0.00
P-68	388	J-C9	J-D1	8.0	PVC	120.0	-3	0.02	0.00
P-69	361	J-D1	J-E1	8.0	PVC	120.0	-9	0.06	0.00
P-70	265	J-E1	J-F1	8.0	PVC	120.0	-15	0.10	0.00
P-71	351	J-F1	J-C7	8.0	PVC	120.0	-18	0.11	0.00
P-72	406	J-C7	J-C8	8.0	PVC	120.0	21	0.13	0.01
P-73	207	J-C7	J-C1	8.0	PVC	120.0	-47	0.30	0.02
P-74	309	J-F1	J-F2	8.0	PVC	120.0	-4	0.03	0.00
P-75	293	J-F2	J-F3	8.0	PVC	120.0	-13	0.08	0.00
P-76	183	J-B2	J-R1	8.0	PVC	120.0	5	0.03	0.00

Bella Mesa North - WaterCAD Output Tables
Max Day Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	-4	0.02	0.00
P-78	333	J-R2	J-R3	8.0	PVC	120.0	-10	0.06	0.00
P-79	288	J-R3	J-B5	8.0	PVC	120.0	-17	0.11	0.00
P-80	258	J-P3	J-R2	8.0	PVC	120.0	-11	0.07	0.00
P-81	201	J-R2	J-B3	8.0	PVC	120.0	-11	0.07	0.00
P-85	127	J-C10	J-C9	8.0	PVC	120.0	-4	0.03	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	-3	0.02	0.00

Bella Mesa North - WaterCAD Output Tables
Peak Hour Conditions

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,804.94	118
J-B2	6,533.99	0	6,804.94	117
J-B3	6,548.84	0	6,804.95	111
J-B4	6,557.42	0	6,804.96	107
J-B5	6,565.21	0	6,804.96	104
J-C1	6,544.27	0	6,804.95	113
J-C2	6,546.33	14	6,804.94	112
J-C3	6,553.21	35	6,804.93	109
J-C4	6,561.66	12	6,804.94	105
J-C5	6,566.37	17	6,804.95	103
J-C6	6,568.06	2	6,804.98	103
J-C7	6,543.80	20	6,804.89	113
J-C8	6,534.75	20	6,804.86	117
J-C9	6,528.49	23	6,804.85	120
J-C10	6,526.65	9	6,804.85	120
J-D1	6,522.51	14	6,804.85	122
J-E1	6,527.57	15	6,804.86	120
J-E2	6,523.59	17	6,804.86	122
J-E3	6,518.44	18	6,804.86	124
J-E4	6,514.86	6	6,804.86	125
J-F1	6,533.99	14	6,804.87	117
J-F2	6,529.69	20	6,804.87	119
J-F3	6,526.75	14	6,804.88	120
J-H2	6,528.26	0	6,804.94	120
J-J1	6,554.69	0	6,804.96	108
J-P1	6,549.00	14	6,804.93	111
J-P2	6,554.43	24	6,804.93	108
J-P3	6,558.26	12	6,804.94	107
J-R1	6,545.43	20	6,804.94	112
J-R2	6,552.17	12	6,804.94	109
J-R3	6,559.94	15	6,804.95	106

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	203	6,805.00
R-2	6,805.00	163	6,805.00

Bella Mesa North - WaterCAD Output Tables
Peak Hour Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	203	0.58	0.05
P-2	172	J-C1	J-C2	8.0	PVC	120.0	50	0.32	0.01
P-7	200	J-C6	R-2	12.0	PVC	120.0	-163	0.46	0.02
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	18	0.11	0.01
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	-18	0.11	0.01
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	-36	0.23	0.01
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	-53	0.34	0.03
P-10	254	J-C2	J-P1	8.0	PVC	120.0	19	0.12	0.00
P-11	442	J-P1	J-P2	8.0	PVC	120.0	5	0.03	0.00
P-12	333	J-P2	J-P3	8.0	PVC	120.0	-19	0.12	0.00
P-13	262	J-P3	J-C4	8.0	PVC	120.0	-6	0.04	0.00
P-15	842	J-C1	J-B1	12.0	PVC	120.0	49	0.14	0.01
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	109	0.31	0.02
P-42	344	J-B5	J-B4	12.0	PVC	120.0	72	0.20	0.01
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	72	0.20	0.01
P-60	405	J-B3	J-B2	12.0	PVC	120.0	48	0.14	0.00
P-61	138	J-B2	J-B1	12.0	PVC	120.0	36	0.10	0.00
P-62	300	J-B1	J-F3	8.0	PVC	120.0	85	0.54	0.07
P-63	265	J-F3	J-E3	8.0	PVC	120.0	43	0.27	0.02
P-64	312	J-E3	J-E2	8.0	PVC	120.0	18	0.12	0.00
P-65	290	J-E2	J-E1	8.0	PVC	120.0	1	0.01	0.00
P-66	493	J-E1	J-C8	8.0	PVC	120.0	-1	0.01	0.00
P-67	287	J-C8	J-C9	8.0	PVC	120.0	25	0.16	0.01
P-68	388	J-C9	J-D1	8.0	PVC	120.0	-7	0.04	0.00
P-69	361	J-D1	J-E1	8.0	PVC	120.0	-21	0.13	0.01
P-70	265	J-E1	J-F1	8.0	PVC	120.0	-34	0.22	0.01
P-71	351	J-F1	J-C7	8.0	PVC	120.0	-39	0.25	0.02
P-72	406	J-C7	J-C8	8.0	PVC	120.0	46	0.29	0.03
P-73	207	J-C7	J-C1	8.0	PVC	120.0	-104	0.67	0.07
P-74	309	J-F1	J-F2	8.0	PVC	120.0	-9	0.06	0.00
P-75	293	J-F2	J-F3	8.0	PVC	120.0	-29	0.18	0.01
P-76	183	J-B2	J-R1	8.0	PVC	120.0	12	0.08	0.00

Bella Mesa North - WaterCAD Output Tables
Peak Hour Conditions

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	-8	0.05	0.00
P-78	333	J-R2	J-R3	8.0	PVC	120.0	-22	0.14	0.01
P-79	288	J-R3	J-B5	8.0	PVC	120.0	-37	0.24	0.01
P-80	258	J-P3	J-R2	8.0	PVC	120.0	-25	0.16	0.01
P-81	201	J-R2	J-B3	8.0	PVC	120.0	-23	0.15	0.00
P-85	127	J-C10	J-C9	8.0	PVC	120.0	-9	0.06	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	-6	0.04	0.00

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - C5

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,801.20	117
J-B2	6,533.99	0	6,800.82	115
J-B3	6,548.84	0	6,800.11	109
J-B4	6,557.42	0	6,799.75	105
J-B5	6,565.21	0	6,799.38	101
J-C1	6,544.27	0	6,802.67	112
J-C2	6,546.33	6	6,801.27	110
J-C3	6,553.21	16	6,799.98	107
J-C4	6,561.66	6	6,798.59	103
J-C5 (FF APPLIED)	6,566.37	1,500	6,795.00	99
J-C6	6,568.06	1	6,798.79	100
J-C7	6,543.80	9	6,802.17	112
J-C8	6,534.75	9	6,801.97	116
J-C9	6,528.49	10	6,801.94	118
J-C10	6,526.65	4	6,801.94	119
J-D1	6,522.51	6	6,801.91	121
J-E1	6,527.57	7	6,801.90	119
J-E2	6,523.59	8	6,801.78	120
J-E3	6,518.44	8	6,801.67	123
J-E4	6,514.86	3	6,801.67	124
J-F1	6,533.99	6	6,801.90	116
J-F2	6,529.69	9	6,801.73	118
J-F3	6,526.75	6	6,801.59	119
J-H2	6,528.26	0	6,801.20	118
J-J1	6,554.69	0	6,799.75	106
J-P1	6,549.00	6	6,800.85	109
J-P2	6,554.43	11	6,800.17	106
J-P3	6,558.26	6	6,799.70	104
J-R1	6,545.43	9	6,800.57	110
J-R2	6,552.17	6	6,799.95	107
J-R3	6,559.94	7	6,799.63	104

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	1,659	6,805.00
R-2	6,805.00	0	6,805.00

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - C5

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	1,659	4.71	2.33
P-2	172	J-C1	J-C2	8.0	PVC	120.0	597	3.81	1.40
P-7 (CLOSED)	200	J-C6	R-2	12.0	PVC	120.0	0	0.00	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	341	2.18	1.28
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	325	2.08	1.40
P-9(1)	297	J-C4	J-C5 (FF APPLIED)	8.0	PVC	120.0	738	4.71	3.58
P-9(2)	296	J-C5 (FF APPLIED)	J-C6	8.0	PVC	120.0	-762	4.86	3.79
P-10	254	J-C2	J-P1	8.0	PVC	120.0	250	1.59	0.41
P-11	442	J-P1	J-P2	8.0	PVC	120.0	243	1.55	0.68
P-12	333	J-P2	J-P3	8.0	PVC	120.0	232	1.48	0.47
P-13	262	J-P3	J-C4	8.0	PVC	120.0	419	2.67	1.11
P-15	842	J-C1	J-B1	12.0	PVC	120.0	754	2.14	1.47
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	-762	2.16	0.59
P-42	344	J-B5	J-B4	12.0	PVC	120.0	-581	1.65	0.37
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	-581	1.65	0.37
P-60	405	J-B3	J-B2	12.0	PVC	120.0	-752	2.13	0.70
P-61	138	J-B2	J-B1	12.0	PVC	120.0	-976	2.77	0.39
P-62	300	J-B1	J-F3	8.0	PVC	120.0	-222	1.42	0.39
P-63	265	J-F3	J-E3	8.0	PVC	120.0	-99	0.63	0.08
P-64	312	J-E3	J-E2	8.0	PVC	120.0	-110	0.70	0.11
P-65	290	J-E2	J-E1	8.0	PVC	120.0	-118	0.75	0.12
P-66	493	J-E1	J-C8	8.0	PVC	120.0	-67	0.43	0.07
P-67	287	J-C8	J-C9	8.0	PVC	120.0	57	0.36	0.03
P-68	388	J-C9	J-D1	8.0	PVC	120.0	42	0.27	0.02
P-69	361	J-D1	J-E1	8.0	PVC	120.0	36	0.23	0.02
P-70	265	J-E1	J-F1	8.0	PVC	120.0	-22	0.14	0.00
P-71	351	J-F1	J-C7	8.0	PVC	120.0	-166	1.06	0.27
P-72	406	J-C7	J-C8	8.0	PVC	120.0	133	0.85	0.20
P-73	207	J-C7	J-C1	8.0	PVC	120.0	-308	1.97	0.50
P-74	309	J-F1	J-F2	8.0	PVC	120.0	138	0.88	0.17

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - C5

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-75	293	J-F2	J-F3	8.0	PVC	120.0	129	0.83	0.14
P-76	183	J-B2	J-R1	8.0	PVC	120.0	224	1.43	0.24
P-77	503	J-R1	J-R2	8.0	PVC	120.0	215	1.37	0.62
P-78	333	J-R2	J-R3	8.0	PVC	120.0	188	1.20	0.32
P-79	288	J-R3	J-B5	8.0	PVC	120.0	181	1.15	0.26
P-80	258	J-P3	J-R2	8.0	PVC	120.0	-192	1.22	0.26
P-81	201	J-R2	J-B3	8.0	PVC	120.0	-170	1.09	0.16
P-85	127	J-C10	J-C9	8.0	PVC	120.0	-4	0.03	0.00
P-86	112	J-E4	J-E3	8.0	PVC	120.0	-3	0.02	0.00

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - E4

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-B1	6,531.73	0	6,801.72	117
J-B2	6,533.99	0	6,801.74	116
J-B3	6,548.84	0	6,801.77	109
J-B4	6,557.42	0	6,801.78	106
J-B5	6,565.21	0	6,801.79	102
J-C1	6,544.27	0	6,802.66	112
J-C2	6,546.33	6	6,802.34	111
J-C3	6,553.21	16	6,802.13	108
J-C4	6,561.66	6	6,801.92	104
J-C5	6,566.37	8	6,801.86	102
J-C6	6,568.06	1	6,801.80	101
J-C7	6,543.80	9	6,799.69	111
J-C8	6,534.75	9	6,798.30	114
J-C9	6,528.49	10	6,798.11	117
J-C10	6,526.65	4	6,798.11	117
J-D1	6,522.51	6	6,797.90	119
J-E1	6,527.57	7	6,797.72	117
J-E2	6,523.59	8	6,795.38	118
J-E3	6,518.44	8	6,792.92	119
J-E4 (FF APPLIED)	6,514.86	1,500	6,787.88	118
J-F1	6,533.99	6	6,798.17	114
J-F2	6,529.69	9	6,797.94	116
J-F3	6,526.75	6	6,797.75	117
J-H2	6,528.26	0	6,801.72	118
J-J1	6,554.69	0	6,801.78	107
J-P1	6,549.00	6	6,802.23	110
J-P2	6,554.43	11	6,802.04	107
J-P3	6,558.26	6	6,801.92	105
J-R1	6,545.43	9	6,801.75	111
J-R2	6,552.17	6	6,801.79	108
J-R3	6,559.94	7	6,801.79	105

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,805.00	1,664	6,805.00
R-2	6,805.00	0	6,805.00

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - E4

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	311	R-1	J-C1	12.0	PVC	120.0	1,664	4.72	2.34
P-2	172	J-C1	J-C2	8.0	PVC	120.0	265	1.69	0.31
P-7 (CLOSED)	200	J-C6	R-2	12.0	PVC	120.0	0	0.00	0.00
P-8(1)	443	J-C2	J-C3	8.0	PVC	120.0	131	0.84	0.22
P-8(2)	527	J-C3	J-C4	8.0	PVC	120.0	115	0.73	0.20
P-9(1)	297	J-C4	J-C5	8.0	PVC	120.0	86	0.55	0.07
P-9(2)	296	J-C5	J-C6	8.0	PVC	120.0	78	0.50	0.06
P-10	254	J-C2	J-P1	8.0	PVC	120.0	128	0.82	0.12
P-11	442	J-P1	J-P2	8.0	PVC	120.0	122	0.78	0.19
P-12	333	J-P2	J-P3	8.0	PVC	120.0	110	0.70	0.12
P-13	262	J-P3	J-C4	8.0	PVC	120.0	-24	0.15	0.01
P-15	842	J-C1	J-B1	12.0	PVC	120.0	591	1.68	0.93
P-16	407	J-B1	J-H2	12.0	PVC	120.0	0	0.00	0.00
P-40	331	J-C6	J-B5	12.0	PVC	120.0	77	0.22	0.01
P-42	344	J-B5	J-B4	12.0	PVC	120.0	83	0.24	0.01
P-43	268	J-B4	J-J1	8.0	PVC	120.0	0	0.00	0.00
P-59	340	J-B4	J-B3	12.0	PVC	120.0	83	0.24	0.01
P-60	405	J-B3	J-B2	12.0	PVC	120.0	142	0.40	0.03
P-61	138	J-B2	J-B1	12.0	PVC	120.0	185	0.52	0.02
P-62	300	J-B1	J-F3	8.0	PVC	120.0	775	4.95	3.97
P-63	265	J-F3	J-E3	8.0	PVC	120.0	922	5.89	4.83
P-64	312	J-E3	J-E2	8.0	PVC	120.0	-586	3.74	2.46
P-65	290	J-E2	J-E1	8.0	PVC	120.0	-594	3.79	2.34
P-66	493	J-E1	J-C8	8.0	PVC	120.0	-211	1.35	0.59
P-67	287	J-C8	J-C9	8.0	PVC	120.0	154	0.98	0.19
P-68	388	J-C9	J-D1	8.0	PVC	120.0	139	0.89	0.21
P-69	361	J-D1	J-E1	8.0	PVC	120.0	133	0.85	0.18
P-70	265	J-E1	J-F1	8.0	PVC	120.0	-257	1.64	0.45
P-71	351	J-F1	J-C7	8.0	PVC	120.0	-425	2.71	1.53
P-72	406	J-C7	J-C8	8.0	PVC	120.0	374	2.39	1.39
P-73	207	J-C7	J-C1	8.0	PVC	120.0	-808	5.16	2.96
P-74	309	J-F1	J-F2	8.0	PVC	120.0	162	1.03	0.23
P-75	293	J-F2	J-F3	8.0	PVC	120.0	153	0.98	0.19
P-76	183	J-B2	J-R1	8.0	PVC	120.0	-42	0.27	0.01

Bella Mesa North - WaterCAD Output Tables
Max Day + Fire Flow Conditions
P - 7 Closed & FF Applied @ J - E4

FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-77	503	J-R1	J-R2	8.0	PVC	120.0	-51	0.33	0.04
P-78	333	J-R2	J-R3	8.0	PVC	120.0	13	0.08	0.00
P-79	288	J-R3	J-B5	8.0	PVC	120.0	6	0.04	0.00
P-80	258	J-P3	J-R2	8.0	PVC	120.0	129	0.82	0.12
P-81	201	J-R2	J-B3	8.0	PVC	120.0	59	0.38	0.02
P-85	127	J-C10	J-C9	8.0	PVC	120.0	-4	0.03	0.00
P-86	112	J-E4 (FF APPLIED)	J-E3	8.0	PVC	120.0	-1,500	9.57	5.04

TOWN OF CASTLE ROCK
FIRE FLOW TEST FORM

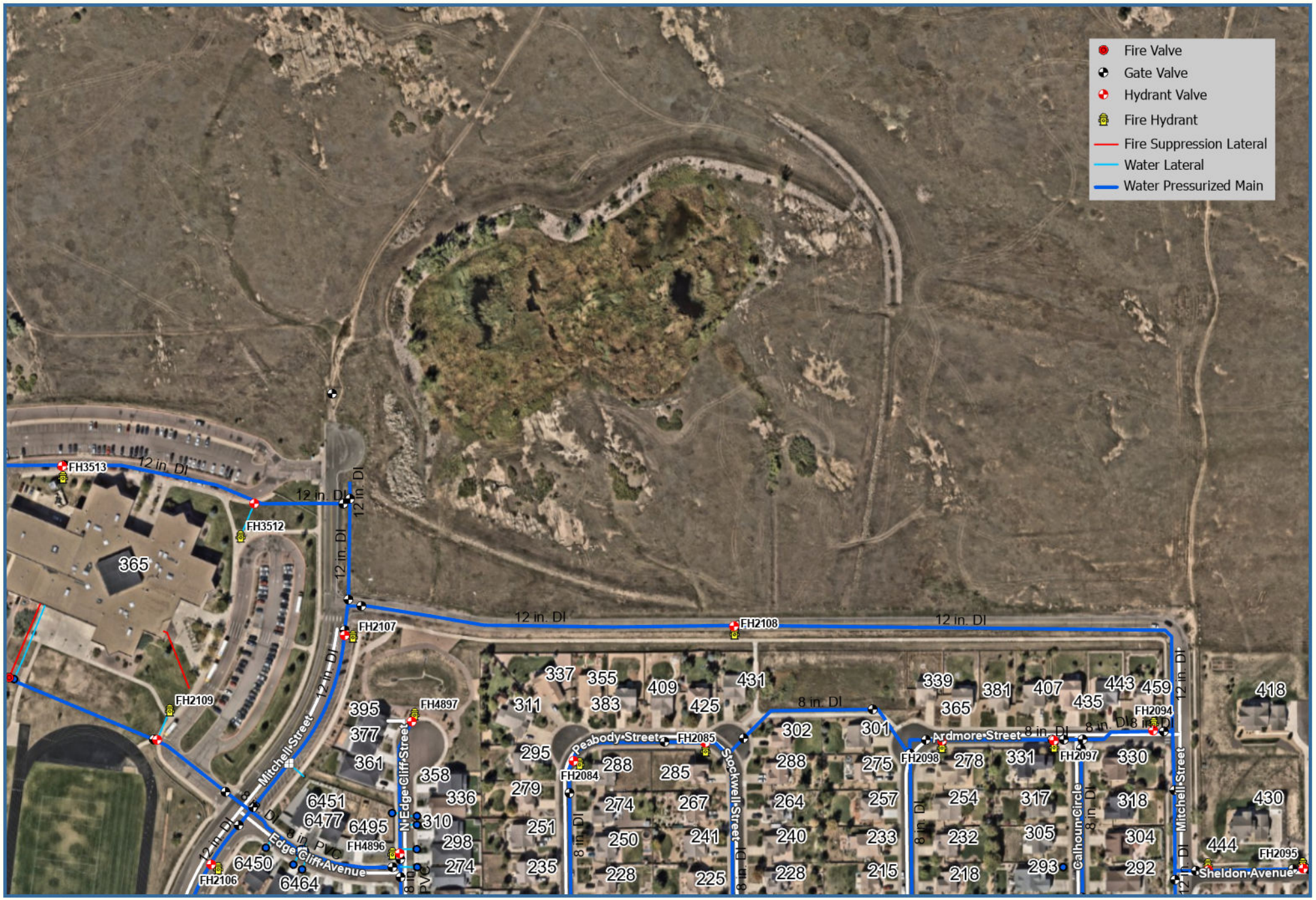
12/2/2025 **F19-2025**

Service Address: *see attached map for location*

Bella Mesa - N Mitchell St / Mitchell St

Test Conducted By: Fire flow is estimated with hydraulic model

Pressure Hydrant		
Hydrant ID FH	**2107**	
Pre-test Static Pressure (Ps1)	110.5	psi
Residual Pressure (Pr)	103.6	psi
Post-test Static Pressure (Ps2)		psi
Flowing Hydrant		
Hydrant ID FH	**2108**	
Orifice Side (D)		in
Main Size (Dp)		in
Calculated Flowrate (Qr)	1500	gpm
Estimated Volume Discharged (Q)		gallons


Fire Valve
Gate Valve
Hydrant Valve
Fire Hydrant
Fire Suppression Lateral
Water Lateral
Water Pressurized Main
FH3513
FH3512
FH2107
FH2108
FH2109
FH4897
FH2084
FH2085
FH2098
FH2097
FH2094
FH4896
FH2106
FH2095
12 in. DI
8 in. DI
Mitchell Street
N Edge Cliff Street
Edge Cliff Avenue
Peabody Street
Stockwell Street
Ardmore Street
Calhoun Circle
Sheldon Avenue
8 in. PVC
PVC
365
395
377
361
358
336
310
298
274
6451
6477
6495
6450
6464
337
355
311
383
409
425
431
295
279
288
285
274
267
251
250
241
235
228
225
302
301
288
275
264
257
240
233
228
215
339
381
365
407
435
443
459
331
278
254
317
305
293
330
318
304
292
418
430
444
Castle Rock Water
Securing our future drop by drop
0 105 210 420 630
Feet
Date: 12/2/2025
1:2,909
N
Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for it's use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6000. Copyright 2024, Town of Castle Rock Utilities Mapping.
CASTLE ROCK
WATER MAP
(INTERNAL USE ONLY)
Document Path: \\CRSAN1\UTShare\GIS\Standard Maps\Standard Map for Ops\Standard Map & Letter Layouts.aprx

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

MEMORANDUM

To: **Castle Rock Fire and Rescue Department**
By: **Evan Rumney, P.E.**
Date: **December 2, 2025**
RE: **Bella Mesa North Filing 1 – Required Fire Flow Confirmation**

This memorandum addresses the confirmation of required fire flow for the development of Bella Mesa North Filing 1 within the overall Bella Mesa North project, hereafter referred to as the Site.

Site Location

The Site is in portions of the Southwest quarter of Section 4, the Southeast quarter of Section 5, the North half of the Northeast quarter of Section 8 and the North half of the Northwest quarter of Section 9, Township 8 South, Range 66 West of the 6th P.M., in the County of Douglas, State of Colorado.

Description of Property and Land Use

The overall Bella Mesa North project is roughly 293.2 acres undeveloped and located east of Mitchell Gulch and north of Mitchell Street, the Castlewood Ranch development, and the Founders Village Filing 24 development. The proposed Filing 1 Site is approximately 110 acres and will include approximately 229 single family detached (SFD) dwellings, local roadways, open space, Site infrastructure, and detention pond A.

Building Information

The Site will consist of 229 single family detached dwellings of two stories or less. No units will be required to be sprinklered. These units are not required to be sprinklered because they fall inside of the remoteness distance criteria outlined in the 2018 International Fire Code, Appendix D - Section D104.3. See the attached exhibit showing the remoteness area and sprinklered units throughout the Site.

Required Fire Flow

Required Fire Flow: 1,500 (value) gpm (units)

Required Duration: 2 (value) Hours (units)

Castle Rock Fire and Rescue Department

_____ _____
Name (please print) **Date**

_____
Authorized Signature

NOTES:

MAXIMUM OVERALL DIAGONAL DISTANCE FROM FARTHEST LOTS TO BE SERVED: 2,678'

ALLOWABLE REMOTENESS: (2,678')($\frac{1}{2}$) = 1,339'

BELLA MESA NORTH F1 ACCESS DISTANCE: 1,634'

REMOTENESS CRITERIA IS ACHIEVED: 1,634' > 1,339'

TOTAL FILING 1 UNIT COUNT: 229

REQUIRED NUMBER OF UNITS TO BE SPRINKLERED: 0

FUTURE BELLA MESA NORTH FILINGS

STREET D (PUBLIC)
STREET E (PUBLIC)
STREET F (PUBLIC)
STREET G (PUBLIC)
STREET C (PUBLIC)
STREET P (PUBLIC)
STREET O (PUBLIC)
STREET R (PUBLIC)
MITCHELL ST (PUBLIC)

2678'

1634'

MESA MIDDLE SCHOOL

FIRE APPARATUS ACCESS ROAD #1

FIRE APPARATUS ACCESS ROAD #2

N

0 75' 150' 300'

SCALE: 1" =150'

I:\2017\17026 - Bella Mesa\CAD\Exhibits\17026.004 - Sunset Point\Filing 1\17026.004 - Filing 1 - Fire Remotness Exhibit.dwg tab: 3 OF 85 PHASING PLAN Jan 05, 2026 - 8:31am lluzwig

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

DATE	NO.	NOTES

PROJECT NO.	17026.004
DATE	NO.	NOTES

BELLA MESA NORTH - FILING 1
EXHIBIT
REMOTENESS AND SPRINKLERED MAP

SHEET
1 OF 1

Docusign Envelope ID: 33032B5C-8351-4DF4-BB93-BEAFE84E1E3E

TECHNICAL MEMORANDUM

To: Mark Marlowe, P.E., Director, Castle Rock Water

Thru: Mark Henderson, Assistant Director, CR Water

Shawn Griffith, Assistant Director of Operations

Roy Gallea, P.E., Engineering Manager

John Chrestensen, Operations Manager

Initial MH (initial)
Initial SG (initial)
Initial RG (initial)
Initial JC (initial)

From: Ken Torres, P.E., Sr. Plan Review Engineer

Date: August 12, 2025

Title: Technical Criteria Variance Application

Name: Bella Mesa North – Water Line Exceeds Maximum Static Pressure

Number: TCV25-0036 and SDP24-0040

Legal Description: A Parcel of Land Being A Part of that Certain Quit Claim Deed as Recorded at Reception No. 2014010037 of The Records of the Douglas County Clerk and Recorder's Office, Located in the Southwest Quarter of Section 4, Part of the East Half of the Southeast Quarter of Section 5, Part of the Northeast Quarter of the Northeast Quarter of Section 8, and All of the North Half of the Northwest Quarter of Section 9, All in Township 8 South, Range 66 West of the Sixth Principal Meridian, Town of Castle Rock, County of Douglas, State of Colorado.

Summary: The attached water exhibit and analysis shows the locations where high static pressures are anticipated within the Bella Mesa North Development based on hydraulic modeling. The modeling output tables summarize the junction locations and pressures for the proposed water distribution system based on static tank levels at 100% full.

Recommendation: ____X_____ Approve _____ Deny

Discussion: Section 4.4.3 of the Water System Design Criteria Manual states the following hydraulic condition: *"Maximum static pressure with zero demand (100% tank stage) is 125 psi (from table)"*

Bella Mesa North will be supplied by existing green pressure zone distribution mains. The site generally lies within the green zone, however some of the site elevations appear to fall in the red pressure zone. To maximize the design effectiveness of the proposed water system in the Bella Mesa North development, the green zone system will increase static pressures slightly above the Town's hydraulic condition stipulated in the criteria. The results were evaluated by the developer's Engineer and reviewed by Castle Rock Water. I recommend approval, as issuing this variance will not impact public health, safety, or welfare.

Cc: Engineering Office Assistant (once finalized)

Docusign Envelope ID: 33032B5C-8351-4DF4-BB93-BEAFE84E1E3E

TOWN OF CASTLE ROCK COLORADO

Development Services
100 N. Wilcox Street
Castle Rock, CO 80104
720-733-2200 FAX 720-733-2231

NO. TCV25-0036

DATE 6/24/2025

TECHNICAL CRITERIA VARIANCE APPLICATION

DEVELOPMENT BELLA MESA - NORTH (SDP24-0040)

LEGAL DESCRIPTION OF SUBJECT PROPERTY

A PARCEL OF LAND BEING A PART OF THAT CERTAIN QUIT CLAIM DEED AS RECORDED AT RECEPTION NO. 2014010037 OF THE RECORDS OF THE DOUGLAS COUNTY CLERK AND RECORDER'S OFFICE, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 4, PART OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 5, PART OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8, AND ALL OF THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 9, ALL IN TOWNSHIP 8 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO.

VARIANCE REQUESTED:

Code Section(s) TOWN OF CASTLE ROCK WATER SYSTEM DESIGN 2018 CRITERIA MANUAL - 4.4.3 (MINIMUM HYDRUALIC PERFORMANCE CRITERIA)

Describe the Variance Requested

MAXIMUM STATIC PRESSURE WITH ZERO DEMAND WHEN TANK IS 100% FULL TO EXCEED 125 PSI.

1. Describe the exceptional situation or condition that exists

THE MAXIMUM STATIC PRESSURE (100% TANK FULL) IN THE PROPOSED WATER NETWORK IS MODELED TO EXCEED THE MAXIMUM ALLOWABLE PRESSURE OF 125 PSI IN MULTIPLE LOCATIONS. THE MAXIMUM PRESSURE MODELED IS 136 PSI. THE REASON FOR THIS IS THAT THE WESTERLY PORTION OF THE SITE IS LOCATED WITHIN A RANGE OF ELEVATIONS THAT FALL WITHIN CASTLE ROCKS RED PRESSURE ZONE, WHILE THE EXISTING STUBS PROVIDEED FOR THE SITE UTILIZE GREEN ZONE TANKS. DUE TO THIS RANGE OF ELEVATIONS, PRESSURES WITHIN THE WESTERLY PORTION OF THE SITE EXCEED THE MAXIMUM STATIC PRESSURE CRITERIA.

2. Describe the difficulty or hardship that would be created by a strict enforcement of the code

DUE TO THE SITE BEING SUPPLIED BY CASTLE ROCK GREEN ZONE TANKS AND THE GRADING CONSTRAINTS THROUGHOUT, THE NEEDED ELEVATIONS TO ACHIEVE THE MAXIMUM ALLOWABLE PRESSURE OF 125 PSI IN ALL AREAS IS NOT FEASIBLE.

3. Describe why there would not be any adverse impact on public health, safety and welfare

SINGLE-FAMILY DETACHED LOTS THAT FALL WITHIN THESE HIGH PRESSURE AREAS WILL UTILIZE WATER SERVICE LINES FITTED WITH PRESSURE REGULATING VALVES (PRV) TO MAINTAIN ADEQUATE PRESSURES TO ENSURE NO ADVERSE IMPACTS ON PUBLIC HEALTH, SAFETY, AND WELFARE.

Additional Information:

Docusign Envelope ID: 33032B5C-8351-4DF4-BB93-BEAFE84E1E3E

1. Attach an improvement survey.
2. Attach a drawing showing the intended uses.
3. Provide any other information helpful to discussion.

PROPERTY OWNER

Name: FOURTH INVESTMENTS, LLC.

Address: 6465 S. GREENWOOD PLAZA BLVD. #700
CENTENNIAL, COLORADO 80111

Phone #: 303-790-6602

Fax #: 303-706-9453

Signature of Applicant

APPLICANT'S REPRESENTATIVE (If applicable)

Name: REDLAND

Address: 1500 WEST CANAL COURT
LITTLETON, COLORADO 80120

Phone: 720-283-6783

Fax:

For Staff Use Only

Staff Recommendation: Approved ☑ Yes ☐ No

Signed by:
Mark Marlowe
FEA6D2E651B241D...
Signature

☐ Public Works Director
☑ Director of Castle Rock Water
☐ Parks & Recreation Director
☐ Development Services Director

8/21/2025 | 12:56 PM MDT
Date

Comments

None

Conditions of Acceptance

None

Docusign Envelope ID: 33032B5C-8351-4DF4-BB93-BEAFE84E1E3E

FIRE FLOW APPLIED @ J - L10

FIRE FLOW APPLIED @ J - C5

PIPE CLOSED WHEN FIRE FLOW APPLIED

100 YR

LEGEND:

GREEN | XX | SF

UNIT COUNT — XX

WATER ZONE — GREEN

SINGLE FAMILY — SF

PROPOSED WATER BASIN

LOTS NEEDING PRESSURE REDUCING VALVES (JUNCTIONS EXCEEDING 125 PSI IN THE STATIC CONDITION) *SEE TECHNICAL CRITERIA VARIANCE FOR SDP24-0040

N

0 75' 150' 300'

SCALE: 1" = 150'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NOTES	NO.	DATE

PROJECT NO.	17026.004	NOTES
DATE	NO.	

BELLA MESA - NORTH
EXHIBIT
PRV TECHNICAL CRITERIA VARIENCE

SHEET
1 OF 1

L:\2017\17026 - Bella Mesa\CADD\Exhibits\17026.004 - Sunset Point\17026.004 - Overall Water Map - PRV Technicol Vorience Exhibit.dwg tabi: Layout1 Jul 08, 2025 - 10:03am lludwig

Appendix D – Wastewater Flows

Bella Messa North - Filing 1 **Redland**

Final Utility Report 6/1/2026

Wastewater Flow

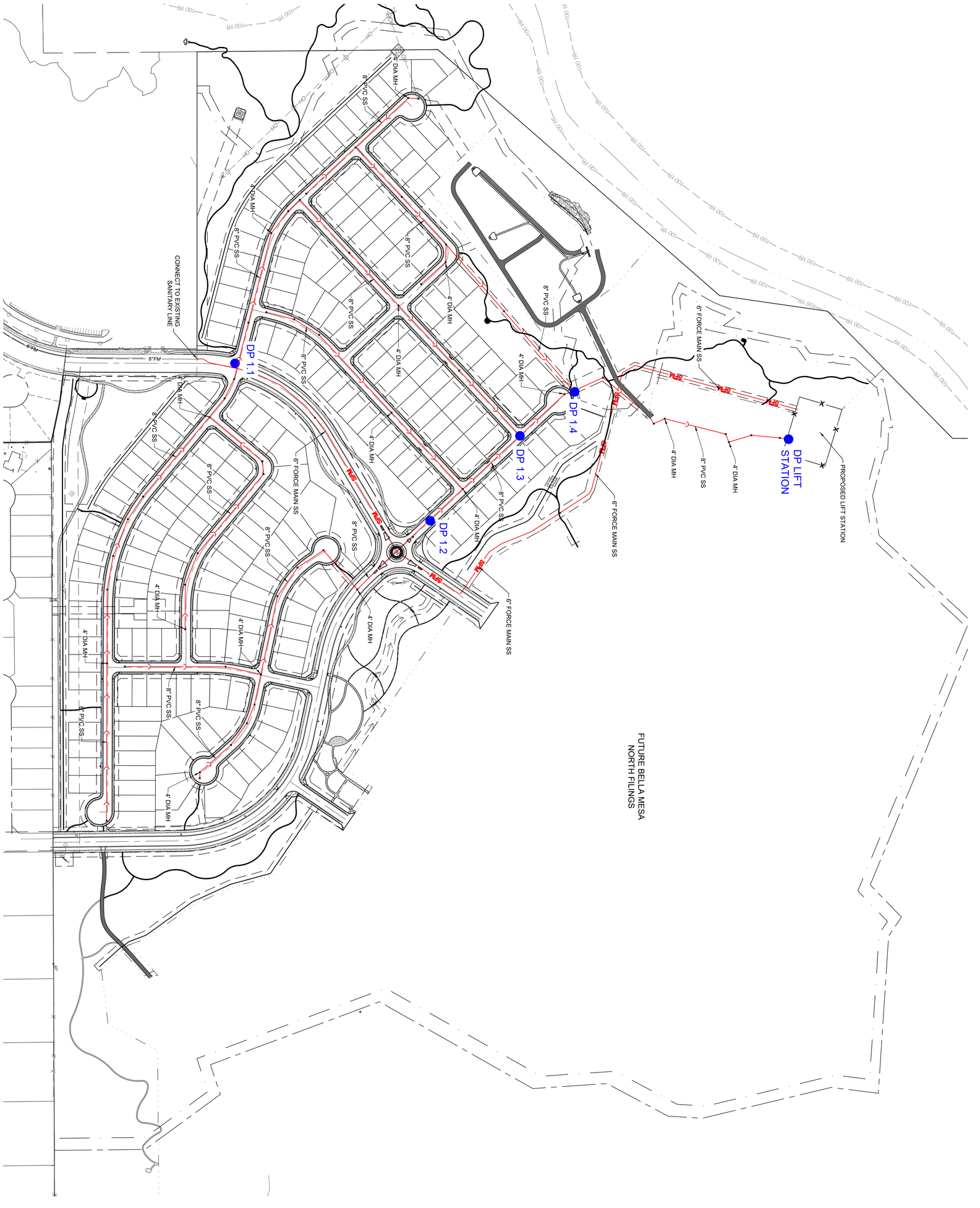
Peaking Factor:

Peak Hour (PHD) 5.0

Phase (SF -Residential)	Use	Dwelling Units	Acres (AC)	Equivalent (SFE/DU)	SFE	Avg Day (GPD/DU)	Avg Day (GPD)	Avg Day (GPM)	Peak Design (GPM)	Peak Design (GPD)	Peak Design Including I/I (GPM)	Peak Design Including I/I (GPD)
1	SF	229	104.63	1.00	229.00	200	45,800.00	31.81	159.03	229,000.00	162.21	233,580.00
Totals:	-	229	104.63	-	229.00	-	45,800.00	31.81	159.03	229,000.00	162.21	233,580.00

*Per Town Of Castle Rock Wastewater Collection Design 2018 Criteria Manual, Section 4.4.1

Appendix E – Wastewater Hydraulic Modeling



SHEET 1 OF 1

BELLA MESA NORTH - FILING 1

EXHIBIT

OVERALL SANITARY MAP

PROJECT NO:	17026.004				
DATE	NO.	NOTES	DATE	NO.	NOTES

NOT FOR CONSTRUCTION

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

Design Point Flows

Design Point	Unit Progression	Total Units	Equivalent (SFE/DU)	SFE	Avg Day (GPD/DU)	Avg Day (GPD)	Avg Day (GPM)	Avg Day (CFS)	Peak Design (GPM)	Peak Design Including I/I (GPM)	Peak Design (CFS)
1.1	73 Units	73	1.00	73.00	200	14,600.00	10.14	0.02	50.69	51.71	0.12
1.2	44 Units	44	1.00	44.00	200	8,800.00	6.11	0.01	30.56	31.17	0.07
1.3	DP1.1 + DP1.2 + 78 Units	195	1.00	195.00	200	39,000.00	27.08	0.06	135.42	138.13	0.31
1.4	DP1.3 + 34 Units	229	1.00	229.00	200	45,800.00	31.81	0.07	159.03	162.21	0.36
Lift Station	All Units	229	-	229	-	45,800.00	31.81	0.07	159.03	162.21	0.36

*Per Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual, Section 4.4.2

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 5 2026

Bella Mesa North Filing 1 - AVG Day - 8in Sanitary Main @ 0.4%

Circular

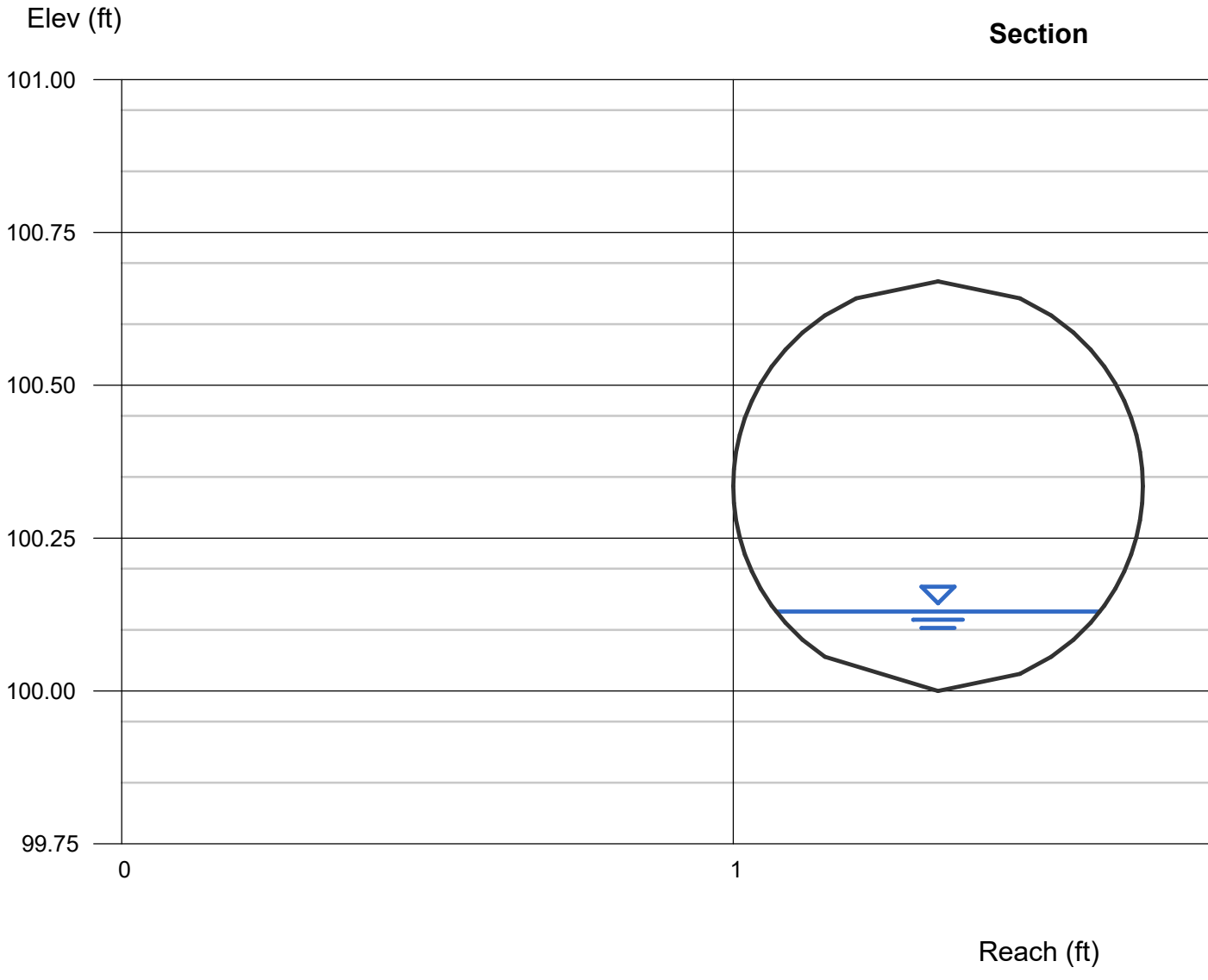
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.40
N-Value	= 0.011

Calculations

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

Highlighted

Depth (ft)	= 0.13
Q (cfs)	= 0.070
Area (sqft)	= 0.05
Velocity (ft/s)	= 1.44
Wetted Perim (ft)	= 0.61
Crit Depth, Yc (ft)	= 0.12
Top Width (ft)	= 0.53
EGL (ft)	= 0.16



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 5 2026

Bella Mesa North Filing 1 - AVG Day - 8in Sanitary Main @ 7.5%

Circular

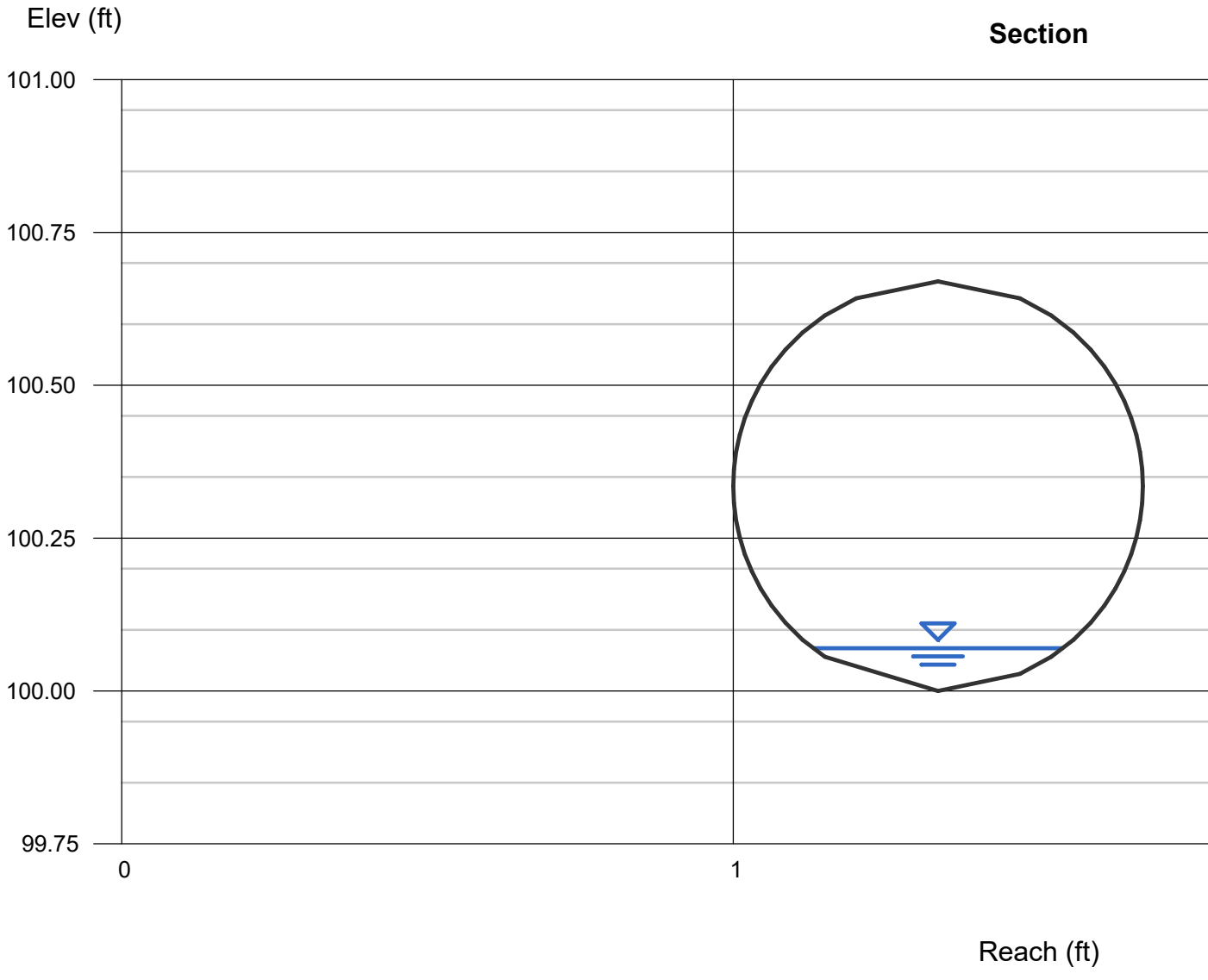
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 7.50
N-Value	= 0.011

Calculations

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

Highlighted

Depth (ft)	= 0.07
Q (cfs)	= 0.070
Area (sqft)	= 0.02
Velocity (ft/s)	= 3.55
Wetted Perim (ft)	= 0.44
Crit Depth, Yc (ft)	= 0.12
Top Width (ft)	= 0.41
EGL (ft)	= 0.27



Channel Report

Bella Mesa North Filing 1 - PEAK Day - 8in Sanitary Main @ 0.4%

Circular

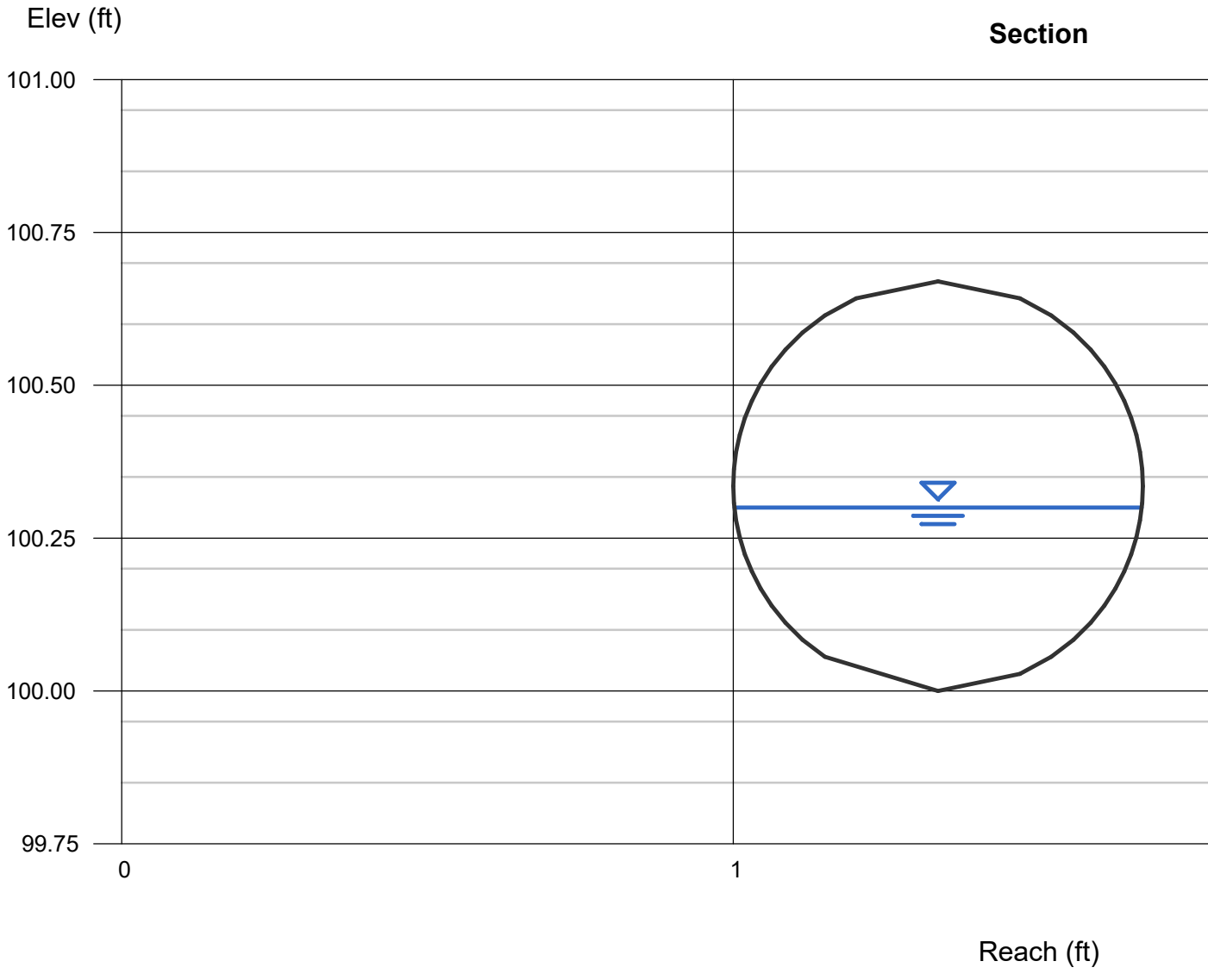
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.40
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.36

Highlighted

Depth (ft)	= 0.30
Q (cfs)	= 0.360
Area (sqft)	= 0.15
Velocity (ft/s)	= 2.34
Wetted Perim (ft)	= 0.98
Crit Depth, Yc (ft)	= 0.28
Top Width (ft)	= 0.67
EGL (ft)	= 0.39



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 5 2026

Bella Mesa North Filing 1 - PEAK Day - 8in Sanitary Main @ 7.5%

Circular

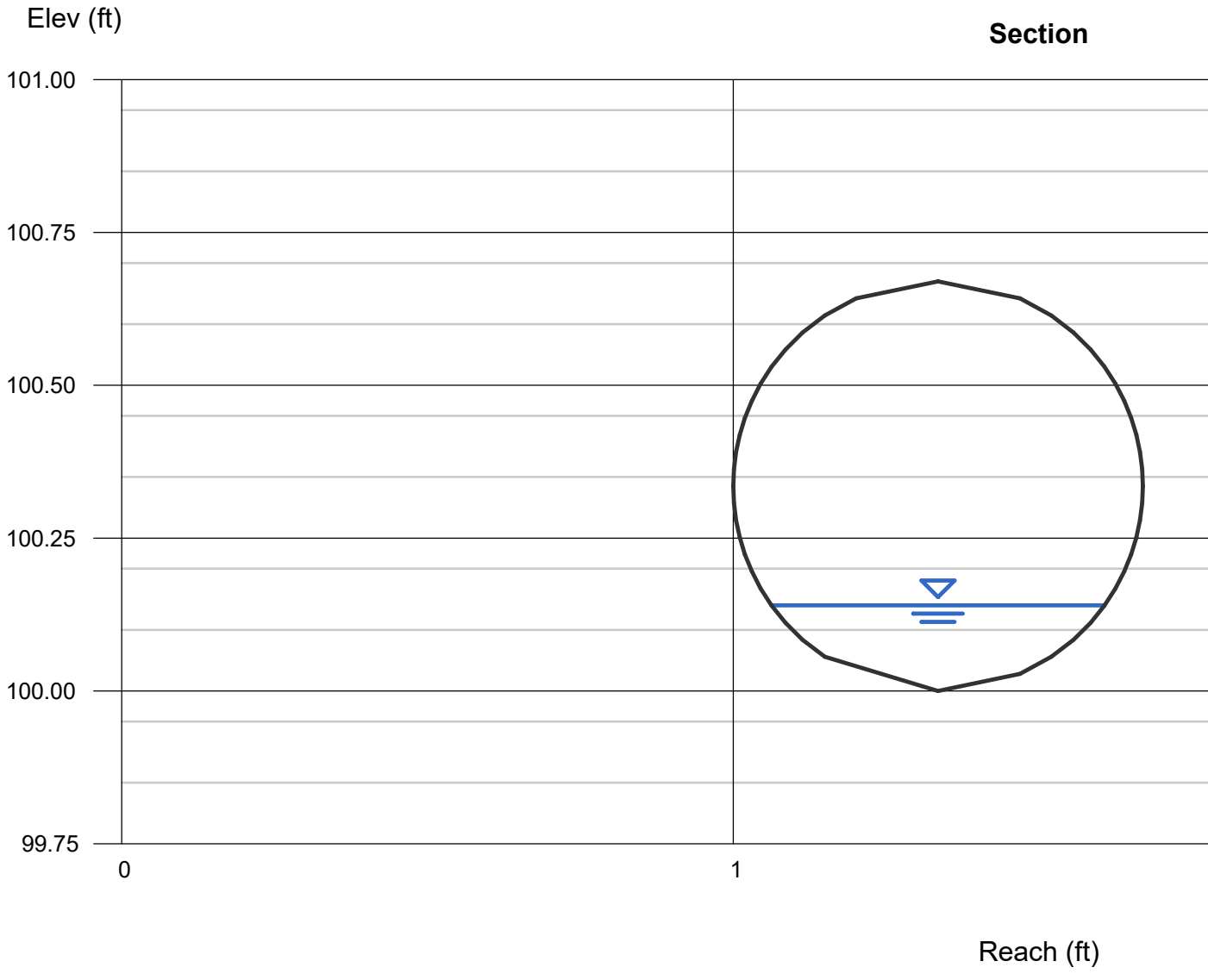
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 7.50
N-Value	= 0.011

Calculations

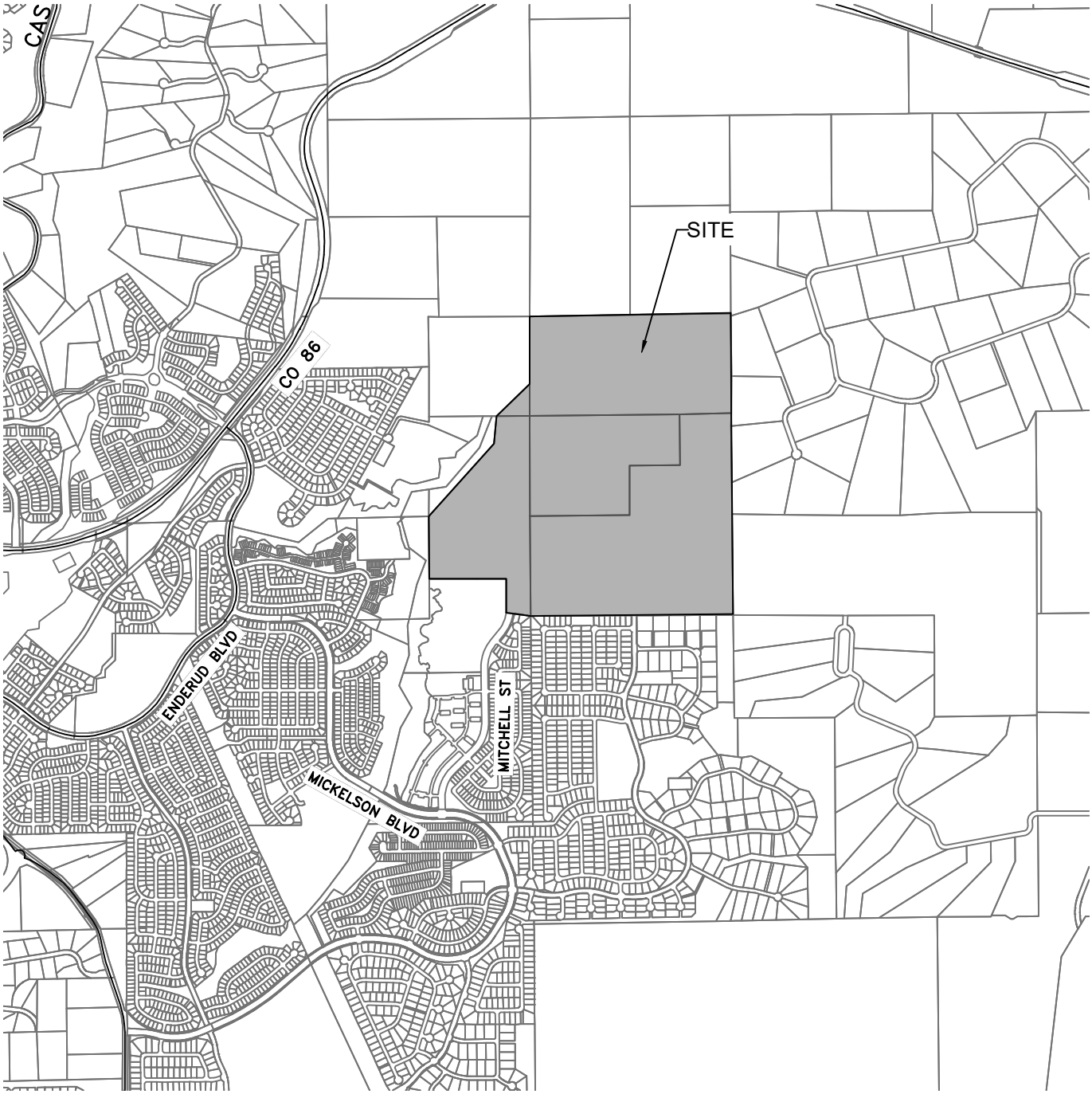
Compute by:	Known Q
Known Q (cfs)	= 0.36

Highlighted

Depth (ft)	= 0.14
Q (cfs)	= 0.360
Area (sqft)	= 0.05
Velocity (ft/s)	= 6.73
Wetted Perim (ft)	= 0.64
Crit Depth, Yc (ft)	= 0.28
Top Width (ft)	= 0.54
EGL (ft)	= 0.84



Appendix F – Maps and Plans



VICINITY MAP

1" = 2000'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

VICINITY MAP

BELLA MESA NORTH

CASTLE ROCK COLORADO

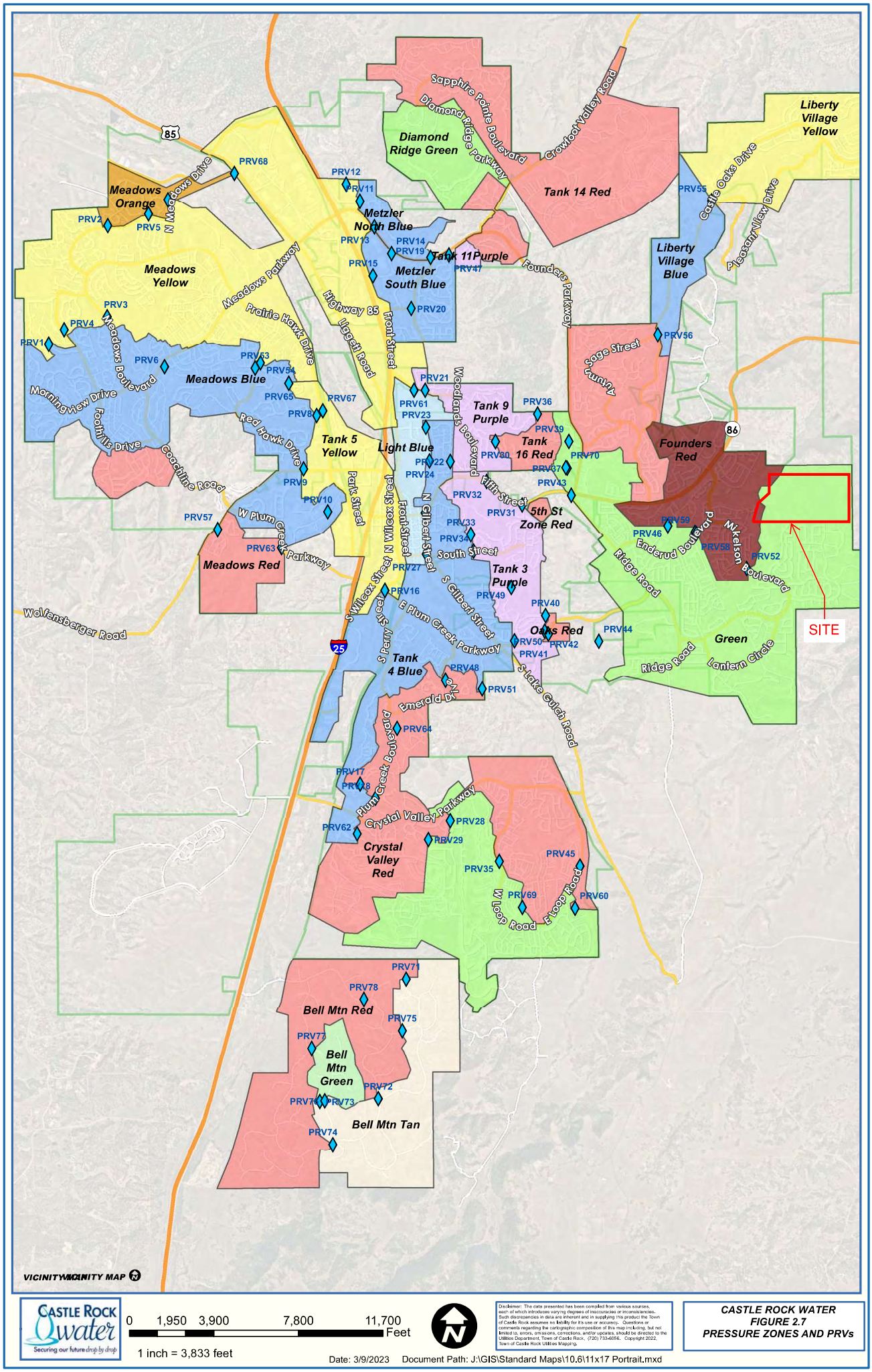
DATE 06.11.2024

PROJ. NO. 17026.004

SHEET

VIC

I:\2017\17026 - Bella Mesa\CADD\Exhibits\Sunset Point\Vicinity Map.dwg, tab: VICINITY MAP, Jun 11, 2024 - 11:06am, idudley


Meadows Orange
Meadows Yellow
Meadows Blue
Meadows Red
Diamond Ridge Green
Tank 14 Red
Metzler North Blue
Metzler South Blue
Tank 11 Purple
Tank 5 Yellow
Light Blue
Tank 9 Purple
Tank 16 Red
Tank 3 Purple
5th St Zone Red
Oaks Red
Tank 4 Blue
Crystal Valley Red
Bell Mtn Red
Bell Mtn Green
Bell Mtn Tan
Liberty Village Yellow
Liberty Village Blue
Founders Red
Green
SITE
Sapphire Pointe Boulevard
Diamond Ridge Parkway
Crowfoot Valley Road
Castle Oaks Drive
Pegasus View Drive
N Meadows Drive
Meadows Parkway
Prairie Hawk Drive
Highway 85
Liggett Road
Front Street
Founders Parkway
Sage Street
Meadows Boulevard
Morningview Drive
Foothills Drive
Coachline Road
Red Hawk Drive
Park Street
Woodlands Boulevard
Fifth Street
N Gilbert Street
N Wilcox Street
South Street
S Wilcox Street
S Gilbert Street
S Perry Street
E Plum Creek Parkway
W Plum Creek Parkway
Plum Creek Boulevard
Crystal Valley Parkway
Emerald Dr
S Lake Gulch Road
Ridge Road
Enderud Boulevard
Mikelson Boulevard
Lantern Circle
W Loop Road
E Loop Road
Wolfensberger Road
PRV1
PRV2
PRV3
PRV4
PRV5
PRV6
PRV8
PRV9
PRV10
PRV11
PRV12
PRV13
PRV14
PRV15
PRV16
PRV17
PRV18
PRV19
PRV20
PRV21
PRV22
PRV23
PRV24
PRV27
PRV28
PRV29
PRV31
PRV32
PRV33
PRV34
PRV35
PRV36
PRV37
PRV39
PRV40
PRV41
PRV42
PRV43
PRV44
PRV45
PRV46
PRV47
PRV48
PRV49
PRV50
PRV51
PRV52
PRV53
PRV54
PRV55
PRV56
PRV57
PRV58
PRV59
PRV60
PRV61
PRV62
PRV63
PRV64
PRV65
PRV67
PRV68
PRV69
PRV70
PRV71
PRV72
PRV73
PRV74
PRV75
PRV77
PRV78
85
25
86
VICINITY MAP
0 1,950 3,900 7,800 11,700 Feet
1 inch = 3,833 feet
Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for it's use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6056. Copyright 2022, Town of Castle Rock Utilities Mapping.
CASTLE ROCK WATER
FIGURE 2.7
PRESSURE ZONES AND PRVs
Date: 3/9/2023 Document Path: J:\GIS\Standard Maps\10.6\11x17 Portrait.mxd

APPROX. PROP. BNDY

APPROX. PROP. BNDY

APPROX. PROP. BNDY

APPROX. PROP. BNDY

EX. DIRT TRAIL

EX. DIRT TRAIL

EX. DIRT TRAIL

EX. DIRT TRAIL

EX. DIRT TRAIL

EX. DIRT TRAIL

EX. 18" FORCE MAIN

EX. 18" FORCE MAIN

EX. 18" SANITARY FORCE MAIN ABANDONED

EX. 18" FORCE MAIN

EX. OVERHEAD TELE POLE

EX. OVERHEAD TELE LINE

EX. OVERHEAD TELE POLE

EX. OVERHEAD TELE POLE

APPROX. PROP. BNDY

EX. 6" SANITARY FORCE MAIN ABANDONED

EX. 6" FORCE MAIN

EX. OVERHEAD TELE POLE

EX. OVERHEAD TELE LINE

EX. OVERHEAD TELE POLE

APPROX. PROP. BNDY

EX. 6" FORCE MAIN

EX. 42" CMP SD

EX. 6" SANITARY FORCE MAIN, CONNECTION POINT.

EX. 6" FORCE MAIN

EX. 12" WATER MAIN

APPROX. PROP. BNDY

EX. 24" RCP SD

EX. 42" STORM FES & 42" CMP SD TO BE REMOVED IN POND RELOCATION

EX. 42" CMP SD TO BE REMOVED IN POND RELOCATION

EX. STORM MH

EX. 42" STORM FES TO BE REMOVED IN POND RELOCATION

EX. DAM TO BE REMOVED IN POND RELOCATION

EX. FENCE TO BE REMOVED IN POND RELOCATION

EX. 12" WATER LINE, CONNECTION POINT.

EX. 24" STORM FES

EX. 12" GREEN ZONE WATER MAIN

EX. DAM TO BE REMOVED IN POND RELOCATION

EX. OVERFLOW CHANNEL

EX. DAM TO BE REMOVED IN POND RELOCATION

EX. RIPRAP BERM

EX. 36" STORM FES

EX. 36" RCP SD

EX. 18" STORM FES

EX. 18" CMP SD

APPROX. PROP. BNDY

APPROX. PROP. BNDY

APPROX. PROP. BNDY

APPROX. PROP. BNDY

NE 1/4 SEC. 8, T.8S., R.66W., SIXTH P.M.

N

0 100 200 400

SCALE: 1" = 200'

L:\2017\17026 - Bella Mesa\Engineering\Reports\Due Diligence\Appendix\Appendix A - Vicinity Map & PD\Bella Mesa - Proposed Site (All sites).dwg tab: Layout1 May 28, 2024 - 11:44am jdudley

15 YEARS Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Landscape Architecture
▪ Civil Engineering ▪ Construction Management

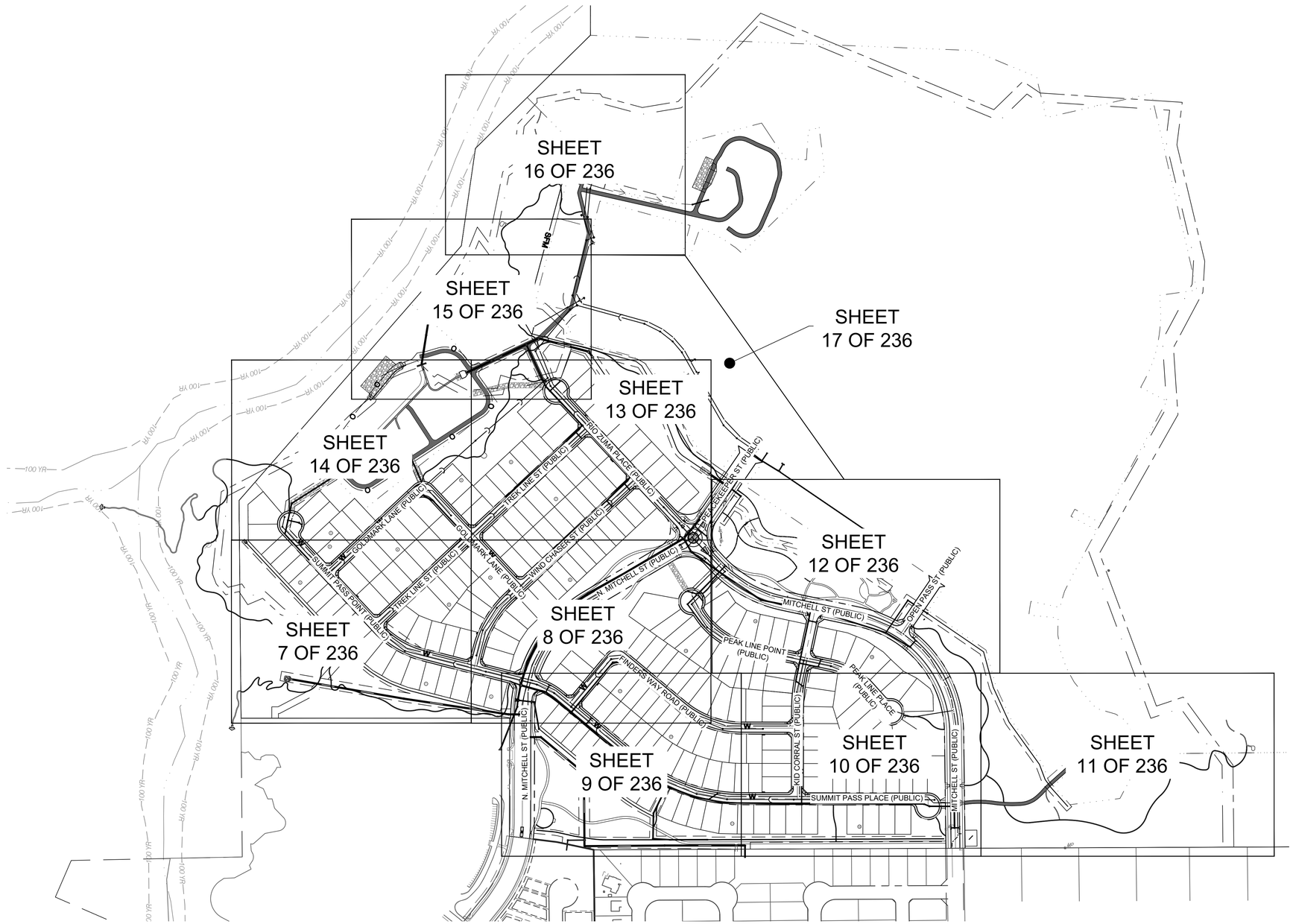
NOT FOR CONSTRUCTION

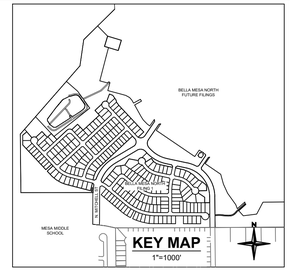
DATE	NO.	NOTES

PROJECT NO: 17026		
DATE	NO	NOTES

SUNSET POINT
EXHIBIT
EXISTING SITE OVERALL UTILITY LOCATIONS

SHEET
1 OF 1





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 100 200 400
SCALE: 1" = 200'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NOTES

NO.	DATE

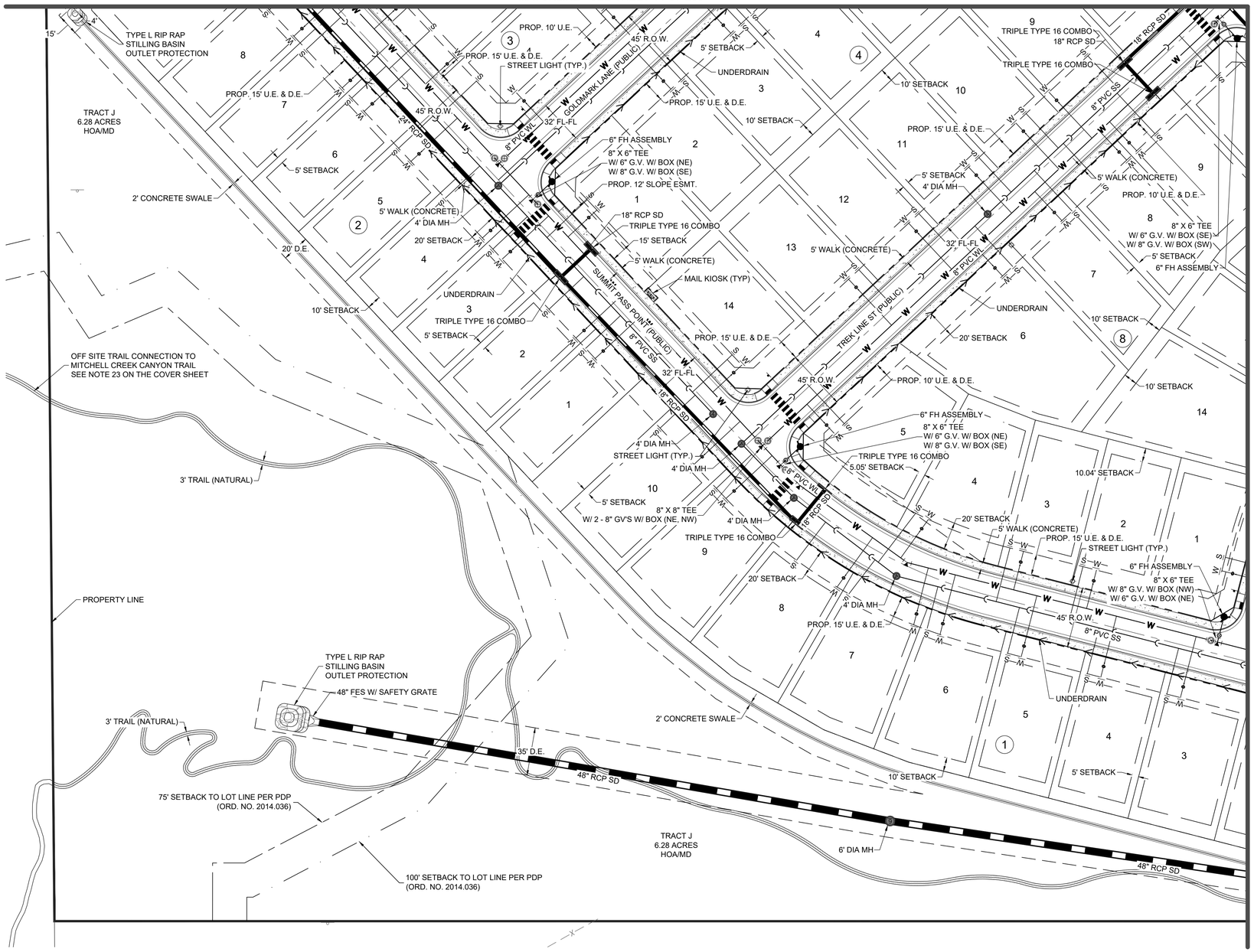
PROJECT NO:	17026.004	NOTES
NO	DATE	
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

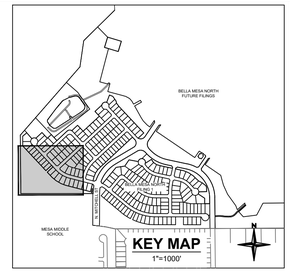
SHEET
6 OF 236

L:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN.dwg tab: 6 OF 236 OVERALL PLAN Nov 02, 2026 - 4:26pm asouter

MATCHLINE - SEE SHEET 14 OF 236



MATCHLINE - SEE SHEET 8 OF 236



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NO.	DATE	NOTES

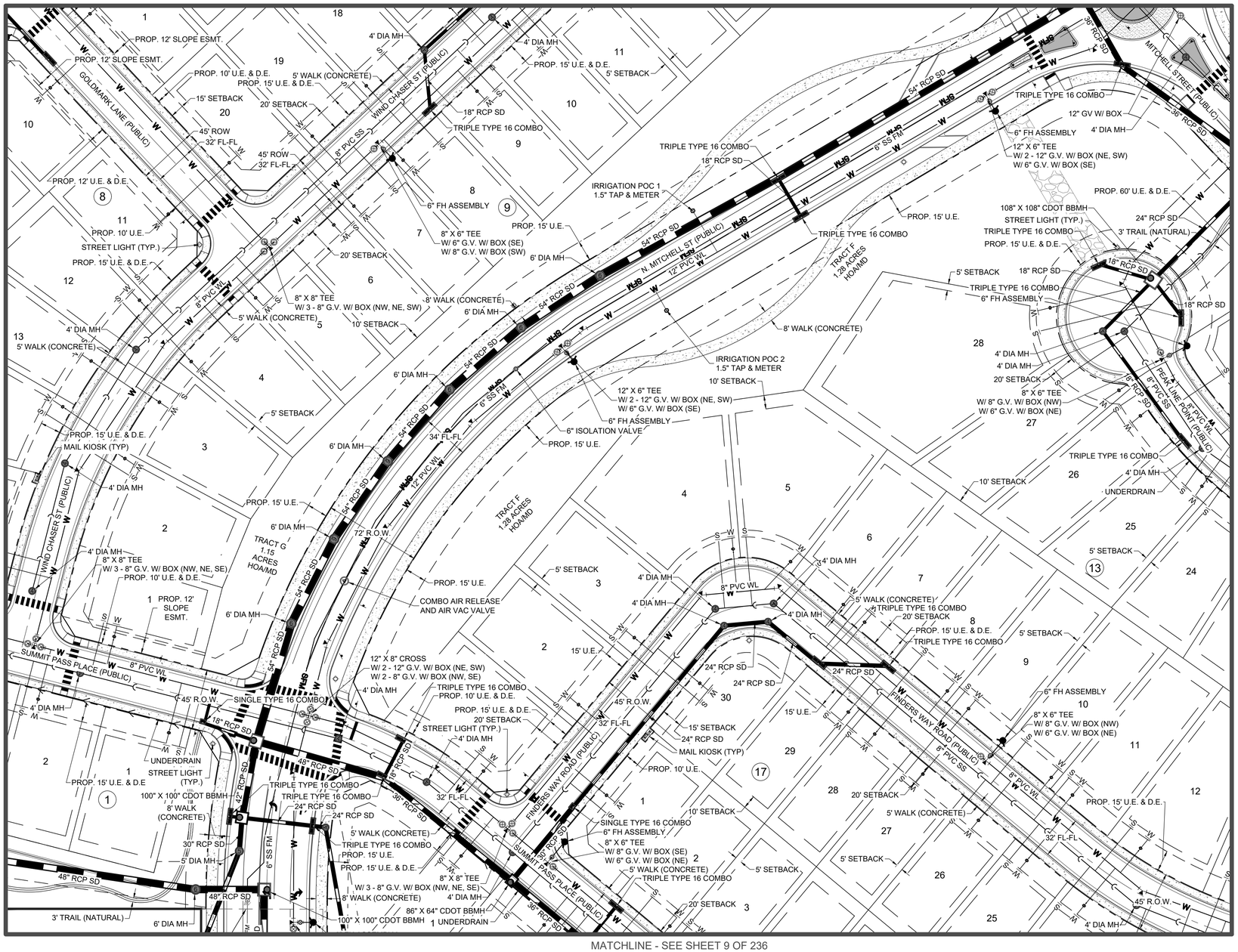
PROJECT NO.	17026.004	
NO	DATE	NOTES
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
7 OF 236

I:\2017\17026 – Bella Mesa\CADD\Sheet Sets\17026.004 – Bella Mesa North CDs\17026.004 – OVERALL PLAN.dwg tab: 7 OF 236 OVERALL PLAN Nov 02, 2026 – 4:26pm asouter

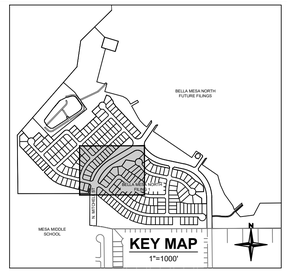
MATCHLINE - SEE SHEET 13 OF 236



MATCHLINE - SEE SHEET 7 OF 236

MATCHLINE - SEE SHEET 12 OF 236

MATCHLINE - SEE SHEET 9 OF 236



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

DATE	NO.	NOTES
01/28/2026	1	FIRST SUBMITTAL TO TOWN
06/05/2026	2	SECOND SUBMITTAL TO TOWN
08/19/2026	3	THIRD SUBMITTAL TO TOWN
11/03/2026	4	FOURTH SUBMITTAL TO TOWN

PROJECT NO 17026.004

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

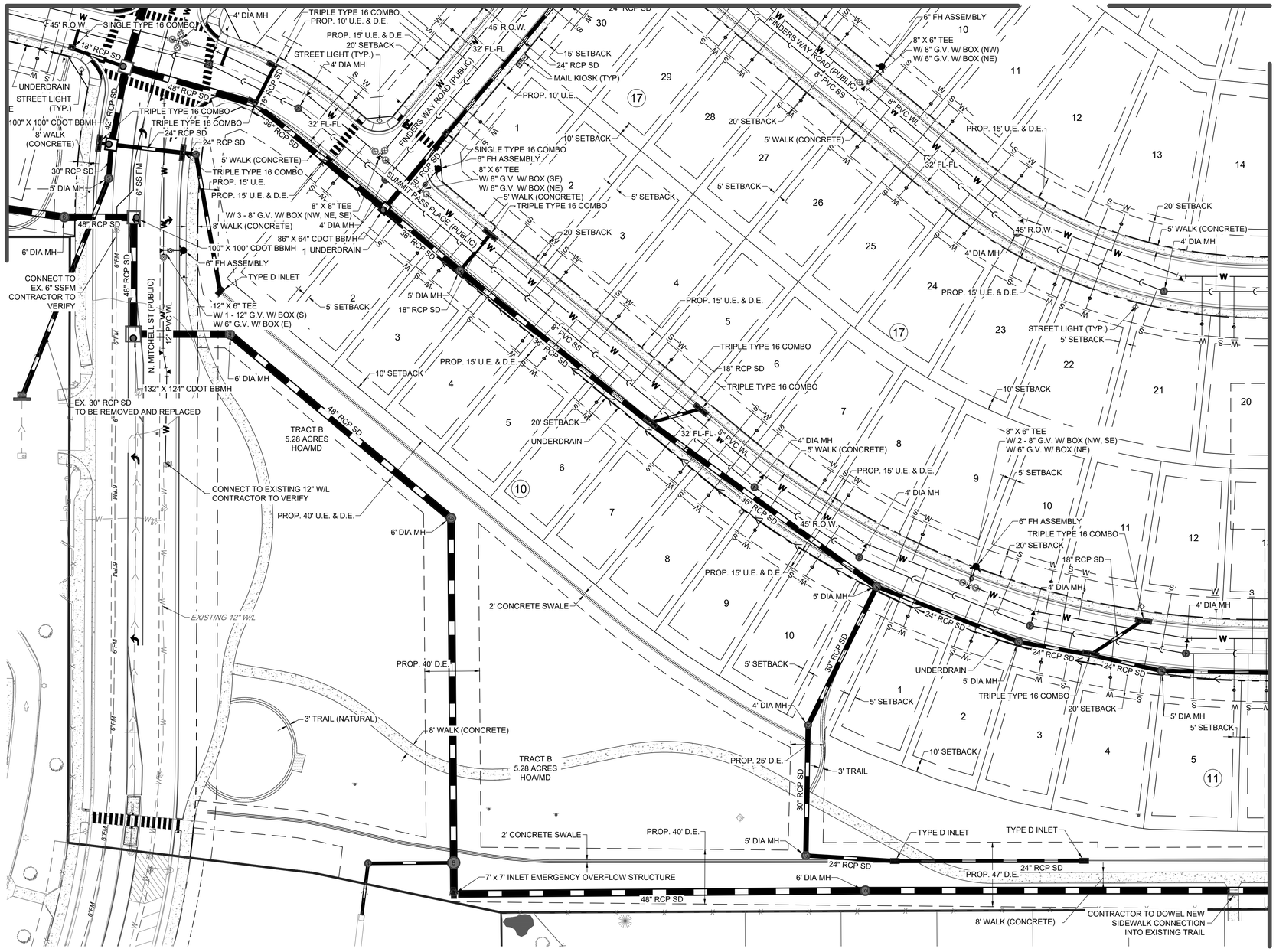
SHEET
8 OF 236

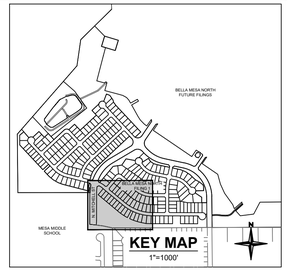
I:\2017\17026 – Bella Mesa\CADD\Sheet Sets\17026.004 – Bella Mesa North CDs\17026.004 – OVERALL PLAN.dwg tdb: 8 OF 236 OVERALL PLAN Nov 02, 2026 – 4:26pm asouter

MATCHLINE - SEE SHEET 8 OF 236

MATCHLINE - SEE SHEET 12 OF 236

MATCHLINE - SEE SHEET 10 OF 236





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:

CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80

SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NOTES	NO.	DATE
FIRST SUBMITTAL TO TOWN	1	01/28/2026
SECOND SUBMITTAL TO TOWN	2	06/05/2026
THIRD SUBMITTAL TO TOWN	3	08/19/2026
FOURTH SUBMITTAL TO TOWN	4	11/03/2026

PROJECT NO. 17026.004

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

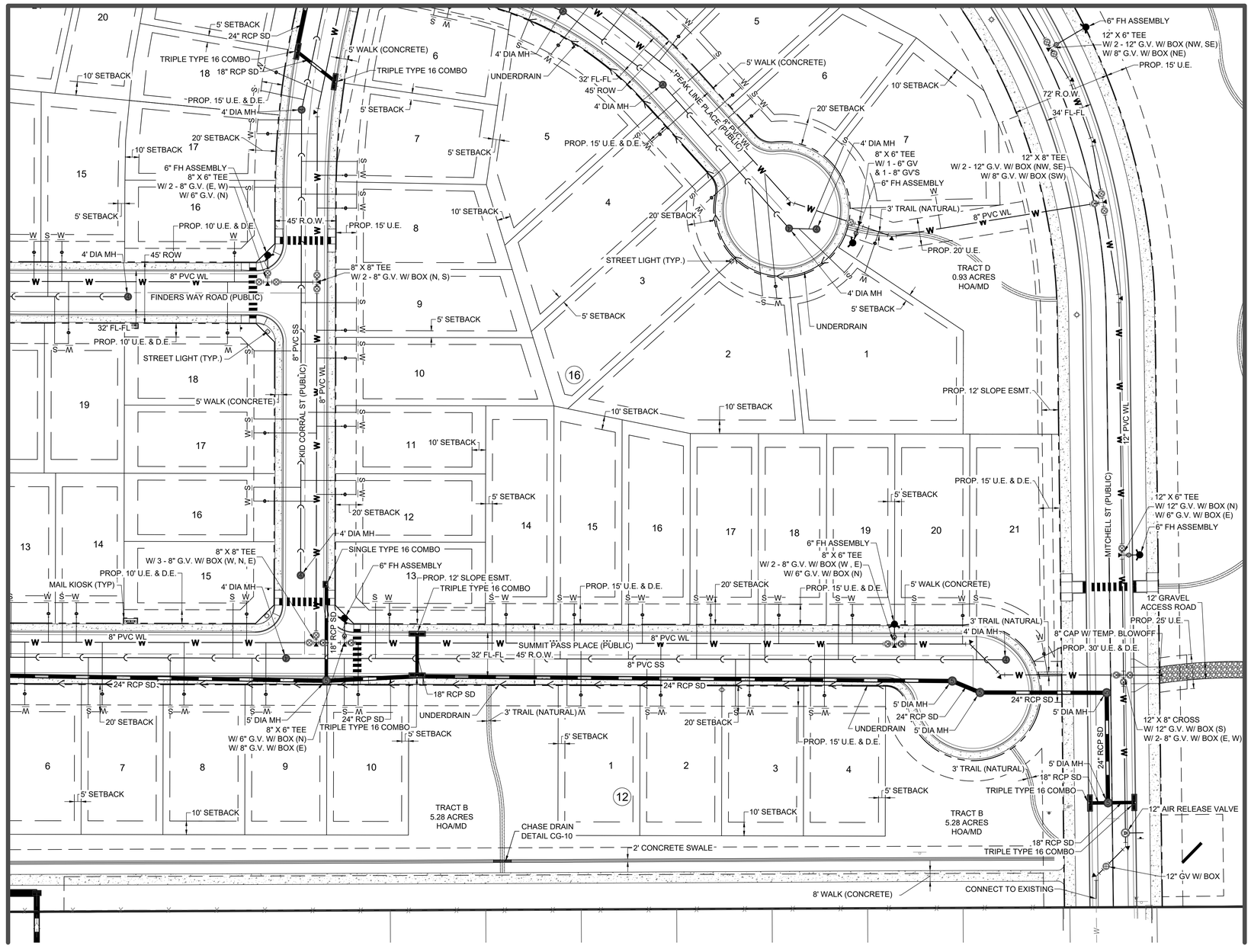
SHEET
9 OF 236

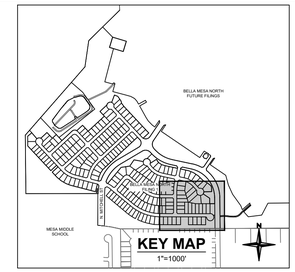
I:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN.dwg tab: 9 OF 236 OVERALL PLAN Nov 02, 2026 - 4:27pm asoutter

MATCHLINE - SEE SHEET 12 OF 236

MATCHLINE - SEE SHEET 9 OF 236

MATCHLINE - SEE SHEET 11 OF 236





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 — DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES — DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

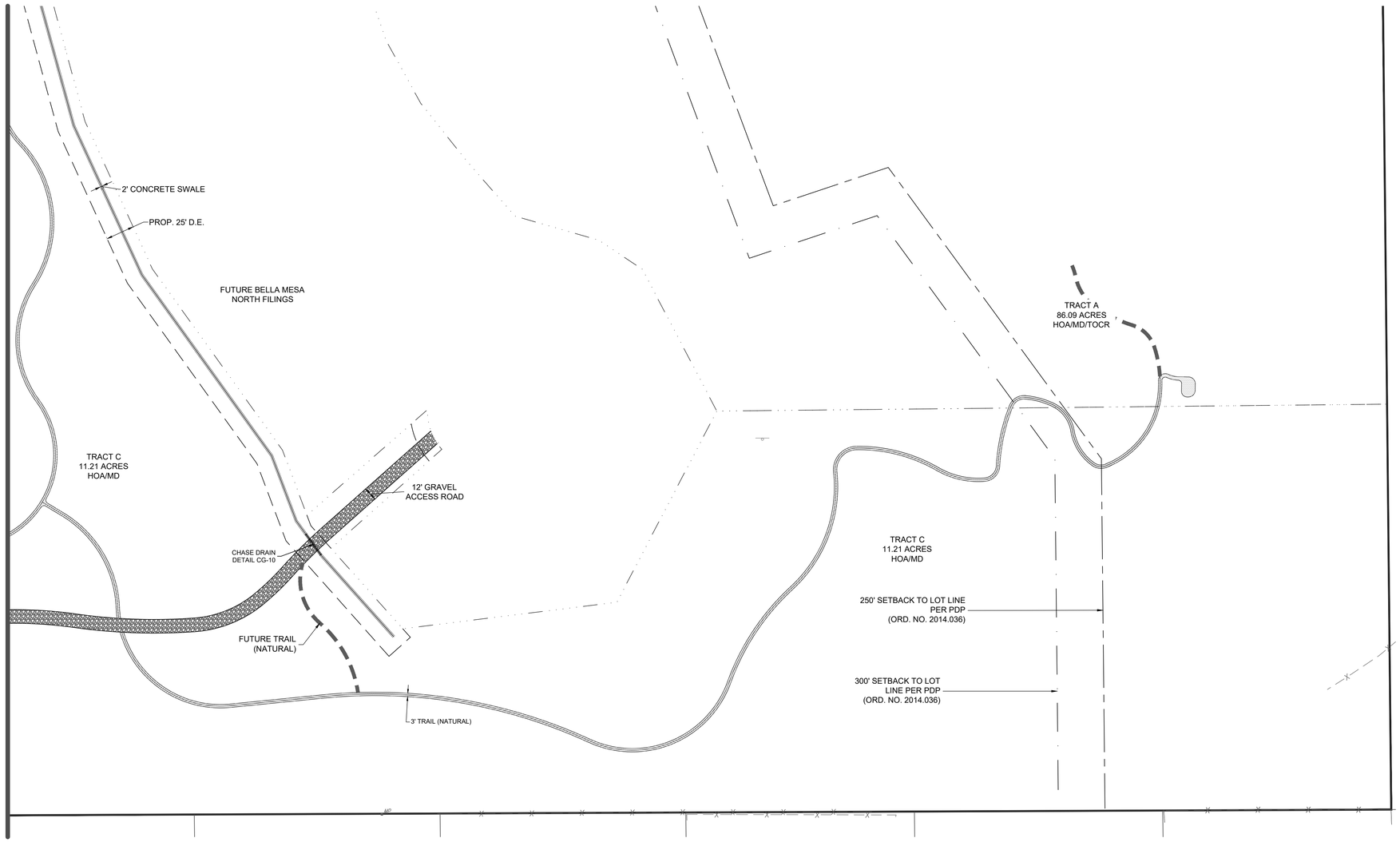
NO.	DATE	NOTES

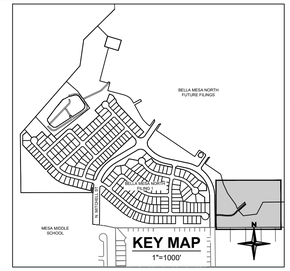
PROJECT NO: 17026.004		
NO.	DATE	NOTES
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
10 OF 236

I:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN.dwg tab: 10 OF 236 OVERALL PLAN Nov 02, 2026 - 4:27pm asouter





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 25 50 100
SCALE: 1" = 50'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NO.	DATE	NOTES

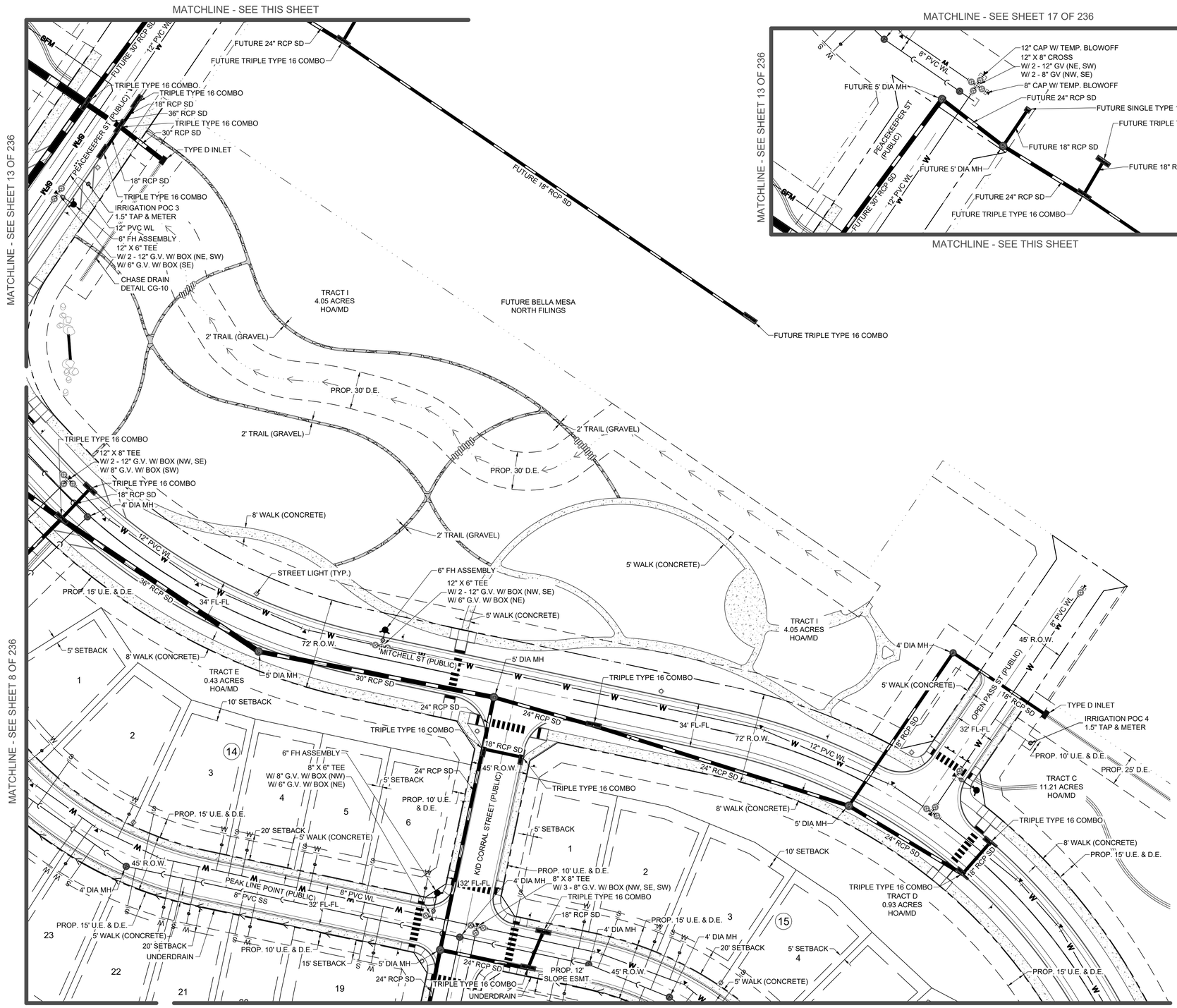
PROJECT NO. 17026.004

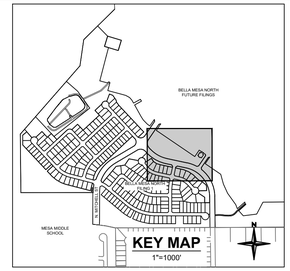
NO.	DATE	NOTES
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
11 OF 236

I:\2017\17026 – Bella Mesa\CADD\Sheet Sets\17026.004 – Bella Mesa North CDs\17026.004 – OVERALL PLAN.dwg tab: 11 OF 236 OVERALL PLAN Nov 02, 2026 – 4:27pm dsouter





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N
0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

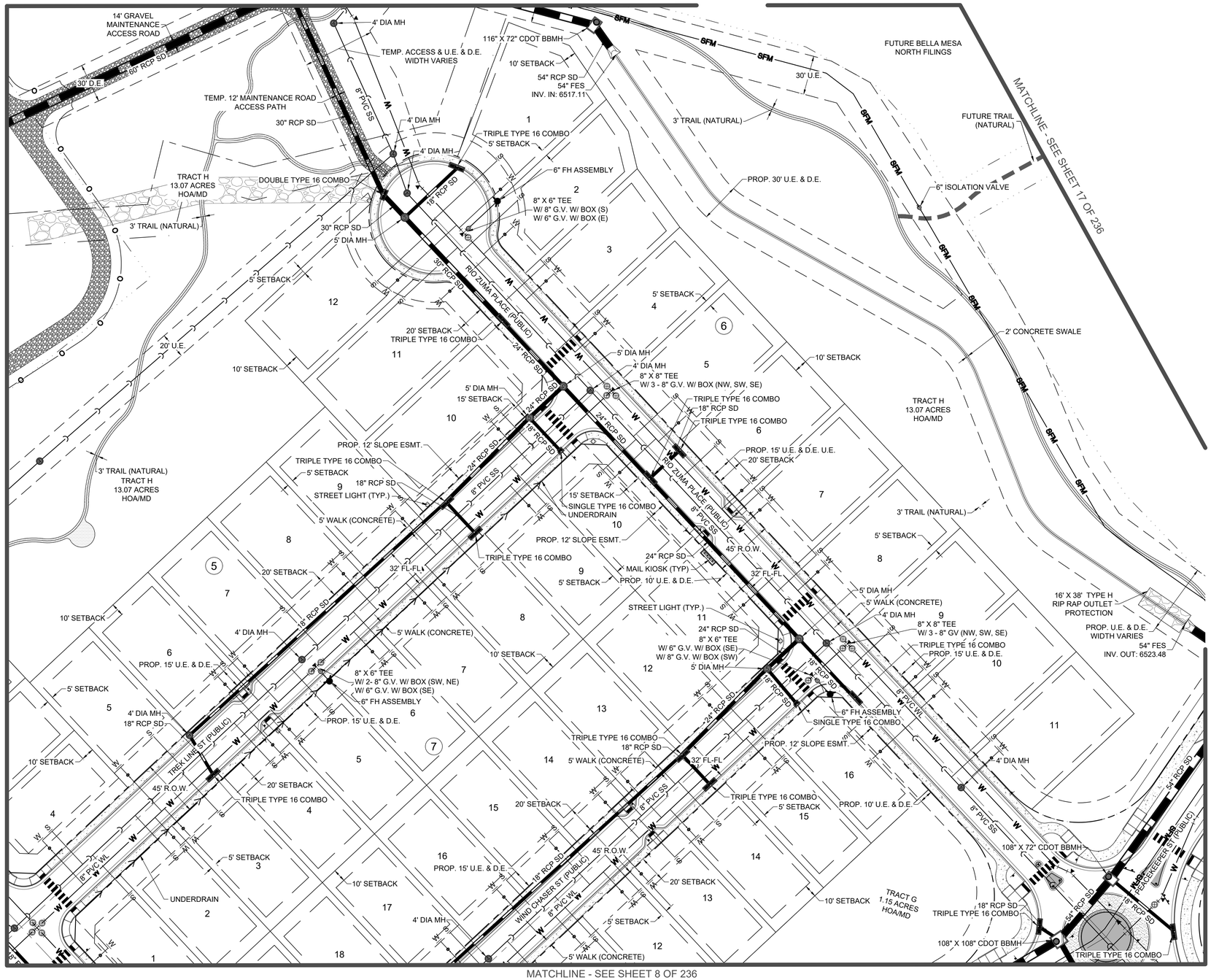
NOT FOR CONSTRUCTION

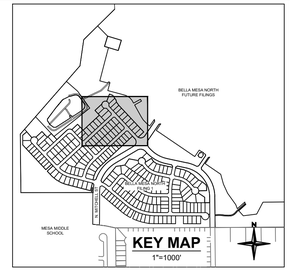
PROJECT NO.	17026.004	NOTES
DATE	NO.	
01/28/2026	1	FIRST SUBMITTAL TO TOWN
06/05/2026	2	SECOND SUBMITTAL TO TOWN
08/19/2026	3	THIRD SUBMITTAL TO TOWN
11/03/2026	4	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
12 OF 236

I:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN 2.dwg tab: 12 OF 236 OVERALL PLAN Nov 02, 2026 - 4:27pm dsouter





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:

CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

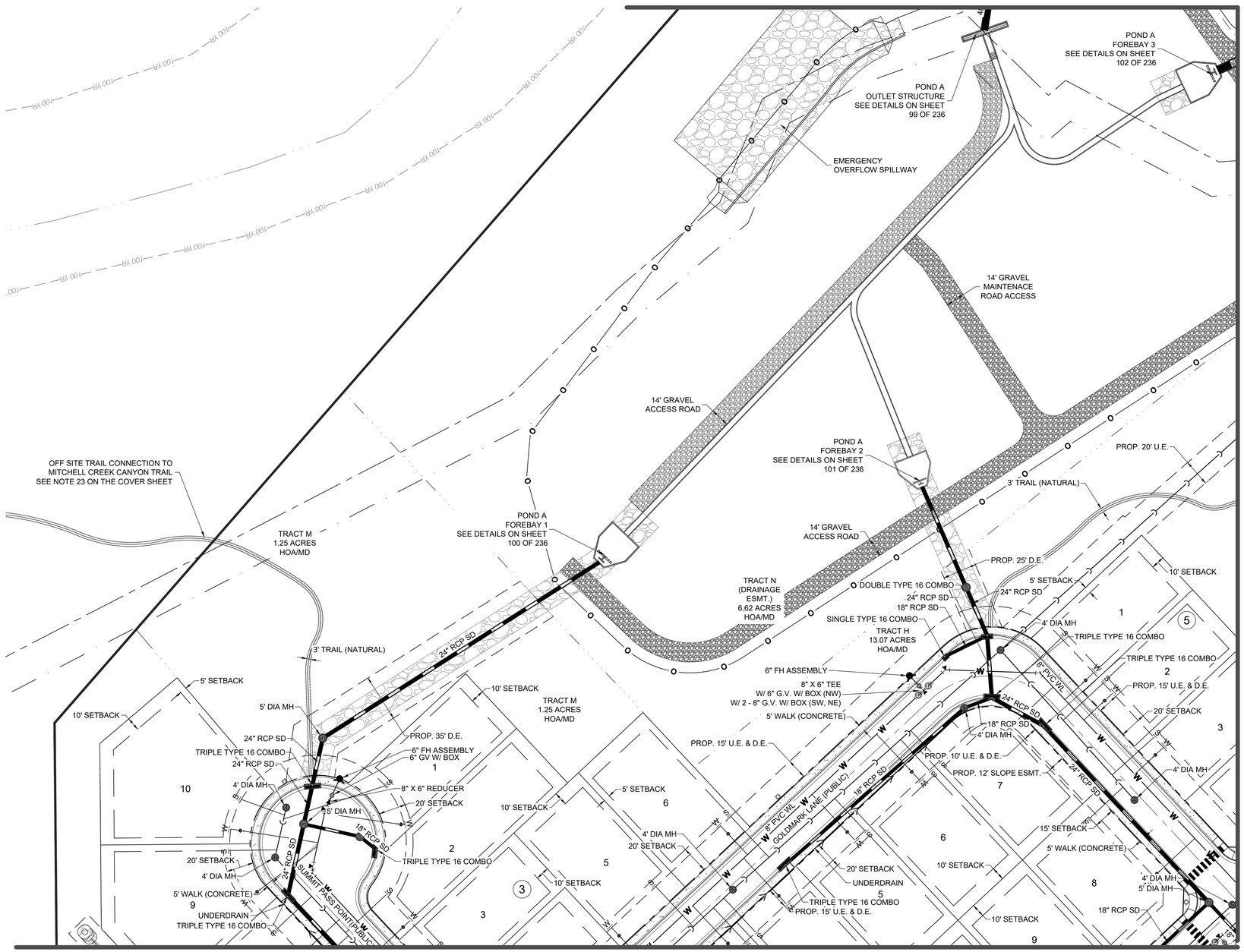
PROJECT NO.	17026.004	NOTES
DATE	NO	
01/26/2026	1	FIRST SUBMITTAL TO TOWN
06/05/2026	2	SECOND SUBMITTAL TO TOWN
08/19/2026	3	THIRD SUBMITTAL TO TOWN
11/03/2026	4	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
13 OF 236

L:\2017\17026 – Bella Mesa\C4DD\Sheet Sets\17026.004 – Bella Mesa North CDs\17026.004 – OVERALL PLAN 2.dwg tdb: 13 OF 236 OVERALL PLAN Nov 02, 2026 – 4:28pm dsouter

MATCHLINE - SEE SHEET 15 OF 236



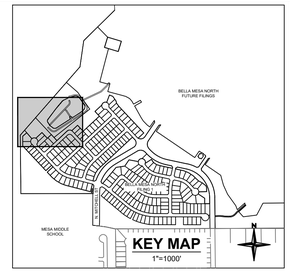
MATCHLINE - SEE SHEET 13 OF 236

MATCHLINE - SEE SHEET 7 OF 236

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

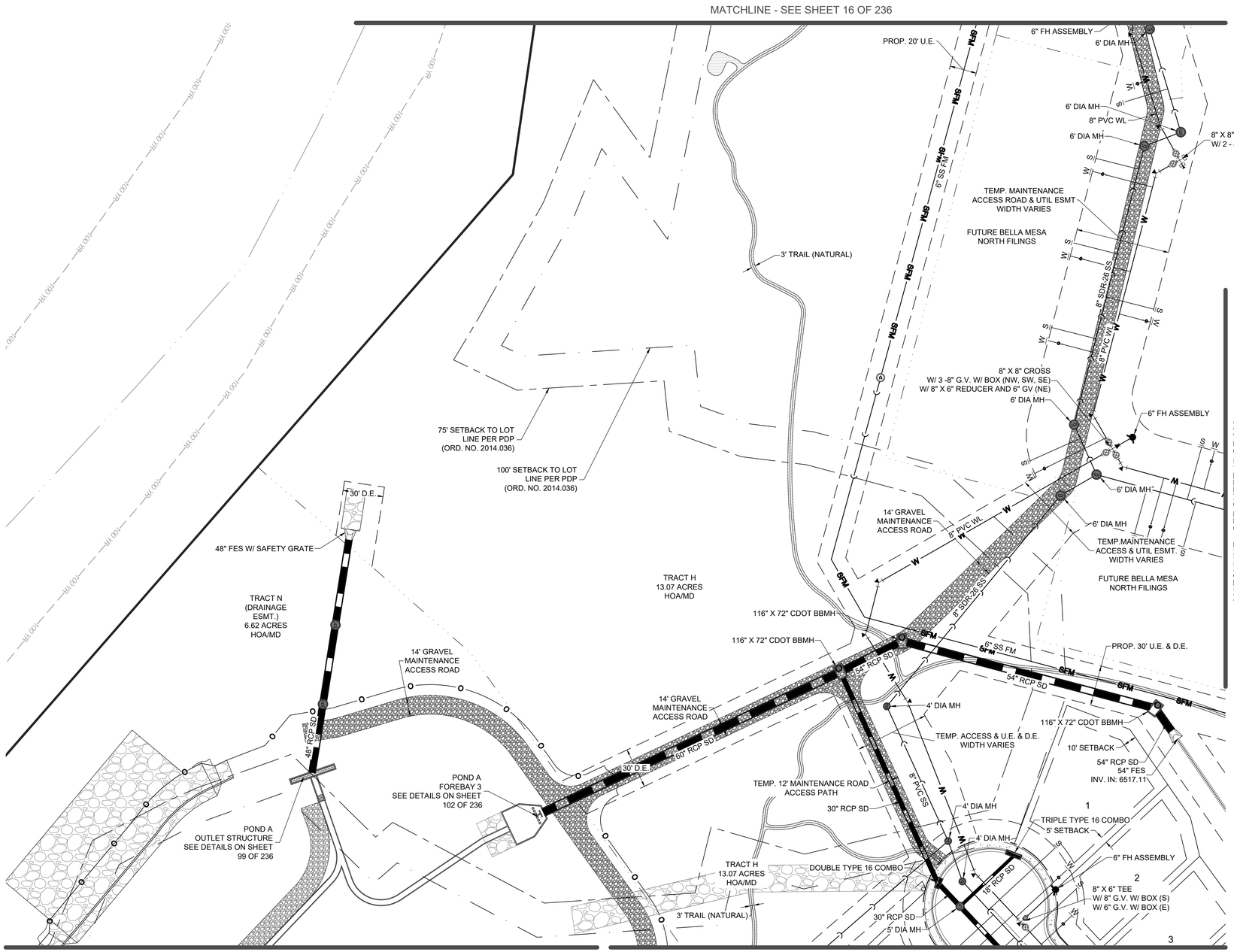
NO.	DATE	NOTES
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

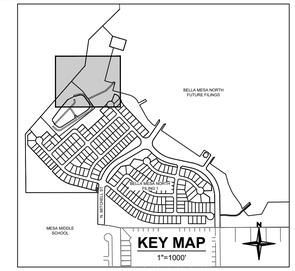
PROJECT NO. 17026.004

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
14 OF 236

I:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN 2.dwg tab: 14 OF 236 OVERALL PLAN Nov 02, 2026 - 4:28pm asoutter





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

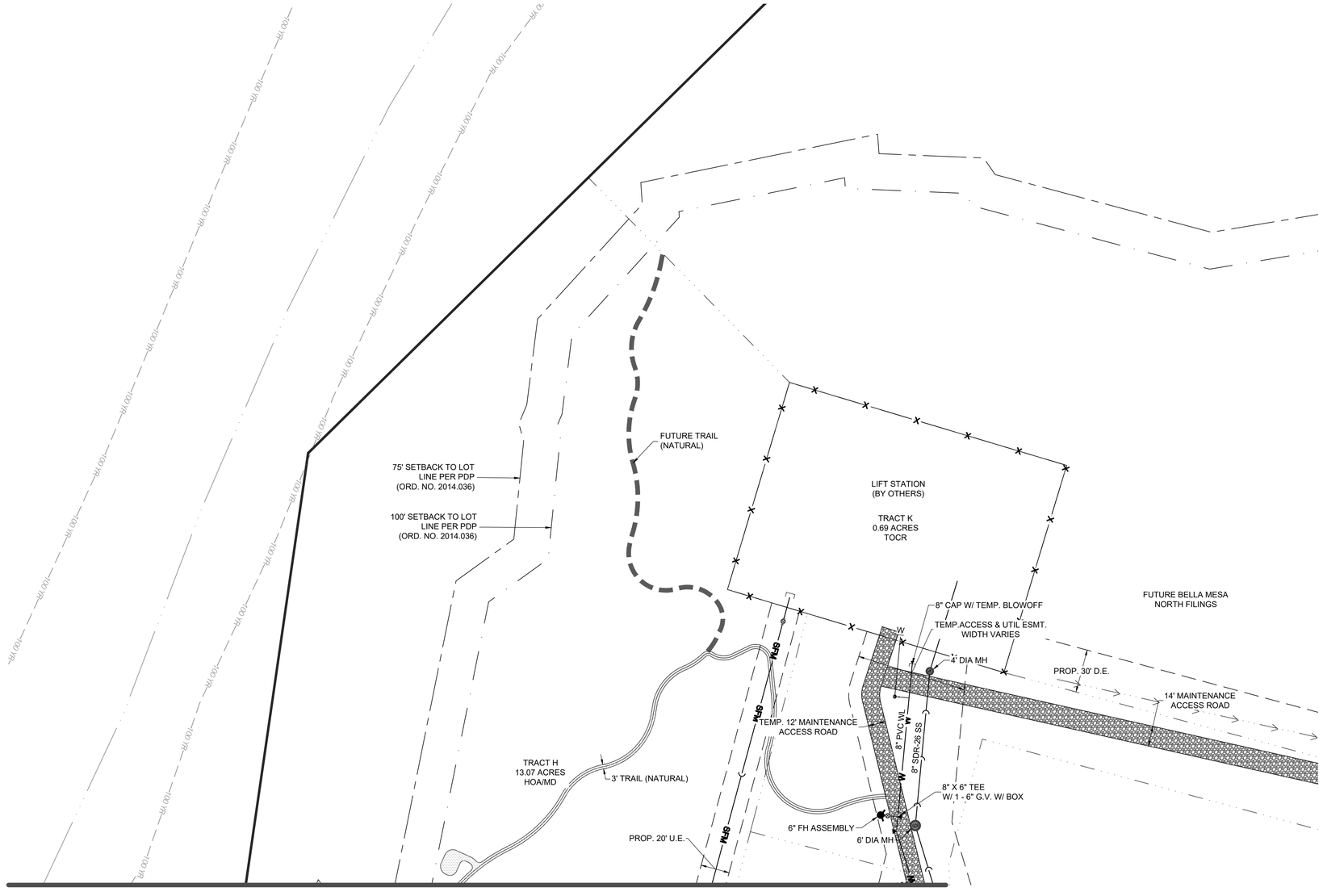
NO.	DATE	NOTES
1	01/28/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

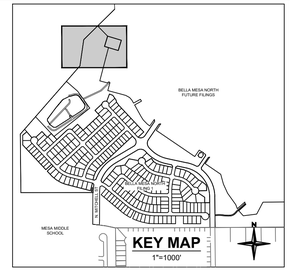
PROJECT NO. 17026.604

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
15 OF 236

I:\2017\17026 - Bella Mesa\CADD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN 2.dwg tab: 15 OF 236 OVERALL PLAN Nov 02, 2026 - 4:28pm csouter





EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE

PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED WATER BEND
- PROPOSED WATER CROSS
- PROPOSED WATER TEE
- PROPOSED WATER REDUCER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED PLUG/CAP
- PROPOSED RETAINING WALL
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- UNDERDRAIN
- ADJACENT DENSITY CALCULATION AREA

PROFESSIONAL ENGINEER CERTIFICATION

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

EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE

NOTE:
CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY TWO (72) HOURS' NOTICE TO THE ON-SITE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR, (720) 733-2200.
PRIOR TO MAKING ANY CONNECTIONS OR TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING CASTLE ROCK WATER CUSTOMERS.
IF THE TIE-IN REQUIRES A LINE SHUTDOWN, OR WILL DISRUPT UTILITY SERVICE, THEN CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS' NOTICE TO THE TOWN OF CASTLE ROCK CONSTRUCTION INSPECTOR TO ALLOW TIME FOR CASTLE ROCK WATER TO PROVIDE WRITTEN NOTIFICATION TO EXISTING CUSTOMERS AFFECTED BY THE TIE-IN.
ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY CASTLE ROCK WATER PRIOR TO COMMENCING WORK.

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

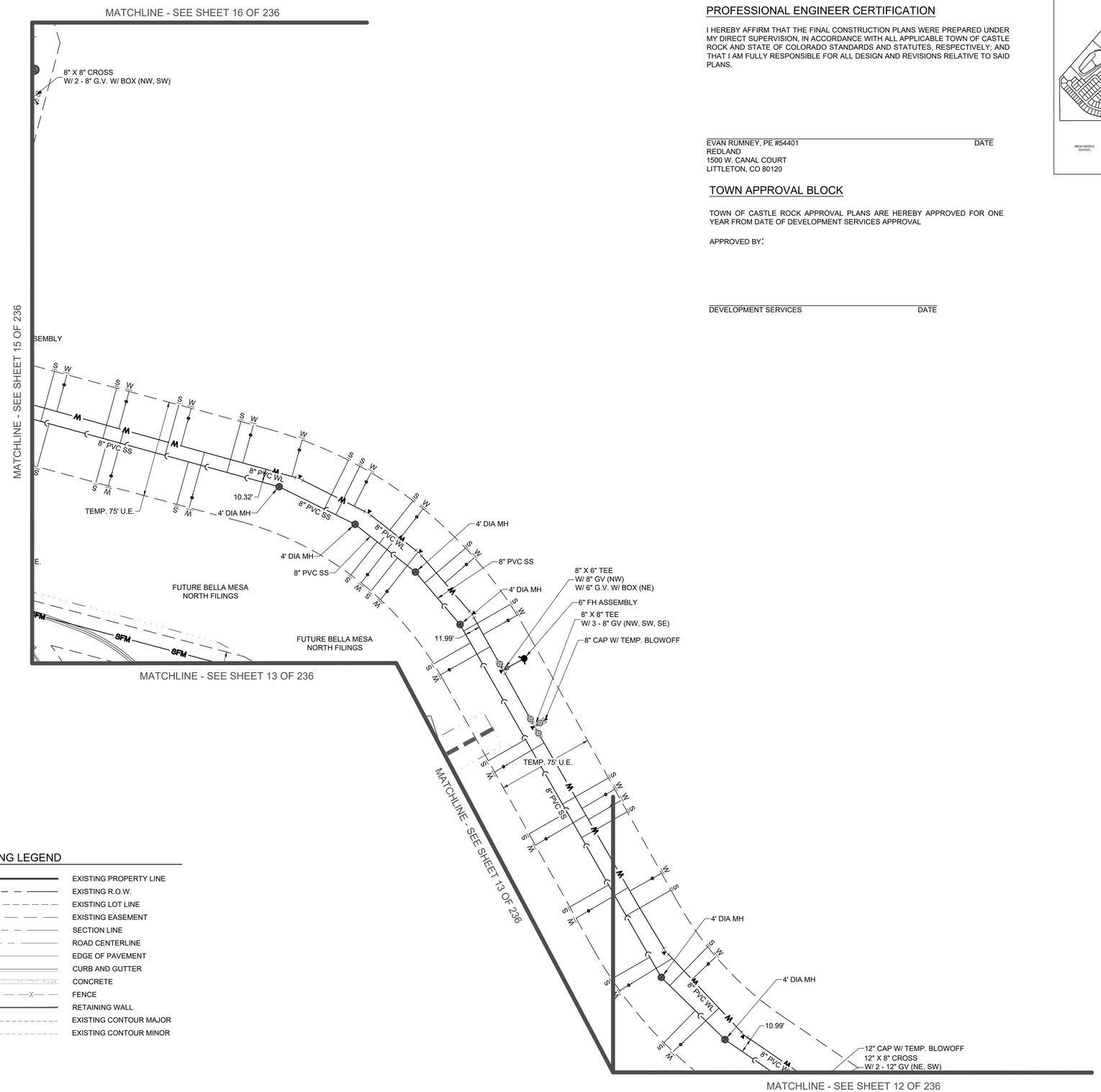
NO.	DATE	NOTES

PROJECT NO	17026.004	NOTES
NO	DATE	
1	01/26/2026	FIRST SUBMITTAL TO TOWN
2	06/05/2026	SECOND SUBMITTAL TO TOWN
3	08/19/2026	THIRD SUBMITTAL TO TOWN
4	11/03/2026	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
16 OF 236

I:\2017\17026 - Bella Mesa\C4D\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN 2.dwg tab: 16 OF 236 OVERALL PLAN Nov 02, 2026 - 4:28pm asouter



PROFESSIONAL ENGINEER CERTIFICATION

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

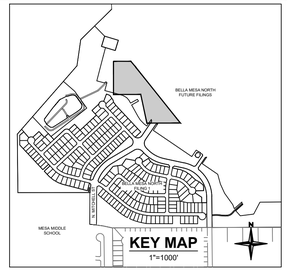
EVAN RUMNEY, PE #54401 DATE
REDLAND
1500 W. CANAL COURT
LITTLETON, CO 80120

TOWN APPROVAL BLOCK

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

APPROVED BY:

DEVELOPMENT SERVICES DATE



PROPOSED LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- PROPOSED LOT LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- PROPOSED SIDEWALK (CONCRETE)
- PROPOSED STORM SEWER
- PROPOSED MANHOLE w/ DIA. (FT.)
- PROPOSED INLET
- PROPOSED FLARED END SECTION
- PROPOSED RETAINING WALL
- 5281 PROPOSED CONTOUR MINOR
- 5280 PROPOSED CONTOUR MAJOR
- 53.9 PROPOSED SPOT ELEVATION
- PROPOSED SLOPE ARROW (4:1 MAX UNLESS NOTED OTHERWISE)
- 100 YR 100YR FLOOD PLAIN
- TRACT BOUNDARY
- PROPOSED SWALE LINE
- ADJACENT DENSITY CALCULATION AREA
- EMERGENCY OVERFLOW ROUTE ARROW
- SLOPE EASEMENT AND STORMWATER CONTAINMENT BERM

EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING R.O.W.
- EXISTING LOT LINE
- EXISTING EASEMENT
- SECTION LINE
- ROAD CENTERLINE
- EDGE OF PAVEMENT
- CURB AND GUTTER
- CONCRETE
- FENCE
- RETAINING WALL
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR

N

0 20 40 80
SCALE: 1" = 40'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783
REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

NOT FOR CONSTRUCTION

NOTES	NO.	DATE

PROJECT NO: 17026.004		
DATE	NO	NOTES
01/28/2026	1	FIRST SUBMITTAL TO TOWN
06/05/2026	2	SECOND SUBMITTAL TO TOWN
08/19/2026	3	THIRD SUBMITTAL TO TOWN
11/03/2026	4	FOURTH SUBMITTAL TO TOWN

BELLA MESA NORTH FILING 1
CONSTRUCTION DOCUMENTS
OVERALL PLAN

SHEET
17 OF 236

I:\2017\17026 - Bella Mesa\CAD\Sheet Sets\17026.004 - Bella Mesa North CDs\17026.004 - OVERALL PLAN 2.dwg tobr. 17 OF 236 OVERALL PLAN Nov 02, 2026 - 4:29pm dsoulter

Appendix G – Water Budget Letter

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

MEMORANDUM

To: John V. Hill, Sara Dieringer, Bryan Conway

Prepared By: Mike Pietschmann, P.E.

Date: Revised, October 10, 2024

RE: Bella Mesa North and Bella Mesa South – Water Budget

Below is a breakdown of the approximate water demand/dedication requirements that may be needed for the Bella Mesa North (Sunset Point) project and Bella Mesa South (Founder's Village 24 West – townhomes) project. The below SFE amounts are subject to change based on the final unit count and the landscape/irrigation design that is selected for the projects as they progress during the design phase.

SFE Summary Table

Project Name or Description	SFE
Bella Mesa North	549
Bella Mesa South	60
Mickelson/Mitchell Roundabout	4
Total SFE's Needed for Bella Mesa	613
SFE Credit per Development Agreement	**276.2**
Remaining SFE Amount to Purchase	**336.8**

<u>Bella Mesa North (293 acre Parcel) – Assumptions</u>

- A total of 525 single-family detached lots are anticipated to be developed.
- A dedication of 1 SFE per single-family lot is required per Section 4.4.1 of the Town of Castle Rock's Water System Design Criteria Manual.
- The Landscape Summary Table on Sheet 38 of 88 of the Sunset Point SDP prepared by Norris Design, dated 07/15/2022 was used for determining the irrigated landscape area for all common area open space tracts on the project.
- The only change we made from the Landscape Summary Table was to increase the "Turf (Texas Hybrid Bluegrass)" from 12,402 SF (0.28 acres) to 65,340 SF (1.5 acres). A total of 0.28 acres of turf area for 525 lots seems slightly low. By adding 1.22 acres of additional turf area, it increased the total annual water demand requirement by 3.3 acre-feet.
- Denver Water's published spreadsheet was used for determining the approximate water budget (acre-feet) based on the 3 types of plantings (turf, native, shrubs & tree beds) shown on the SDP.
- We assumed seven 1-1/2" irrigation taps for the Bella Mesa North project. This is extremely conceptual as no design has been completed on the irrigation system by any

consultant to date. More accurate size and number of irrigation taps will be determined as design progresses. This was used to determine the approximate number of SFE's needed per Castle Rock Water's system development fees. We are currently confirming with Castle Rock that the SFE's shown on their system development table is what they will require for each irrigation tap size.

Bella Mesa North (293 acre Parcel) – Water Dedication Requirements

- A total of 525 Single-Family Equivalent's (SFE's) will be required to serve the 525 lots anticipated for the Bella Mesa North project.
- Based on the conceptual landscape plans prepared by others and Denver Water's spreadsheet, a total of approximately 24.2 acre-feet of water will be required for irrigation. This may increase or decrease as Redland coordinates and prepares the landscape & irrigation plans for Cardel Homes.
- Using the assumption of seven 1-1/2" taps, this would equate to approximately 23.31 SFE's for irrigation taps per the Town's system development fee table.
- Therefore, the total amount of SFE's need to serve both on lot and irrigated common area open space for the Bella Mesa North project is approximately 549 SFE's.

Bella Mesa South (9 acre Parcel) – Assumptions

- The PD allows for a maximum of 196 multi-family units for the Bella Mesa South parcel. The most current conceptual site plan for the parcel yields approximately 82 units, which is what we assumed for the below calculations.
- A dedication of 0.65 SFE per townhome lot is required per Section 4.4.1 of the Town of Castle Rock's Water System Design Criteria Manual.
- The Landscape Summary Table on Sheet 8 of 16 of the Avilla Founders Village SDP prepared by Norris Design, dated 12/02/2021 for the site (NexMetro's submittal) was used for determining the irrigated landscape area for all common area open space tracts on the project.
- Denver Water's published spreadsheet was used for determining the approximate water dedication requirement (acre-feet) based on the 3 types of plantings (turf, native, shrubs & tree beds) shown.
- We assumed one 2" irrigation tap for the project. This is extremely conceptual as no design has been complete on the irrigation system by any consultant to date. More accurate size and number of irrigation taps will be determined as design progresses. This was used to determine the approximate number of SFE's needed per Castle Rock Water's system development fees. We are currently confirming with Castle Rock that SFE's shown on their system development table is what they will require for each irrigation tap size.

Bella Mesa South (9 acre Parcel) – Water Dedication Requirements

- A total of 82 townhome lots was assumed based on the current conceptual site plan. This would equate to the need for an additional 53.3 SFE's. If you were able to achieve the maximum density of 196 units, which is not feasible for a townhome product on this parcel, this would equate to 127.4 SFE's.
- Based on the conceptual landscape plans prepared by others and Denver Water's spreadsheet, a total of approximately 4.5 acre-feet of water will be required for

irrigation. This may increase or decrease as Redland coordinates and prepares the landscape plans for Cardel Homes.

- Using the assumption of one 2" tap as stated above, this would equate to approximately 6.67 SFE's for the irrigation tap per the Town's system development fee table.
- Therefore, the total amount of SFE's need to serve both on lot and irrigated common area open space for the Bella Mesa South project is approximately 60 SFE's. This would increase if more than 82 townhome lots are able to be achieved.

Overall Summary

Based on the above assumptions and information, we estimate the minimum number of Single-Family Equivalent's (SFE's) necessary to develop the Bella Mesa North and South parcels are:

- Bella Mesa North – 549 SFE's: This includes 525 SFE's for the water taps to each lot, and approximately an additional 23.31 SFE's for the irrigation taps serving the common area open space tracts.
- Bella Mesa South – 60 SFE's: This includes 53.3 SFE's for the water taps to each lot, and approximately an additional 6.67 SFE's for the irrigation taps serving the common area open space tracts.
- Mitchell & Mikelson Right-of-Ways – approximately 4.0 SFE's will be necessary for the Mickelson & Mitchell right-of-ways for landscape irrigation purposes. This is based on a 1-1/2" irrigation tap being needed to serve this area.

This equates to a minimum of 613 SFE's suggested to be available for the project based on the level of design completed to date. It should also be noted that the project currently has a credit of 276.2 SFE's available to it as outlined in the approved development agreement. Therefore, approximately an additional 336.8 SFE's remain to be acquired in order to adequately serve the project.

Please note the above is approximate and may be subject to change based on the final number of lots and type/amount of landscaping chosen for the development.

WATER BUDGET

PROJECT NAME:	**Bella Mesa North- Approximate Landscape Water Budget**	**SUBMITTED BY:**	**DATE: 9/23/2024**
TAP SIZE:			
TAP ELEVATION:			
ADDRESS:			
LEGAL DESCRIPTION:			

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT(Kc)	PLANT WATER REQUIREMENT	AVERAGE PRECIPITATION	EFFECTIVE PRECIPITATION	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	1.50	APRIL	2.26	0.88	1.99	0	0.00	90%	2.21	0.51	89,520
BLUEGRASS		MAY	5.73	0.88	5.04	0	0.00	90%	5.60	1.29	226,969
		JUNE	6.64	0.88	5.84	0	0.00	90%	6.49	1.50	263,014
		JULY	7.27	0.88	6.40	0	0.00	90%	7.11	1.64	287,969
		AUGUST	5.87	0.88	5.17	0	0.00	90%	5.74	1.32	232,514
		SEPTEMBER	4.45	0.88	3.92	0	0.00	90%	4.35	1.00	176,267
		OCTOBER	1.6	0.88	1.41	0	0.00	90%	1.56	0.36	63,377
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		29.76	0	0.00	TOTAL	33.07	TOTAL	1,339,629
DAYS/WEEK	6.0									ACRE FEET/YR.	4.1
DAYS/MONTH	26.0									PEAK SEASON GPM	23

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT	PLANT WATER REQUIREMENT	AVE. RAINFALL	EFFECTIVE RAINFALL	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	1.00	APRIL	2.26	0.5	1.13	0	0.00	90%	1.26	0.29	33,909
MODERATE USE TREES & SHRUBS		MAY	5.73	0.5	2.87	0	0.00	90%	3.18	0.73	85,973
		JUNE	6.64	0.5	3.32	0	0.00	90%	3.69	0.85	99,627
		JULY	7.27	0.5	3.64	0	0.00	90%	4.04	0.93	109,079
		AUGUST	5.87	0.5	2.94	0	0.00	90%	3.26	0.75	88,073
		SEPTEMBER	4.45	0.5	2.23	0	0.00	90%	2.47	0.57	66,768
		OCTOBER	1.6	0.5	0.80	0	0.00	90%	0.89	0.21	24,006
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		16.91	0	0.00	TOTAL	18.79	TOTAL	507,435
DAYS/WEEK	6.0									ACRE FEET/YR.	1.6
DAYS/MONTH	26.0									PEAK SEASON GPM	9

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT	PLANT WATER REQUIREMENT	AVE. RAINFALL	EFFECTIVE RAINFALL	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	15.46	APRIL	2.26	0.3	0.68	0	0.00	70%	0.97	0.22	404,409
NATIVE GRASS		MAY	5.73	0.3	1.72	0	0.00	70%	2.46	0.57	1,025,338
		JUNE	6.64	0.3	1.99	0	0.00	70%	2.85	0.66	1,188,175
		JULY	7.27	0.3	2.18	0	0.00	70%	3.12	0.72	1,300,908
		AUGUST	5.87	0.3	1.76	0	0.00	70%	2.52	0.58	1,050,389
		SEPTEMBER	4.45	0.3	1.34	0	0.00	70%	1.91	0.44	796,292
		OCTOBER	1.6	0.3	0.48	0	0.00	70%	0.69	0.16	286,307
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		10.15	0	0.00	TOTAL	14.49	TOTAL	6,051,818
DAYS/WEEK	6.0									ACRE FEET/YR.	18.6
DAYS/MONTH	26.0									PEAK SEASON GPM	105

MINIMUM REQUIRED SYSTEM EFFICIENCIES:
Drip irrigation - 90%
Rotor irrigation - 70%
Spray head irrigation: 65%
April & October ET = 1/2 Monthly Value
ET data from Denver Water weather stations (Average 2003-2008)

PROJECT TOTALS

IRRIGATED ACRES	18.0
GALLONS/YEAR	7,898,883
ACRE FEET/YEAR	24.2
PEAK SEASON GPM	137

WATER BUDGET

PROJECT NAME:	**Bella Mesa South - Approximate Landscape Water Budget**	**SUBMITTED BY:**	**DATE: 9/23/2024**
TAP SIZE:			
TAP ELEVATION:			
ADDRESS:			
LEGAL DESCRIPTION:			

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT(Kc)	PLANT WATER REQUIREMENT	AVERAGE PRECIPITATION	EFFECTIVE PRECIPITATION	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	0.21	APRIL	2.26	0.88	1.99	0	0.00	90%	2.21	0.51	12,533
BLUEGRASS		MAY	5.73	0.88	5.04	0	0.00	90%	5.60	1.29	31,776
		JUNE	6.64	0.88	5.84	0	0.00	90%	6.49	1.50	36,822
		JULY	7.27	0.88	6.40	0	0.00	90%	7.11	1.64	40,316
		AUGUST	5.87	0.88	5.17	0	0.00	90%	5.74	1.32	32,552
		SEPTEMBER	4.45	0.88	3.92	0	0.00	90%	4.35	1.00	24,677
		OCTOBER	1.6	0.88	1.41	0	0.00	90%	1.56	0.36	8,873
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		29.76	0	0.00	TOTAL	33.07	TOTAL	187,548
DAYS/WEEK	6.0									ACRE FEET/YR.	0.6
DAYS/MONTH	26.0									PEAK SEASON GPM	3

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT	PLANT WATER REQUIREMENT	AVE. RAINFALL	EFFECTIVE RAINFALL	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	1.99	APRIL	2.26	0.5	1.13	0	0.00	90%	1.26	0.29	67,479
MODERATE USE TREES & SHRUBS		MAY	5.73	0.5	2.87	0	0.00	90%	3.18	0.73	171,086
		JUNE	6.64	0.5	3.32	0	0.00	90%	3.69	0.85	198,257
		JULY	7.27	0.5	3.64	0	0.00	90%	4.04	0.93	217,067
		AUGUST	5.87	0.5	2.94	0	0.00	90%	3.26	0.75	175,266
		SEPTEMBER	4.45	0.5	2.23	0	0.00	90%	2.47	0.57	132,868
		OCTOBER	1.6	0.5	0.80	0	0.00	90%	0.89	0.21	47,773
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		16.91	0	0.00	TOTAL	18.79	TOTAL	1,009,796
DAYS/WEEK	6.0									ACRE FEET/YR.	3.1
DAYS/MONTH	26.0									PEAK SEASON GPM	17

DESCRIPTION	IRRIGATED ACRES	MONTH	HISTORICAL ET	PLANT COEFFICIENT	PLANT WATER REQUIREMENT	AVE. RAINFALL	EFFECTIVE RAINFALL	SYSTEM EFFICIENCIES	TOTAL WATER REQUIREMENT(IN.)	WEEKLY WATER REQUIREMENT (IN.)	MONTHLY WATER REQUIREMENT (IN.)
PLANT TYPE:	0.65	APRIL	2.26	0.3	0.68	0	0.00	70%	0.97	0.22	17,003
NATIVE GRASS		MAY	5.73	0.3	1.72	0	0.00	70%	2.46	0.57	43,109
		JUNE	6.64	0.3	1.99	0	0.00	70%	2.85	0.66	49,956
		JULY	7.27	0.3	2.18	0	0.00	70%	3.12	0.72	54,695
		AUGUST	5.87	0.3	1.76	0	0.00	70%	2.52	0.58	44,163
		SEPTEMBER	4.45	0.3	1.34	0	0.00	70%	1.91	0.44	33,479
		OCTOBER	1.6	0.3	0.48	0	0.00	70%	0.69	0.16	12,037
OPERATING PERIOD-HRS./DAY	8.0	TOTALS	33.82		10.15	0	0.00	TOTAL	14.49	TOTAL	254,443
DAYS/WEEK	6.0									ACRE FEET/YR.	0.8
DAYS/MONTH	26.0									PEAK SEASON GPM	4

MINIMUM REQUIRED SYSTEM EFFICIENCIES:
Drip irrigation - 90%
Rotor irrigation - 70%
Spray head irrigation: 65%
April & October ET = 1/2 Monthly Value
ET data from Denver Water weather stations (Average 2003-2008)

PROJECT TOTALS	
IRRIGATED ACRES	2.9
GALLONS/YEAR	1,451,787
ACRE FEET/YEAR	4.5
PEAK SEASON GPM	25

Appendix H – Lift Station Report

BELLA MESA NORTH LIFT STATION
PRELIMINARY ENGINEERING REPORT

PREPARED FOR:

THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
4300 Cherry Creek Drive South
Denver, CO 80246-1530

ON BEHALF OF:

CARDEL HOMES

Issue Date: April 28, 2025

PREPARED BY:

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016

MSK Project No. 59-001-01

TABLE OF CONTENTS

Section 1: Introduction 1
1.1 Location 1
1.2 Background 2
1.3 Applicant Information 2

Figure 1-1 –Bella Mesa North Location Map 1

Section 2: Existing Facilities 4
2.1 Service Area 4
2.2 Existing Wastewater System 5

Figure 2-1 – Lift Station Service Area 4
Figure 2-2 – Existing and Proposed Wastewater Facilities 6

Section 3: Design Conditions 7
3.1 Lift Station Criteria 7
3.2 Hydraulic Loading 7
3.3 Water Quality 7
3.4 Site Conditions 7
3.5 Force Main and Metering 8
3.6 Odor Control 8

Section 4: Alternatives Analysis and Selected Alternative 9
4.1 Alternatives Analysis 9
4.2 Selected Alternative Design Features 9

Figure 4-1 – Proposed Site Plan 10

Section 5: Management and Finance 12
5.1 Ownership and Management 12
5.2 Operations and Maintenance 12
5.3 Project Schedule 13

APPENDICES

Appendix A: Proof of Ownership
Appendix B: Castle Rock Water Design Criteria and Calculations
Appendix C: Floodplain Map
Appendix D: 5-mile Radius Map and 1-mile Radius Map
Appendix E: Emergency Response Plan

SECTION 1: INTRODUCTION

1.1 LOCATION

The proposed Bella Mesa North Lift Station will be located in the Bella Mesa North development in the Town of Castle Rock, Douglas County, state of Colorado. Bella Mesa North is a 293-acre development that offers single-family residential units. The proposed Bella Mesa North Lift Station lies in SE quarter of Section 5, Township 8 South, Range 66 West of the 6th Principal Meridian.

The service area is undeveloped and the proposed lift station will serve the entire Bella Mesa North subdivision. The proposed facility will be situated approximately 4,900 feet to the intersection the Mikelson Blvd and Mitchell Street.

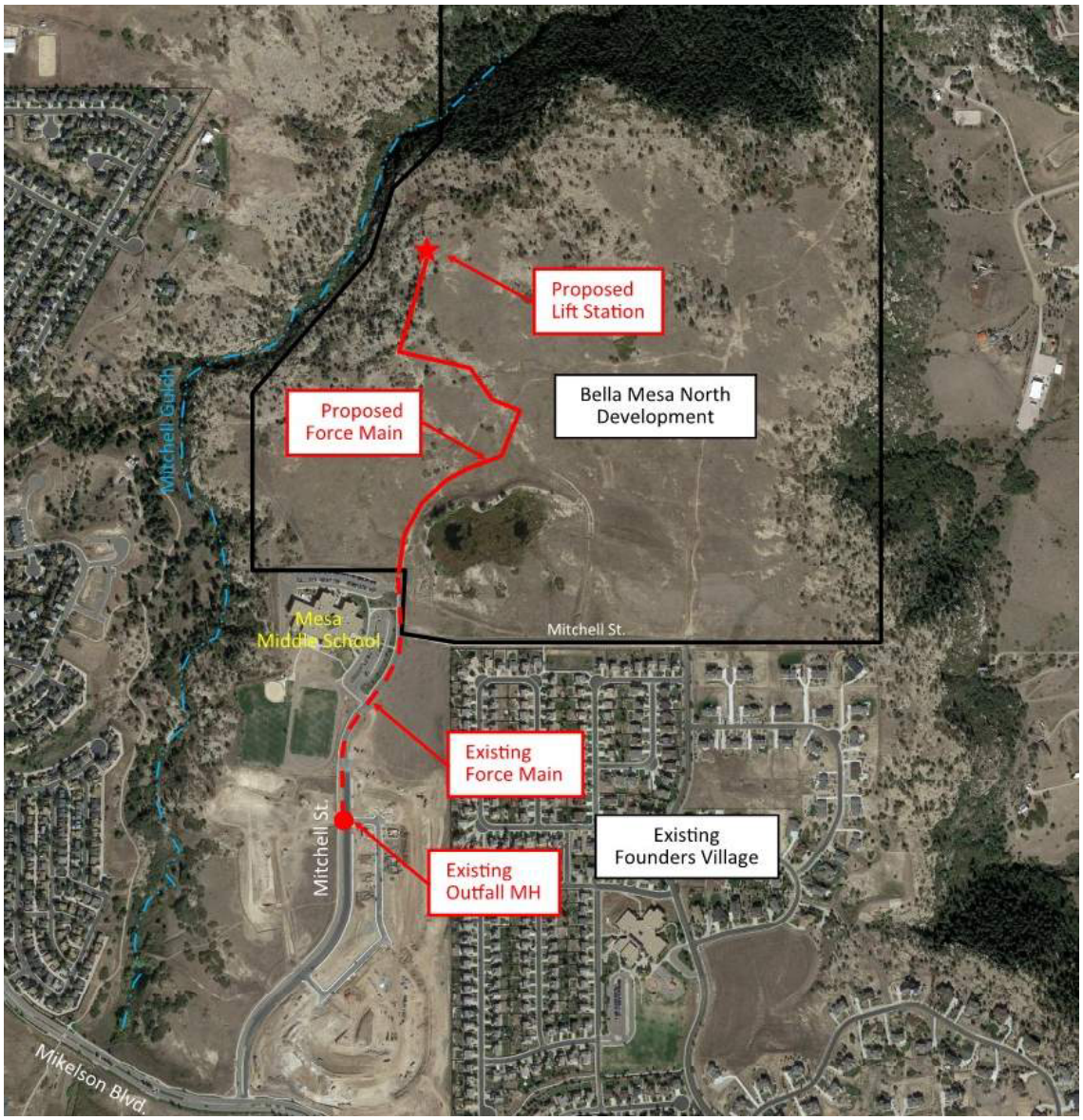


FIGURE 1-1: BELLA MESA NORTH LOCATION MAP
(NOT TO SCALE)

1.2 BACKGROUND

At build-out the Bella Mesa North development will contain approximately 525 single-family homes. The development has Mitchell Gulch on its western boundary, which impedes gravity flow to the existing sewer collection system to the west. Ultimately, the development's wastewater will be treated at the existing Plum Creek Water Reclamation Facility (PCWRF), which is owned and operated by the Plum Creek Water Reclamation Authority (PCWRA). The existing treatment plant is approximately 6.5 miles to the northwest of the development and is separated by ridgelines, valleys, Interstate 25, creeks, and existing development.

Consequently, all of the wastewater from Bella Mesa North will require a lift station to deliver the flows to the existing sanitary sewer collection system. Presently, the plan is to pump the raw sewage south to an existing 8-inch sewer line. This sewer line will gravity flow to an existing syphon that crosses Mitchell Gulch. The existing syphon discharges into an existing sewer, which flows to the existing Mitchell Creek Lift Station. The Mitchell Creek Lift Station's force main discharges into an existing gravity system that ultimately continues to the PCWRF located on Highway 85. All of the existing sanitary sewer collection system, but not the PCWRF, is owned and operated by the Castle Rock Water (CRW).

The proposed Bella Mesa North Lift Station will be situated on the east side of Mitchell Gulch at the downstream (northwestern) end of the Bella Mesa North development. The proposed site and its overflow pond will be outside of the 100-year floodplain. The accompanying force main's alignment is to the south approximately 5,125 lineal feet (lf) to an existing outfall manhole in N. Mitchell Street. After construction and final acceptance, the proposed Bella Mesa North Lift Station will be owned and operated by Castle Rock Water (CRW).

1.3 APPLICANT INFORMATION

1.3.1 Applicant

The Applicant for the Bella Mesa North Lift Station is:

Cardel Homes
9110 E Nichols Avenue, Suite 120
Denver, CO 80112
Attn: Bryan Conway

1.3.2 Owner/Operator

The owner and operator for the Bella Mesa North Lift Station is:

Castle Rock Water
175 Kellogg Court
Castle Rock, CO 80109
720-773-6033

1.3.3 Treater

The wastewater pumped by the Bella Mesa North Lift Station will be treated by:

Plum Creek Water Reclamation Authority
4255 US Highway 85
Castle Rock, CO 80108
303-688-1991
Attn: Wes Martin, Manager

1.3.4 Engineer

The Engineer for the Bella Mesa North Lift Station is:

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918
dave@mskwater.com
Attn: David L. Takeda, P.E., Owner

SECTION 2: EXISTING FACILITIES

2.1 SERVICE AREA

The service area for the proposed lift station is shown in Figure 2-1 and contains approximately 293 acres. Using the CRW's design criteria, the proposed Bella Mesa North development contains 525 single-family equivalents ("SFE"). One SFE produces the same amount of wastewater as the average single-family home.



FIGURE 2-1: LIFT STATION SERVICE AREA
(NOT TO SCALE)

Table 2-1: Bella Mesa North Lift Station Ultimate SFEs

Type	Quantity	SFEs
Residential (single-family)	525 units	525
Totals		**525**

2.2 EXISTING WASTEWATER SYSTEM

2.2.1 Existing Collection System

An existing 6-inch force main is installed in Mitchell Street and starts at the southern boundary of Bella Mesa North. This force main is currently not in service and was installed previously in anticipation of the proposed lift station. The existing force main connects to an existing 8-inch sewer line at the intersection of Mitchell Street and Vista Canyon Drive. This existing sewer line discharges into an existing 8-inch syphon that crosses Mitchell Gulch and then flows into an existing 8-inch sewer line. This sewer line discharges into the existing Mitchell Creek Lift Station.

2.2.2 Existing Lift Stations

CRW operates one lift station that is downstream of the proposed Bella Mesa North Lift Station. The Mitchell Creek Lift Station was installed in 2003 and has a rated capacity of 1,450 gpm. The existing Mitchell Creek Lift Station was designed to serve the flows from Bella Mesa North and an expansion to this facility is not required.

2.2.3 Existing Wastewater Treatment Plant

All wastewater from CRW is treated at the PCWRF. The existing facility has a permitted hydraulic capacity of 6.44 mgd and the current hydraulic loading is approximately 5.3 mgd. The PCWRF's processes include primary screening, grit removal, oxidation ditches, secondary clarifiers, filtration, UV disinfection, and sludge dewatering. The PCWRF will not require an expansion or modifications to its existing treatment processes in order to receive and treat wastewater from the proposed Bella Mesa North Lift Station.



FIGURE 2-2: EXISTING AND PROPOSED WASTEWATER FACILITIES
(NOT TO SCALE)

SECTION 3: DESIGN CONDITIONS

3.1 LIFT STATION CRITERIA

The lift station will be designed according to the State of Colorado's *Design Criteria for Domestic Wastewater Treatment Works* (September 15, 2012) and the Town of Castle Rock's Wastewater Collection Design Criteria Manual, Chapter 5. Additional design features will be in accordance with the Cherry Creek Basin Water Quality Authority's (CCBWQA) *Emergency Response Plan Criteria* (October 1, 2020) and Chatfield Watershed Authority standards.

3.2 HYDRAULIC LOADING

The hydraulic loading to the proposed Bella Mesa North Lift Station is based on the CRW's design criteria. The criteria states a sanitary sewer loading of 200 gpd per SFE and a 10% inflow and infiltration factor. The peak hour flow factor uses the formula: 3.65 x (Average Daily Flow)$^{-0.168}$, maximum of 5.0. Table 3-1 shows the ultimate flows. A copy of CRW's design criteria is provided in Appendix B.

Table 3-1: Bella Mesa North Lift Station Initial Wastewater Flows

Type	SFEs	Average Daily Flows (gpd)	Peak Hour Flows (gpm)
Residential (single-family)	525	105,000	365
Inflow & Infiltration (10%)	n/a	10,500	7
Totals	**525**	**115,500**	**372**

3.3 WATER QUALITY

The wastewater generated by Bella Mesa North will be domestic. The development will not contain any industrial or commercial facilities.

3.4 SITE CONDITIONS

To the immediate north and west of the proposed Bella Mesa North Lift Station site will be park or open space areas with Mitchell Gulch further to the west. To the east and south will be private homes. Presently, all of the surrounding areas are undeveloped.

The proposed lift station will be approximately 200 feet from the nearest home. This will provide a reasonable distance to mitigate odors, noise, and its visual impact.

3.5 FORCE MAIN AND METERING

The proposed lift station will pump into a 6-inch diameter C900 DR18 PVC force main. The force main's total length will be approximately 5,125 lineal feet to an existing sanitary sewer manhole. The proposed pumping rate of approximately 400 gpm will result in a velocity of approximately 4.41 feet per second (fps), which exceeds CDPHE's minimum velocity of 2.0 fps and satisfies the requirements of CPNMD.

One requirement by the CCBWQA is the facility must have two flow meters. The first will be located immediately downstream of the proposed lift station. The second is at the discharge from the force main into the existing outfall manhole. The flows from the two meters will be monitored by a SCADA system.

3.6 ODOR CONTROL

CRW typically uses an aeration system in the wet well to reduce odor potential at the facility and in the force main. In addition, CRW may request a 55-gallon drum of Centaur Carbon (activated carbon) with a metering pump to mitigate odors during initial start-up and if there is an upset at the proposed facility.

SECTION 4: ALTERNATIVES ANALYSIS AND SELECTED ALTERNATIVE

4.1 ALTERNATIVES ANALYSIS

4.1.1 No Action

The Bella Mesa North site will be developed and sanitary sewer service is required. Thus, "no action" is not a viable alternative.

4.1.2 Gravity Sewer Line

The Bella Mesa North site lies at a low point in the area and is separated from CRW's existing sewer collection system by Mitchell Gulch. Thus, a gravity pipeline is not a viable option.

4.1.3 Alternative Service Provider

Bella Mesa North has been included in CRW's service area and its sanitary sewer system is very close to the proposed lift station. No other wastewater service providers is within four miles of the development. Thus, inclusion into another utility's service area is not a reasonable option.

4.1.4 Selected Alternative

There is only one viable option for Bella Mesa North – a new lift station. The site's characteristics require pumping and a force main to reach the existing Mitchell Creek Lift Station.

4.2 SELECTED ALTERNATIVE DESIGN FEATURES

The proposed lift station will be designed based the CRW's criteria, which is consistent with municipal practices and equipment. The lift station is located within the CCBWQA boundary and upstream of Cherry Creek Reservoir. The proposed lift station equipment is consistent with other existing and recently approved lift stations in the CCBWQA boundary. Some design features include:

1. Duplex self-priming pumps
2. Emergency overflow storage
3. Standby emergency power
4. SCADA and autodialer system

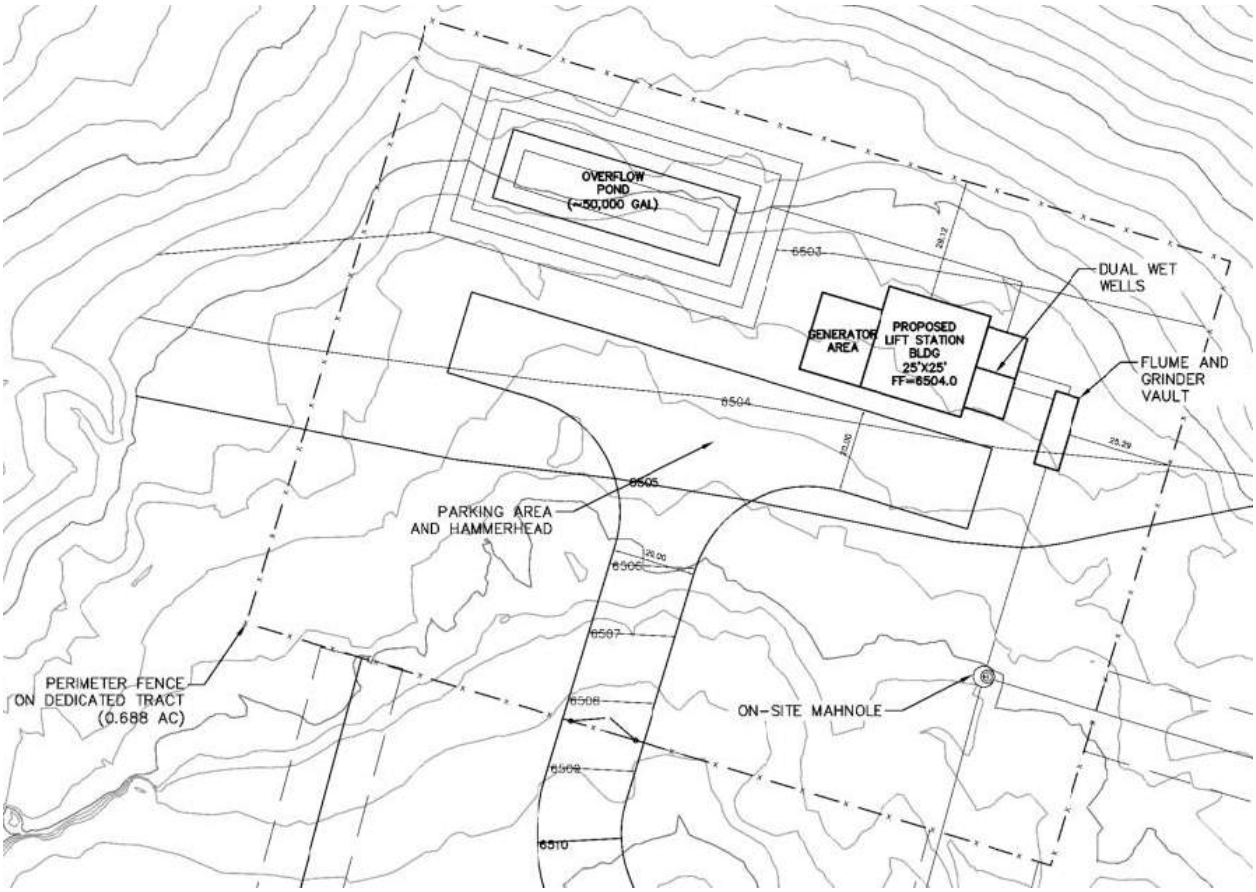


FIGURE 4-1: PROPOSED SITE PLAN
(NOT TO SCALE)

4.2.1 Pumping System

The pumping rate for the lift station is approximately 400 gpm. This flowrate will ensure a 3-inch solid is passed and will maintain a velocity of at least 2 fps in the force main. The proposed pumps for the facility will be self-priming by Gorman-Rupp. A duplex setup will provide for redundancy, with a "lead" and "lag" operation.

The wet well will be sized to have a maximum storage volume of one hour of average day flow. It will contain controls that will alternate the "lead" pump. The instrumentation will activate the "lag" pump if the "lead" pump fails. The controls will also have a setting that will activate both pumps if the "lead" pump cannot keep up with influent flows. The control panel will be programmed to send out an alarm during any failure condition.

4.2.2 Emergency Overflow Storage

A requirement of the CCBWQA is to provide emergency storage for raw sewage in the event of a lift station failure (Table 2, Section V). The criteria states that the storage volume is "equal to the amount of time required to respond and rectify the problem spill." Two hours of response time at peak hour flow will be adequate for the proposed Bella Mesa North Lift Station. The proposed facility will be located along well traveled and maintained roadways (Mikelson Blvd and local paved streets). For the proposed Bella Mesa North Lift Station, the initial two-hour overflow storage will be approximately 50,000 gallons and will be a lined pond. The overflow storage does not include any

volume in the wet well or pipelines. The surrounding site will be graded so that precipitation run-off will drain away from the overflow pond. Furthermore, the overflow storage will be easily accessible to response vehicles to facilitate operation and maintenance. Both the lift station and overflow storage pond will be located outside of the 100-year floodplain.

4.2.3 Standby Power

The proposed Bella Mesa North Lift Station will have a standby diesel generator sized to power all electrical functions of the facility. The generator has an automatic transfer switch activates the generator when the primary power fails.

4.2.4 SCADA, Metering, and Autodialer

The proposed lift station will have a SCADA system that will record operational data. The proposed facility will have two magnetic flow meters to monitor the discharge. One magnetic flow meter will be immediately downstream from the pumps and the other will be located at the outfall of the force main into the first manhole. An autodialer will notify the operators in the event of a failure, and low and high levels in the wet well.

4.2.5 Force Main

The force main on the discharge side of the proposed lift station will be 6-inch diameter pipeline. The alignment is approximately 3,550 lineal feet of new pipe and 1,575 lineal feet of existing pipe (total of 5,125 lineal feet), and the force main will discharge into an existing sanitary sewer manhole. The force main's material will be C900 PVC, DR18. A quick connection will be included in the construction to allow for by-pass pumping from the wet well to the force main in the event of an emergency.

SECTION 5: MANAGEMENT AND FINANCE

5.1 OWNERSHIP AND MANAGEMENT

After construction of the proposed lift station, it will be owned and operated by CRW. The Applicant is financially responsible for the permitting, design, and construction of the facility.

CRW is a municipal government and provides service to over 24,000 homes and businesses. Its annual operations and maintenance budget is $3.14 million and it has the financial means to provide proper operation and maintenance of the proposed Bella Mesa North Lift Station.

5.2 OPERATIONS AND MAINTENANCE

The proposed lift station will be operated by CWR, which has an operations staff of 54 full-time equivalents and will provide the following services:

- Provide a licensed operator designated as the Operator in Responsible Charge (OCR).
- Provide licensed operators to perform all work associated with the facility.
- Perform inspections of the lift station equipment.
- Perform maintenance on the pumps and motors.
- Perform repairs.
- Respond to all alarms and emergencies.
- Prepare all required documentation and reports.

5.2.1 Preliminary Operating Plan

Provided below is the facility's proposed preliminary operating plan:

- The lift station is operated by CRW personnel; the facility is checked three times per week with 24/7 SCADA monitoring.
- The operator monitors run times and pump conditions.
- The operator will clear debris from the pumps.
- The operator will conduct a bi-annual inspection of the wet well.
- The operator will conduct periodic testing of the alarms, SCADA system, automatic transfer switch and generator.
- A SCADA system will monitor operating levels, emergencies, and notify staff of any failures.
- Operator in Responsible Charge is John Chrestensen.

5.2.2 Emergency Response Plan

CRW has an existing Emergency Response Plan ("ERP") and the information and procedures for the proposed Bella Mesa North Lift Station will be prepared and added. The ERP has response protocols and duties, contact numbers, equipment lists, reporting procedures, safety equipment, and other information. The ERP is included in Appendix E.

5.3 PROJECT SCHEDULE

Table 5-3 shows the anticipated completion schedule for the proposed Bella Mesa North Lift Station.

Table 5-3: Schedule

Milestone	Completion Date
Submit Site Location application and PER to referral agencies (Town of Castle Rock, Tri-county Health, CCBWQA and PCWRA)	May 2025
Submit Site Location application and PER to CDPHE	June 2025
Site Location & PER approval from CDPHE	September 2025
Final Design of Lift Station	November 2025
Submit BDR and plans to CCBWQA and CDPHE	December 2025
Design and BDR comments from CDPHE	March 2026
Design and BDR approval from CDPHE	April 2026
Complete construction of Lift Station	December 2026
Start-up of Lift Station	January 2027
First house in the Bella Mesa North occupied	February 2027

Appendix A
Proof of Ownership

Appendix B
Castle Rock Water Design Criteria and Calculations

Bella Mesa North Lift Station

Hydraulics and Calculations

Flow Projections

Date: April 2025

MSK Project: 59-001-02

Calc'd by: DLT

PRELIMINARY
4/12/25

Assumptions:

SF Detached ADF: 200 gpd/DU

Peaking factor: 3.65 x (Average flow in mgd) $^{-0.168}$

Peaking factor (Max.): 5.0 times Average Day Flow of entire basin

Inflow/infiltration: 10% of ADF

Table B1-1: Ultimate Wastewater Loading

A	B	C	D	E	F	G	H
No.	Description	Total Units	Average WW (gpd)	Average WW (mgd)	Peaking Factor	Peak Flow (mgd)	Peak Flow + I/I (gpm)
1	Bella Mesa North Phase 1	275	55,000	0.055	5.0	0.275	191.0
2	Bella Mesa North Phase 2	250	50,000	0.050	5.0	0.250	173.6
4	Inflow and Infiltration (10%)	n/a	10,500	0.011	n/a	n/a	7.3
Totals		**525**	**115,500**	**0.116**		**0.525**	**371.9**

Note:

1. Based on the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual.

Appendix B
Town of Castle Rock
Wastewater Collection Design
2018 Criteria Manual

nd all applicable Federal, State and Local regulations. Criteria
of underdrains are contained within the Town's Storm
riteria Manual, and shall under no circumstances be
ter collection system.

4.4 Minimum Wastewater System Design Criteria

This section presents the minimum technical criteria for the analysis and design of wastewater systems within the boundaries of the Town of Castle Rock, including collection mains, sanitary sewer service lines, and the applicable appurtenances associated with these installations. Refer to the Sanitary Sewer Construction Notes and Construction Methodology and Materials Manual on the Town's website (CRgov.com/codecentral) for acceptable materials. Any special criteria beyond those contained herein, and as determined necessary by the Town, shall be discussed at the pre-application consultation.

It is the intent of this section to provide sufficiently detailed information to enable the engineer to design the majority of wastewater system components associated with a typical project. The wastewater system shall be designed by a Registered Professional Engineer licensed in the State of Colorado and shall conform to the most current technical standards available. It is assumed that any number of engineers may be involved in the design, depending on the technical expertise necessary to design and certify the various components of the project. It is further assumed that sound engineering will be applied throughout the design process to produce standard of the industry designs that incorporate specific Town input conveyed to the engineer during the review process. As established in Chapter 3 of these Criteria, specific information will ultimately be required on the record drawings in accordance with the Record Drawing Checklist. In order to expedite the eventual preparation of the record drawings, a thorough review of these requirements during the design phase of the project, and prior to the preparation of the CDs, is strongly recommended.

If there is a question or a concern regarding the design of any portion of the wastewater system that is not adequately addressed in this chapter, the developer shall contact Castle Rock Water to resolve all issues prior to proceeding with the design of any such component. Any variance from these Criteria must be approved in accordance with Section 1.9 of these Criteria. The submittal review process and the specific wastewater system requirements associated with the Town's Concept, Preliminary, and Final Development Packages are documented in Chapter 3 of these Criteria.

4.4.1 Design Flows

The tabulation below provides the Average Daily Flow (ADF) rates that shall be applied to compute the wastewater flows associated with the various types of land use within the development. Flows shall be computed for initial 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.

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**
Rates for Typical Douglas County School Sizes:		
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**
Rates for Alternate School Sizes:		
Elementary	**5 gpd/student**	**0.025/student**
Middle	**10 gpd/student**	**0.050/student**
High	**10 gpd/student**	**0.050/student**

The demands noted in the table above represent the “winter time” or “dry weather” Average Daily Flow (ADF) with no allowance for infiltration and inflow (I/I). I/I shall be accounted for in accordance with the Peak Design Flow computation discussed in the sections to follow.

Regarding design flows for schools, planned school sizes shall be confirmed with the Douglas County School District and documented in the Utility Report. The tabulated rates

shown above shall be applied as appropriate, depending on the information provided by the School District. Reasonable engineering judgment shall be used in determining the estimated ADF for commercial, industrial and institutional sites. Individual evaluation and justification shall be provided when the proposed use is not specifically represented in the table above, or when the proposed flows will be inconsistent with the tabulated values. Justification of all non-residential flows shall be addressed in the Utility Report.

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

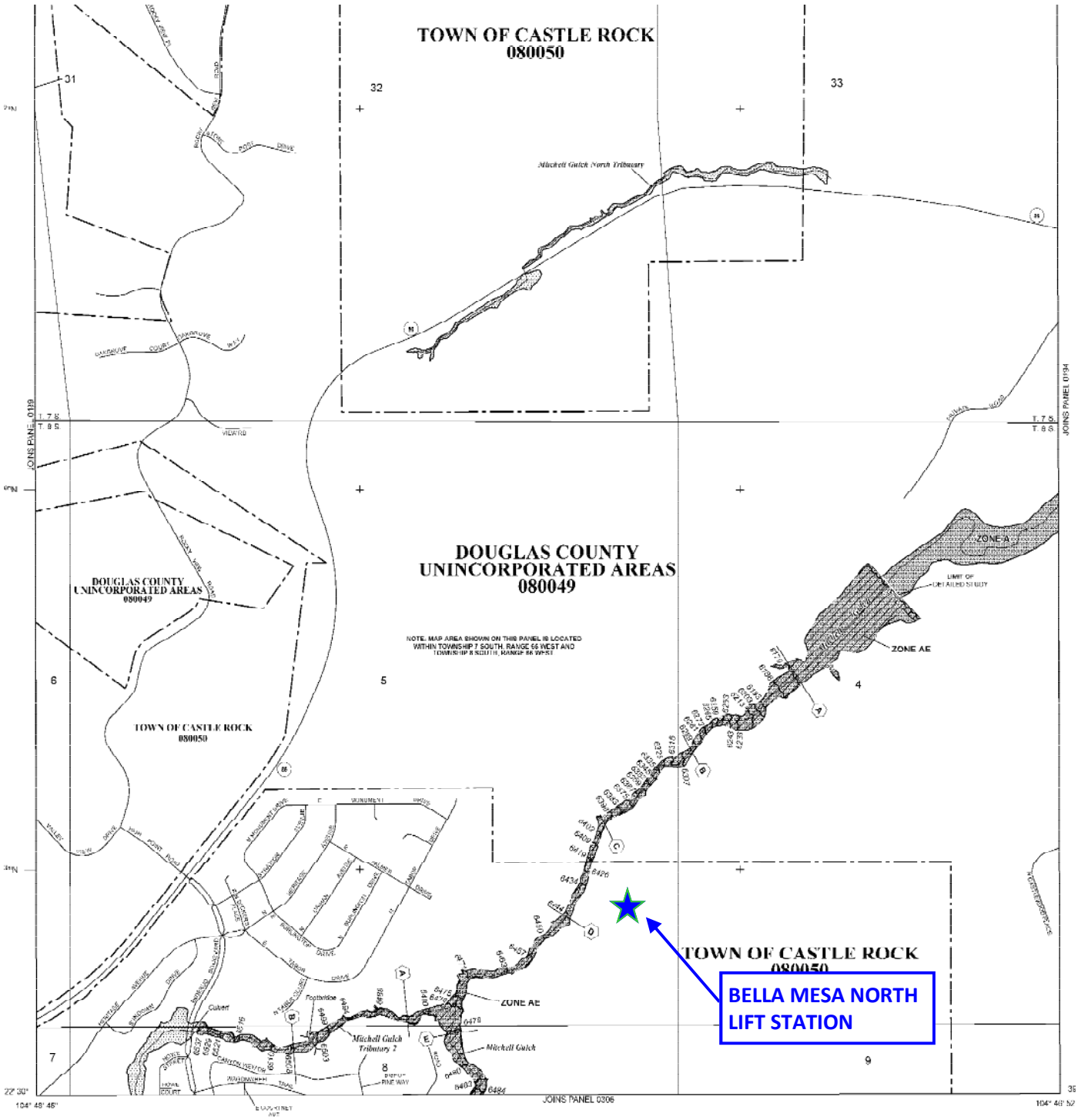
Once computed, the PDF shall be used to determine the sizes of the facilities in accordance with the criteria established below.

4.4.2 Hydraulic Design

Wastewater systems shall be designed to provide a minimum velocity of two feet per second at the Peak Design Flow. In situations where the minimum velocity of 2.0 feet per second cannot be met, an explanation and justification shall be included in the Final Utility Report. The maximum velocity shall not exceed ten feet per second. Drop manholes shall be provided to break steep slopes to limit the velocities in conformance with this criterion. Where drop manholes are impractical for velocity reduction, the sewer must be approved by variance and shall be of PVC or other abrasion resistant material approved by Castle Rock Water.

Where actual flow will be much below normal for several years, the minimum velocity shall be achieved by suitable grades at the partial design flow rate. Care shall be taken to design invert elevations at manholes in such a manner that the energy gradient is consistently falling in the direction of the flow. Sanitary sewers shall be sized to convey the Peak Design Flow while flowing no more than 75 percent of the maximum pipe flow capacity. Computation of velocity of flow shall be based on a coefficient of roughness "n" in the Manning formula of 0.011 for PVC. At all junctions where a smaller diameter main discharges into a larger one, the invert of the larger sanitary sewer shall be lowered so that the energy gradients of the sewers at the junction are at the same level. Generally, this condition will be met by placing the 0.80 depth point of both sewers at

Appendix C
Floodplain Map



MSK consulting
7157 S. Andes Circle
Centennial, CO 80016
303.903.0918

Source: FEMA FIRM Map, Panel 0193G (March 16,2016).

N

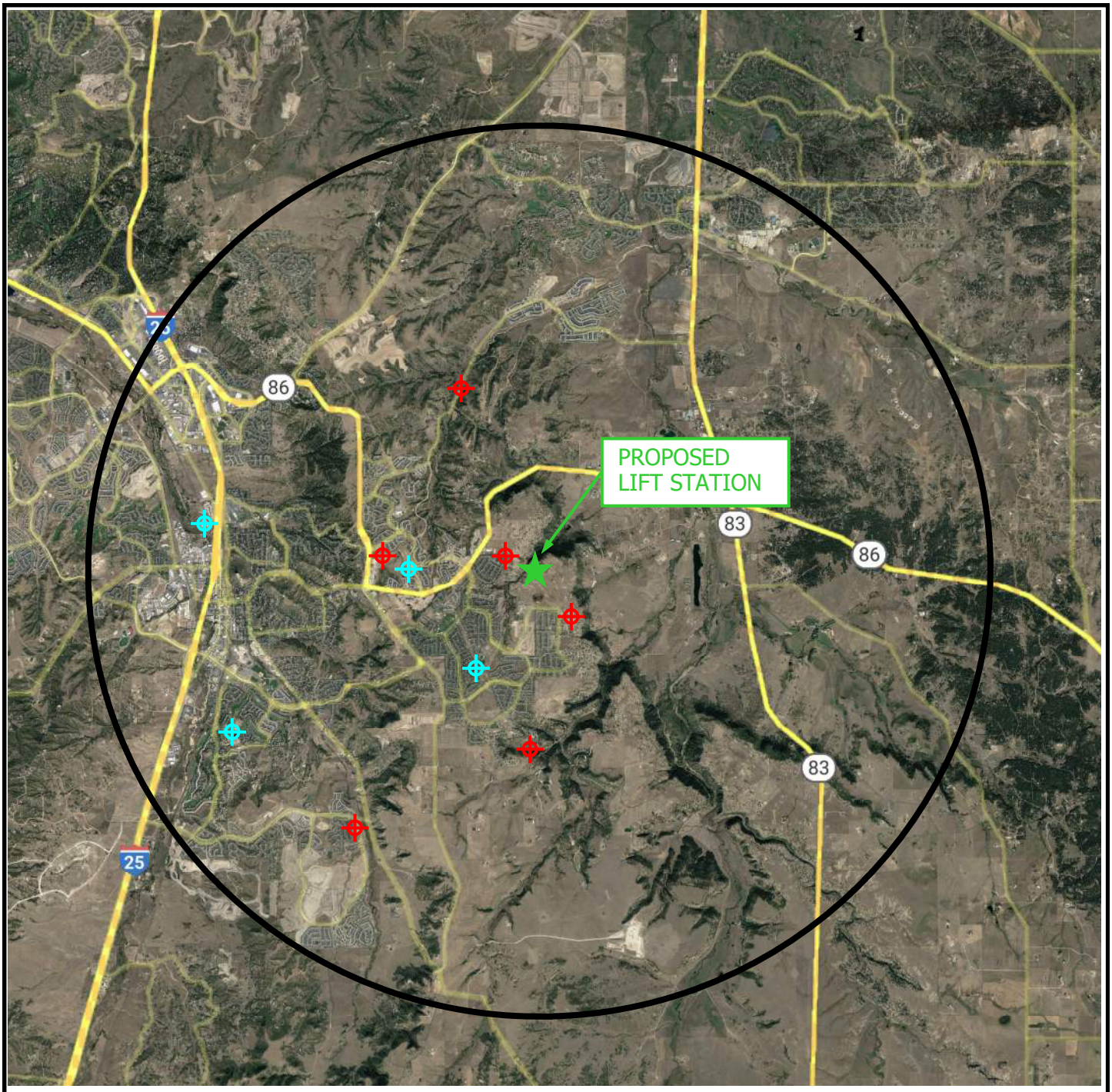
BELLA MESA NORTH LIFT STATION

Figure C-1

Floodplain Map

April2025 | Scale: N.T.S.

Appendix D
Figure D-1: 5-mile Radius Map
Figure D-2: 1-mile Radius Map



Legend

- Water Treatment Facility
- Lift Station

MSK consulting
7157 S. Andes Circle
Centennial, CO 80016
303.903.0918

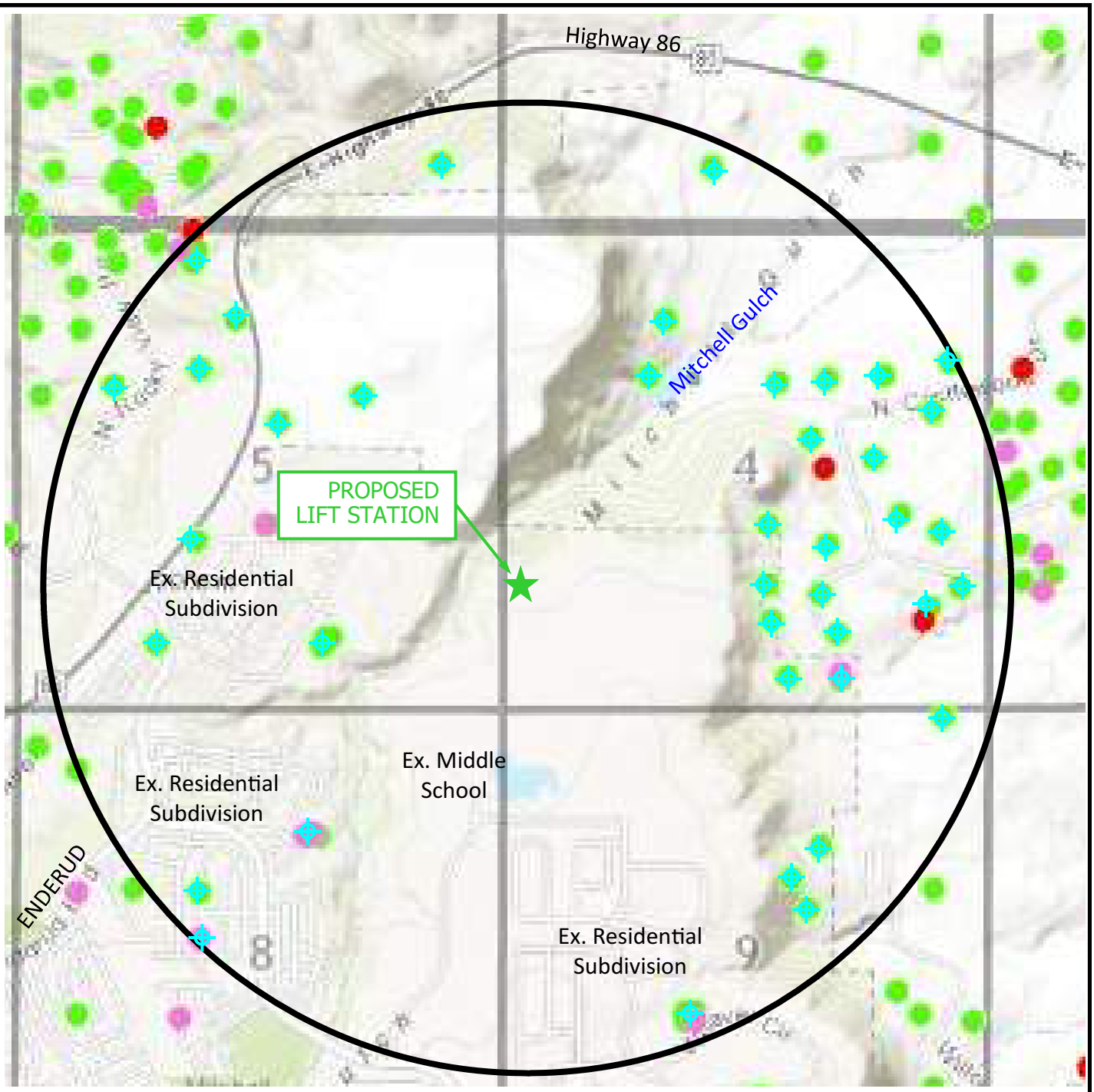
N

BELLA MESA NORTH LIFT STATION

Figure D-1

5-Mile Vicinity Map

April 2025	Scale: N.T.S.



Legend

Permitted Well

Note: Some of the "dots" on the map represent denied well permit applications, monitoring wells, abandoned wells, or expired permits.

MSK consulting
7157 S. Andes Circle
Centennial, CO 80016
303.903.0918

Source: AquaMap from the Colorado Division of Water Resources.

N

BELLA MESA NORTH LIFT STATION

Figure D-2

1-Mile Vicinity Map

April 2025 | Scale: N.T.S.

Appendix E
Emergency Response Plan

BELLA MESA NORTH LIFT STATION
EMERGENCY RESPONSE PLAN

PREPARED FOR:

CASTLE ROCK WATER
175 Kellogg Court
Castle Rock, CO 80109

Issue Date: April 25, 2025

PREPARED BY:

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016

TABLE OF CONTENTS

Section 1: Introduction 1
1.1 Purpose 1
1.2 Location 1
1.3 Emergency Situations 2
1.4 Facility Information 2
1.5 Acronyms 2

Figure 1-1 – Location Map 1

Section 2: Roles, Notification, and Routine Maintenance 3
2.1 Personnel 3
2.2 Notification 3
2.3 Routine Maintenance 5

Section 3: Response Procedures 6
3.1 Lift Station Procedures 6
3.2 Spill Containment and Mitigation 11

APPENDICES

Appendix A: Lift Station Drawings
Appendix B: Equipment List

SECTION 1: INTRODUCTION

1.1 PURPOSE

The purpose of this Emergency Response Plan ("ERP") is to summarize the emergency response activities for the Bella Mesa North Lift Station. The manual will provide a means for fast and effective response to emergency situations and to minimize the impact or effects of an incident. Rapid and proper response is crucially important as the Bella Mesa North Lift Station is upstream of the Reuter-Hess Reservoir, which stores water for potable use.

An emergency is defined as any event at the lift station facility that if left unattended may result in a public health risk, damage to the environment or public/private property, and for which Castle Rock Water (CRW) is ultimately responsible. An emergency is the result of failure of electrical, mechanical, and/or control systems.

1.2 LOCATION

The proposed Bella Mesa North Lift Station will be located in the Bella Mesa North development in Douglas County, state of Colorado within the Town of Castle Rock. The Bella Mesa North Lift Station lies in the SE quarter of Section 5, Township 8 South, Range 66 West of the 6th Principal Meridian.

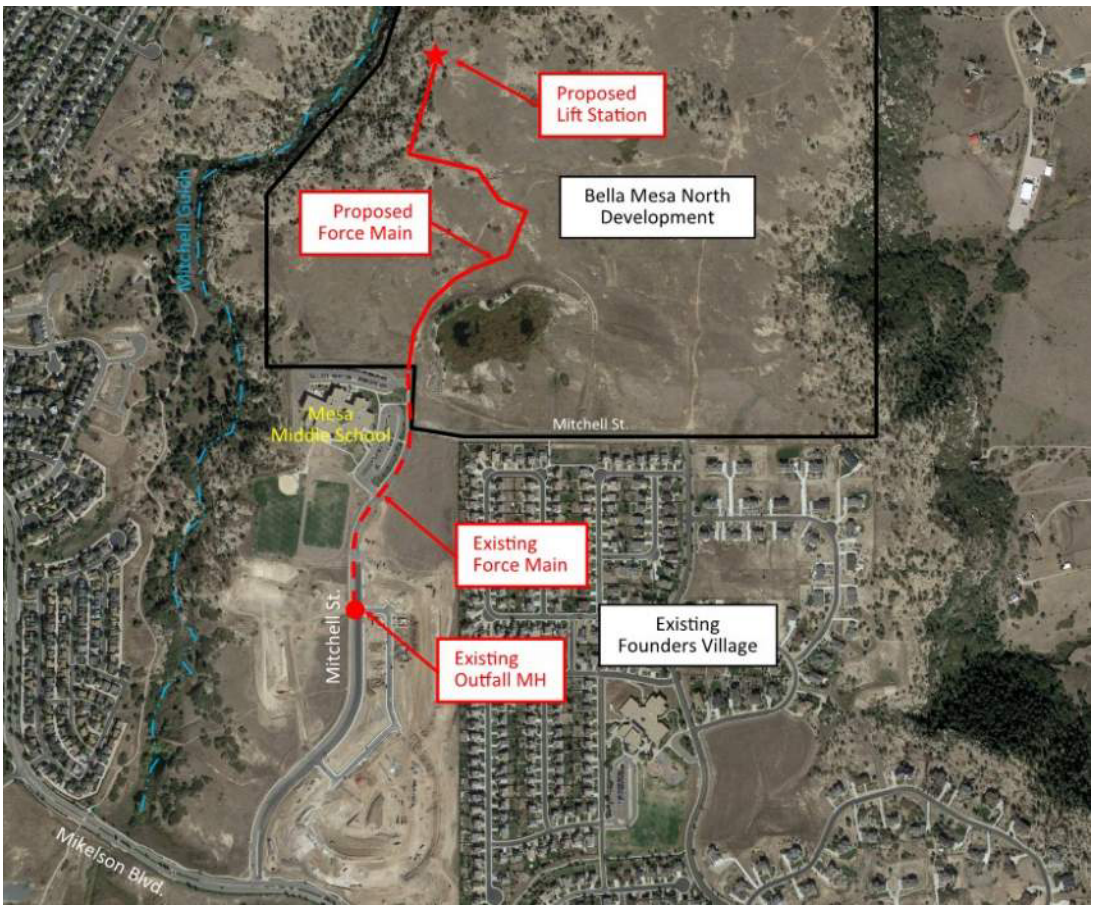


FIGURE 1-1: LOCATION MAP
(NOT TO SCALE)

1.3 EMERGENCY SITUATIONS

The following is a list of possible emergency situations. This list is not to be considered to be a complete list as other possible scenarios may exist.

- Alarm notification from SCADA system
- Visual indication of sewage around facility or overflow ponds
- Report of a sewer smell or sewerage on the ground in any specific area by a homeowner.
- Electric power outage reported in this area.

For purposes of this ERP, a spill could include the following materials:

- Wastewater
- Chemicals
- Petroleum products
- Grease
- Grit

1.4 FACILITY INFORMATION

The Bella Mesa North Lift Station has the following design features and equipment:

- Gorman-Rupp pumps with a pumping capacity of 400 gpm.
- 8'x8' wet well with an operating volume of approximately 6,500 gallons.
- 50,000-gallon overflow pond providing 2.0 hours of response time.
- Standby diesel generator with a fuel tank sized for 24 hours of continuous operation.

1.5 ACRONYMS

CCBWQA	Cherry Creek Basin Water Quality Authority
CDPHE	Colorado Department of Public Health & Environment
CDPWR	Colorado Primary Drinking Water Regulations
CRFR	Castle Rock Fire and Rescue
CRPD	Castle Rock Police Department
CWA	Chatfield Watershed Authority
FM	Force Main
PCWRA	Plum Creek Water Reclamation Authority
PWSD	Parker Water and Sanitation District
SCADA	Supervisory Control and Data Acquisition
WQCD	Water Quality Control Division

SECTION 2: ROLES, NOTIFICATION, AND ROUTINE MAINTENANCE

2.1 PERSONNEL

Any person engaged in any operation or activity which results in a spill or discharge of a substance which may pollute State waters contrary to the Water Quality Control Act must notify CDPHE as soon as he has knowledge of the spill or discharge. Because the Bella Mesa North Lift Station is within PCWRA's service area, a copy of the incident report must be sent to PCWRA. Because the Bella Mesa North Lift Station is upstream of Reuter-Hess Reservoir, PWSD and CCBWQA must be contacted.

The Operator of Responsible Charge ("ORC") is responsible for:

- Development, implementation and review of CRW's emergency procedures.
- Ensure adequate training of CRW personnel.
- Providing proper equipment for CRW personnel.
- Coordination with responding agencies.
- Notification to authorities and reporting.
- Estimating and recording quantity of sewage spill,
- Recordkeeping.
- Technical support.
- Recording the time an emergency was declared.
- Recording the names, assignments, time of arrival and departure of response personnel.
- Recording the cause of the incident and steps taken to restore lift station.
- Recording the time mitigation was completed.
- Taking a photographic record of the incident.
- Public/media relations.
- Notification/reporting.
- Technical support.

CRW has five certified collection system operators during business hours and on-call staff including certified operators for after hours.

2.2 NOTIFICATION

This section outlines the notification procedures for emergency response and contacting regulatory and other agencies.

2.2.1 Decision to Notify

1. The ORC will make the decision whether to notify CDPHE. It is understood that the ORC will notify the CDPHE unless it is very clear that notification is not required.
2. Any CRW representative who is contacted about a spill should immediately notify the ORC. Be certain to obtain the NAME and TELEPHONE NUMBER of the person calling.

3. The ORC will investigate any problems reported to him and make a decision whether to notify CDPHE.
4. The ORC will note in writing the TIME and DATE of telephone notification, and the NAME of the CDPHE representative he spoke to.

2.2.2 Manner of Notification

1. The ORC or designee will notify CDPHE immediately, by telephone, as follows:

   CDPHE spill hotline: 1-877-518-5608

2. The ORC or designee will notify PWSD immediately, by telephone, as follows:

   PWSD emergency number: 303-841-4627 (press "4" for after hours contact)

3. The ORC or designee will notify PWSD will notify the PCWRA, CCBWQA and CWA.

2.2.3 CRW Contact Numbers

ORC – Field Services Superintendent
Desk 720-733-6071
Cell 303-435-3647

Emergency On-Call Duty Phone 303-435-4472

2.2.4 Off-site Responders

CRFR (Fire) - Primary Emergency Responders 911
CRPD (Police) - Primary Emergency Responders 911

2.2.5 Designated Local Emergency Medical Facility

See the Town of Castle Rock Designated Provider Information.

2.2.6 Agency Contacts

Cherry Creek Basin Water Quality Authority
303-779-4525

Parker Water and Sanitation District
303-841-4627

Plum Creek Water Reclamation Authority
303-688-1991

Chatfield Watershed Authority
303-916-4645

2.2.7 Contractor List

MacDonald Farms
P: 303-772-4577

2.3 ROUTINE MAINTENANCE

CRW staff performs the following routine maintenance tasks:

- Equipment maintenance will occur according to manufacturers' specifications.
- Schedule and program for inspection : Live Operators monitor daily via SCADA, and Certified Collections Operators perform on-site physical inspections three times per week.
- Alarm testing: Three times per week to ensure auto-dialer function.
- Backup power testing schedule: Backup engine tested weekly; PMs quarterly. The automatic transfer switch is exercised weekly; PMs quarterly.
- Valve exercise schedule: Once per week for valves inside the station

SECTION 3: RESPONSE PROCEDURES

3.1 LIFT STATION PROCEDURES

3.1.1 Situation: Lift Station Failure Caused by Primary Power Failure

1. Dispatch crew to the lift station.

2. Request the assistance of the power company, CORE, (1-800-332-9540) in restoring power to the station. Determine the estimated time of arrival of the power company crew and then notify the ORC.

3. Check any overhead power lines for fuses that might have blown or downed power line as they approach the pumping station. If the operators notice a blown fuse or downed power line, identify the pole number(s), and notify the ORC to relay to the power company the location and pole number(s).

4. Check if standby generator is operating.

5. Check fuel level of the standby generator. If fuel is required, contact fuel supplier for delivery.

6. If the generator is not operating, contact the ORC and obtain the portable generator.

7. If an overflow or spill has occurred, assure that the ORC has been contacted and take steps to mitigate the spill. See Section 3.2.

8. Once the power company notifies the crew that the primary power source has been restored, shut down the portable generator and disconnect from the auxiliary power connection.

9. The crew should monitor the pumps to ensure that the pumps follow their normal lead and lag operation including the start and stop operating level.

10. Monitor several complete pumping cycles before leaving the station.

11. Notify the ORC that power has been restored and to verify that the alarm condition is cleared from the alarm panel.

12. Complete a report per CRW policies.

3.1.2 Situation: Lift Station Failure Caused by Mechanical Failure

1. Locate the cause for failure of the lift station.

2. If one pump failed, isolate failed pump by closing values and activate second (standby) pump.

3. If mechanical failure does not allow for any of the pumps to operate, then contact the temporary pump contractor for delivery of a portable pump.

4. Obtain a portable backup pump to bypass the lift station. Once on site, connect and start-up.

5. Check wet well and if wet well requires man entry, follow the OSHA safety requirements for confined space entry.

6. If the cause is related to pump failure, repair pumps as necessary.

7. If the cause is related to material failure of some portion of the lift station or piping, isolate the area of the failure and repair as necessary.

8. If an overflow or spill has occurred, assure that the ORC has been contacted and take steps to mitigate the spill. See Section 3.2.

9. Prior to starting up the lift station after repair and spill mitigation, check the lift station for possible damage due to the sudden shut down.

3.1.3 Situation: Lift Station Failure Caused by Force Main Break at the Facility

1. Identify if the wet well is being flooded.
2. Determine if the force main has separated flooding the lift station.
3. If the failure has occurred in a location that does not prevent a portable pump from working, request and obtain a portable pump.
4. If an overflow or spill has occurred, assure that the ORC has been and take steps to mitigate the spill. See Section 3.2.
5. Otherwise, notify ORC, and call additional crew to connect the portable pump including all lengths of suction and discharge hose to the lift station.
6. Monitor the atmospheric conditions while working in the dry side of the station.
7. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend into the wet well, then connect hose to quick connect on force main.
8. Go through the procedures for starting the portable pump, and begin pumping.
9. Make the necessary repairs to the force main.
10. Once the repair has been completed, shut down the by-pass operation. Do not disconnect the hose until the repair has been properly inspected for leaks.
11. If no leakage is observed, return all pump controls to their original operating position.
12. Restore the main line disconnect to its original position by removing the lock out tag out.
13. Monitor pumps to ensure that the pumps follow their normal lead and lag operation including the start and stop operating level.
14. Monitor several complete pumping cycles before leaving the station.
15. Notify the ORC that power has been restored and to verify that the alarm condition is cleared from the alarm panel.
16. Complete a report per CRW policies.

3.1.4 Situation: Lift Station Alarms

1. Send an on-call operator to the station within *ten (10)* minutes of receiving the alarm. If serious trouble is found, call for additional assistance and keep an individual at the station until further instructions are received.

2. Always check with CORE, (1-800-332-9540) when an alarm goes on to see if there is a power outage in the area. The pole number nearest the station should be reported to the ORC.

3. In all wet wells the operating level is below the inlet. Consequently, if sewage is not flowing into the wet well a sewage backup upstream of the lift station occurred.

4. Personnel called in to investigate lift station alarms shall respond to the station even if the alarm has cleared prior to their arrival. All alarm conditions are to be checked and logged. Use the following guidelines and follow confined space entry procedures as applicable:

    - Take your time entering the station.
    - Note any unusual odors, i.e., burning electrical equipment or paint.
    - Observe the SCADA panel for abnormal operation and alarms.
    - Listen and note any unusual noises.
    - Observe pumps, controls, and piping of equipment in the station. Note anything which looks out of place.
    - Record all gauge reading, i.e., wet well level, hour meters, flow charts, on-off levels, psi gauges on pump, rpm, and anything significant.
    - Fill out lift station log book.
    - Call ORC and use notes to make your report (of a potential problem).
    - Consult the detailed lift station emergency procedure for any further action which may be required.
    - A lift station alarm call out report must be filled out completely and forwarded to the ORC for all alarms received from the lift station.
    - Responding operator needs to be absolutely certain that the cause of the lift station alarm or failure has been properly identified and corrected prior to leaving the station.
    - Signal line failures from lift stations are to be reported to the ORC. The circuit line number from the station is reported to and the station is to be checked once a shift (8 hours) until the signal line is repaired.
    - Reset any/all alarm feature indicator lights.

5. If lights are on in the station but pumps will not operate in “Manual,” check wet well level. Call in an electrician. Initiate by-pass pumping operation.

6. Do not open the pump control panel to look for the reset buttons. Before pressing an exposed reset button in any station, be sure the breaker and toggle switches are “off”.

Once this is confirmed, perform the following three steps:

- Press and release the reset button(s),
- Turn “on” the main breaker, and
- Test all the toggle switches.

7. If the equipment initially appears to be running satisfactorily, wait five minutes to make certain the equipment does not go offline again. If it does, DO NOT try this resetting procedure again. Instead, call electrical contractor.

8. If the station cycles three (3) times without any trouble, most likely it is an alarm problem. Notify technical support for the SCADA system. Check station once per shift until alarm trouble is repaired.

3.2 SPILL CONTAINMENT AND MITIGATION

1. If it is imminent that the wastewater will be released into receiving waters or a drinking water supply watershed, then the ORC should be notified. The ORC will notify people who will notify the proper authorities and agencies (see Section 2.2).

2. Call emergency response contractors to set up flotation booms across streams, gulches, etc., initiate by-pass pumping as necessary.

3. Request the vac truck.

4. Direct the spill to the overflow pond.

5. If overflow pond is full, then initiate and removal of debris and organic matter from the affected area.

6. If the wastewater is in the streets/roads (public or private), then contain the wastewater as best as possible with sand bags or other industry accepted alternatives to minimize any impact to public health or the environment.

7. Sand bag nearby catch basin inlets to prevent the wastewater from entering the drainage system and causing potential contamination to the tributary receiving waters.

8. If ponding should occur on the street or easement (public or private), cordon off the area.

9. Remove as much of the contaminant as possible.

10. Disinfect the ponding areas with an industry standard disinfectant and notify the surrounding homes.

COLORADO
Department of Public Health & Environment

May 27, 2026

Mike Newman, Cardel Homes
9110 E Nichols Avenue, Suite 120
Denver, CO 80112

Subject: Lift Station Site Location Approval
Town of Castle Rock, Bella Mesa North Lift Station
Associated Colorado Discharge Permit System (CDPS) No. CO0038547 (Plum Creek Wastewater Reclamation Facility)
Douglas County
ES Project No. 260164

Dear Mike Newman:

The Water Quality Control Division (Division) has received and reviewed the site location application for the Town of Castle Rock's Bella Mesa North Lift Station. The lift station is to be located as follows: Latitude 39d22'46"N / Longitude 104d47'39"W, Douglas County. The force main will discharge to a manhole on a gravity sewer with siphon, and into the Mitchell Creek lift station. Wastewater is treated at the Plum Creek Wastewater Reclamation Facility.

The site location application has been found to be in conformance with the Water Quality Control Commission's ***Site Location and Design Regulations for Domestic Wastewater Treatment Works, 5 CCR 1002-22*** (Regulation 22) and is therefore approved. This site location approval addresses the following summary of the proposed design:

1. Based upon application information, the lift station will be designed to convey the following:

   - Hydraulic Design Capacity – 375 GPM (firm pumping capacity – capacity with the largest unit out of service)

2. The project consists of the following:
   - New lift station including, new wetwell, pumps, and approximately 5,125-feet of 6-inch force main to connect to existing gravity conveyance, electrical and instrumentation (alarms and monitoring), back-up/emergency power located at the lift station, emergency storage pond, and site fencing.

This site location approval does not constitute design approval for construction. In accordance with Regulation 22, Section 22.13(1), in addition to approval of the site location application, the applicant must obtain approval of the design of the treatment works from the Division prior to beginning construction.

This site location approval will expire on November 27, 2026. If construction has not commenced by this date, the approval will expire and a new application for site location approval may be required. Construction is defined as entering into a contract for the erection or physical placement of materials, equipment, piping, earthwork or buildings which are to be a part of a treatment works. In cases where the applicant elects to use in-house work forces, construction shall be considered to begin when any actions are initiated towards the previous activities.

In accordance with Regulation 22, Section 22.4(12), this site location approval is subject to appeal pursuant to the State Administrative Procedures Act.

This approval does not relieve the applicant/owner from compliance with all local, state, and federal regulations prior to construction nor from responsibility for proper engineering, construction and operation of the treatment works.

The Engineering Section is interested in collecting feedback about your experience during the review process. Please take a moment to fill out our survey.

If you have any questions, please contact Anthony Kerr at either 720-383-7291 or anthony.kerr@state.co.us.

Sincerely,

Clayton Moores, P.E.
Engineering Section Manager
Water Quality Control Division
Colorado Department of Public Health and Environment

cc: David Takeda, MSK Consulting
Skyler Sicard, Douglas County Health Department
Emily Wong, WQCD Engineering Review Unit Manager
Ian Sutton, WQCD ES Work Group Lead
David Kurz, WQCD ES Lead Wastewater Engineer

Appendix I – Correspondence

Outlook

FW: [External] RE: Bella Mesa North Questions

From Rick Haering <rhaering@redland.com>
Date Tue 12/16/2025 3:22 PM
To Logan Ludwig <lludwig@redland.com>

FYI – Water dedication info for establishing native seed below.

Thank you,

Rick Haering
Senior Landscape Designer

Redland
WHERE GREAT PLACES BEGIN

1500 West Canal Court
Littleton, CO 80120
Cell: (224) 532-1271
Office: (720) 283-6783
rhaering@redland.com
www.redland.com

From: Adriana Alfaro <AAlfaro@crgov.com>
Sent: Tuesday, December 16, 2025 3:11 PM
To: Rick Haering <rhaering@redland.com>
Cc: Lauren Moore <LMoore@crgov.com>; BrieAnna Grandy <BGrandy@crgov.com>
Subject: Re: [External] RE: Bella Mesa North Questions

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good afternoon Rick,

I spoke with our team and leadership, and we agree you do not need to include this temporary water for the purposes of dedication.

Very respectfully,
Adriana Alfaro
Water Resources Program Analyst
720-733-6081

From: Rick Haering <rhaering@redland.com>
Sent: Tuesday, December 16, 2025 2:13 PM
To: Adriana Alfaro <AAlfaro@crgov.com>
Cc: Lauren Moore <LMoore@crgov.com>; BrieAnna Grandy <BGrandy@crgov.com>
Subject: RE: [External] RE: Bella Mesa North Questions

Hi Adriana,

Our team had a few questions regarding water dedication and temporary irrigation for native grass areas. See my original email below for full details. Is this something you can help us with? I would be happy to set up a short call if this would be easier to discuss on the phone. Let me know what works best for you. Thanks.

Thank you,

Rick Haering
Senior Landscape Designer

Redland
WHERE GREAT PLACES BEGIN

1500 West Canal Court
Littleton, CO 80120
Cell: (224) 532-1271
Office: (720) 283-6783
rhaering@redland.com
www.redland.com

From: BrieAnna Grandy <BGrandy@crgov.com>
Sent: Friday, December 12, 2025 1:40 PM
To: Rick Haering <rhaering@redland.com>
Cc: Adriana Alfaro <AAlfaro@crgov.com>; Lauren Moore <LMoore@crgov.com>
Subject: [External] RE: Bella Mesa North Questions

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good afternoon Rick,
Thank you for reaching out. I have copied Adriana from Water Resources who can help answer your question below.
Thank you.

BrieAnna Grandy
Development Services | Senior Planner
Town Hall, 100 N. Wilcox St, Castle Rock, CO 80104
Direct 720.733.3566 | bgrandy@crgov.com

Your feedback is important to us, please let us know how we are doing by taking our Customer Service survey: https://www.surveymonkey.com/r/LR35C27

From: Rick Haering <rhaering@redland.com>
Sent: Wednesday, December 10, 2025 9:38 AM
To: BrieAnna Grandy <BGrandy@crgov.com>
Subject: Bella Mesa North Questions

Hi BrieAnna,

We have begun work on the Civil and Landscape Construction documents for Filing 1 at Bella Mesa North and I had a question for you regarding water dedication.

We have a large amount of landscape area that will be covered with native seed and will only receive temporary irrigation for establishment. Do the water dedication calculations have to include this temporary water? Or is water dedication only required for permanent ongoing irrigated areas?

Feel free to give me a call if this is easier to discuss on the phone. Thanks for your help.

Thank you,

Rick Haering
Senior Landscape Designer

Redland
WHERE GREAT PLACES BEGIN

1500 West Canal Court
Littleton, CO 80120
Cell: (224) 532-1271
Office: (720) 283-6783
rhaering@redland.com
www.redland.com

IRRIGATION CHART POC 1

Contact Information

Registered Landscaper_____
Company Name__Hines Inc._____
Address_1640 Riverside Ave #200, Fort Collins, CO 80524
Phone_(970) 282-1800 Email__Doug@HinesInc.com_____
Registration #_____ Design X r Maintenance r

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle (Nozzle/ Emmitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)			
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*			
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*		Monthly AR	Weekly AR
1	Low	Tree	Drip Ring	0.06	1.96	26	3.94	121	12	3076	May	1.50	0.375
2	Low	Native Seed	Turf Rotor	48	0.65	88	2.84	262	26	23070	June	3.00	0.75
3	Low	Native Seed	Turf Rotary	MP1000	0.55	54	2.84	310	31	16739	July	6.00	1.5
4	Low	Shrub	Area for Dripline	0.04	0.3	19	3.94	788	79	15350	August	3.00	0.75
5	Low	Native Seed	Turf Rotary	MP1000	0.55	32	2.84	310	31	10051	September	1.50	0.375
6	Low	Native Seed	Turf Rotor	33	0.57	57	2.84	299	30	17040	Seasonal Total	15.00	
7	Low	Native Seed	Turf Rotor	43	0.6	67	2.84	284	28	19028			
8	Low	Native Seed	Turf Rotor	48	0.65	105	2.84	262	26	27526			
9	Low	Native Seed	Turf Rotor	33	0.57	192	2.84	299	30	57338			
10	Low	Native Seed	Turf Rotor	6	0.62	20	2.84	275	27	5359			
11	Low	Native Seed	Turf Rotor	43	0.6	199	2.84	284	28	56544			
12	Low	Tree	Drip Ring	0.06	1.96	6	3.94	121	12	724			
13	Low	Native Seed	Turf Rotor	43	0.6	190	2.84	284	28	53846			
14	Low	Shrub	Area for Dripline	0.04	0.3	3	3.94	788	79	2569			
15	Low	Native Seed	Turf Rotor	48	0.65	189	2.84	262	26	49547			
16	Low	Native Seed	Turf Rotor	48	0.65	190	2.84	262	26	49704			
17	Low	Native Seed	Turf Rotor	3	0.4	139	2.84	426	43	59171			
18	Low	Native Seed	Turf Rotor	6	0.62	184	2.84	275	27	50680			
19	Low	Native Seed	Turf Rotor	3	0.4	182	2.84	426	43	77617			
20	Low	Native Seed	Turf Rotor	33	0.57	139	2.84	299	30	41524			
21	Low	Native Seed	Turf Rotor	25	0.63	156	2.84	270	27	42140			
22	Low	Tree	Drip Ring	0.06	1.96	4	3.94	121	12	422			
23	Low	Native Seed	Turf Rotor	6	0.62	184	2.84	275	27	50680			
24	Low	Native Seed	Turf Rotor	33	0.57	180	2.84	299	30	53811			
25	Low	Native Seed	Turf Rotor	33	0.57	126	2.84	299	30	37787			
26	Low	Native Seed	Turf Rotor	48	0.65	118	2.84	262	26	30803			
27	Low	Native Seed	Turf Rotor	33	0.57	153	2.84	299	30	45859			
28	Low	Native Seed	Turf Rotor	5	0.55	168	2.84	310	31	51926			
29	Low	Native Seed	Turf Rotor	33	0.57	14	2.84	299	30	4185			
30	Low	Native Seed	Turf Rotor	33	0.57	158	2.84	299	30	47234			
31	Low	Native Seed	Turf Rotor	48	0.65	185.2	2.84	262	26	48551			
32	Low	Native Seed	Turf Rotor	33	0.57	18	2.84	299	30	5381			
33	Low	Native Seed	Turf Rotor	33	0.57	158	2.84	299	30	47234			
34	Low	Native Seed	Turf Rotor	33	0.57	189.6	2.84	299	30	56680			
35	Low	Native Seed	Turf Rotary	MP1000	0.55	11.16	2.84	310	31	3458			
36	Low	Native Seed	Turf Rotor	48	0.65	46	2.84	262	26	12059			
37	Low	Shrub	Area for Dripline	0.04	0.3	23.32	3.94	788	79	18376			
38	Low	Native Seed	Turf Rotor	48	0.65	82.8	2.84	262	26	21706			
39	Low	Native Seed	Turf Rotor	48	0.65	126.4	2.84	262	26	33136			
40	Low	Shrub	Area for Dripline	0.04	0.3	19.66	3.94	788	79	15492			
41								0	0	0			
42								0	0	0			
43								0	0	0			
44								0	0	0			
45								0	0	0			
46								0	0	0			
47								0	0	0			
48								0	0	0			
								Min/Month	**Min/cycle**	**Gallons/Month**			
Total								13200	1320	1263424			
	Make sure all plants within like zones are compatible with each other. Similar water needs, exposure, slope…	Indicate plant type for each zone.	Indicate head make & model. Must be appropriate for specific application and be consistant with Town of Castle Rock standard set of details.	Indicate nozzle radius for spray heads or MPR rotors, nozzle size for all other rotors, and flow rate for drip, dripper line, and bubblers.	Application rate of each zone.	Total gallons per minute for each zone.	Enter the peak inches per month that you want for each zone. The next three columns should auto calculate for you.	This column represents total run time per month during PEAK SEASON. It is supposed to be a maximum number. Water less if conditions allow. Adjust down for early or late season watering.	Every third day watering gives an average of 10 watering days per month. Use cycle and soak programming to avoid runoff. Timing will vary depending on head type, slope, plant material, soil type, and exposure.	Gallons per month per zone and then added for a monthly total. This will only be a theoretical number unless you have actual flow data.			
			Temporary Irrigation										

IRRIGATION CHART POC 2

Contact Information

Registered Landscaper_____
Company Name__Hines Inc._____
Address_1640 Riverside Ave #200, Fort Collins, CO 80524
Phone_(970) 282-1800 Email__Doug@HinesInc.com_____
Registration #_____ Design X r Maintenance r

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle (Nozzle/ Emmitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)			
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*			
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*		Monthly AR	Weekly AR
1	Low	Shrub	Area for Dripline	0.4	0.96	19.56	3.94	246	25	4817	May	1.50	0.375
2	Low	Native Seed	Turf Rotor	3	0.65	84.5	2.84	262	26	22152	June	3.00	0.75
3	Low	Shrub	Area for Dripline	0.4	0.96	15.06	3.94	246	25	3709	July	6.00	1.5
4	Low	Shrub	Area for Dripline	0.4	0.96	12.54	3.94	246	25	3088	August	3.00	0.75
5	Low	Native Seed	Turf Rotor	3	0.55	36.62	2.84	310	31	11346	September	1.50	0.375
6	Low	Native Seed	Turf Rotor	33	0.57	135.8	2.84	299	30	40597	Seasonal Total	15.00	
7	Low	Native Seed	Turf Rotor	43	0.6	97	2.84	284	28	27548			
8	Low	Shrub	Area for Dripline	0.4	0.96	11.58	3.94	246	25	2852			
9	Low	Native Seed	Turf Rotor	48	0.57	124.2	2.84	299	30	37129			
10	Low	Native Seed	Turf Rotor	33	0.62	126.4	2.84	275	27	34740			
11	Low	Tree	Tree Ring	0.6	0.96	22.75	3.94	246	25	5602			
12	Low	Native Seed	Turf Rotor	33	0.6	126.4	2.84	284	28	35898			
13	Low	Native Seed	Turf Rotor	33	0.6	126.4	2.84	284	28	35898			
14	Low	Native Seed	Turf Rotor	33	0.3	126.4	3.94	788	79	99603			
15	Low	Native Seed	Turf Rotor	33	0.65	126.4	2.84	262	26	33136			
16	Low	Shrub	Point Source	1	0.65	10	3.94	364	36	3637			
17	Low	Native Seed	Turf Rotor	33	0.4	126.4	2.84	426	43	53846			
18	Low	Native Seed	Turf Rotary	MP	0.4	74.75	2.84	426	43	31844			
19	Low	Shrub	Area for Dripline	0.4	0.96	11.13	3.94	246	25	2741			
20	Low	Native Seed	Turf Rotor	3	0.57	84	2.84	299	30	25112			
21	Low	Shrub	Point Source	1	0.63	11.13	3.94	375	38	4176			
22	Low	Tree	Tree Ring	0.6	0.96	12.25	3.94	246	25	3017			
23	Low	Native Seed	Turf Rotor	33	0.62	80	2.84	275	27	21987			
24	Low	Native Seed	Turf Rotor	33	0.57	111.6	2.84	299	30	33363			
25	Low	Native Seed	Turf Rotor	33	0.57	54	2.84	299	30	16143			
26	Low	Shrub	Point Source	1	0.65	10	3.94	364	36	3637			
27	Low	Native Seed	Turf Rotor	33	0.57	119	2.84	299	30	35575			
28	Low	Native Seed	Turf Rotary	MP	0.4	25.83	2.84	426	43	11004			
29	Low	Native Seed	Turf Rotary	MP	0.4	9.01	2.84	426	43	3838			
30	Low	Native Seed	Turf Rotor	3	0.57	47	2.84	299	30	14051			
31	Low	Tree	Tree Ring	0.4	0.96	4.25	3.94	246	25	1047			
32	Low	Shrub	Area for Dripline	0.4	0.96	23.12	3.94	246	25	5693			
33	Low	Shrub	Area for Dripline	0.4	0.96	13.66	3.94	246	25	3364			
34	Low	Native Seed	Turf Rotary	MP	0.4	13.44	2.84	426	43	5725			
35	Low	Native Seed	Turf Rotary	MP	0.4	12.88	2.84	426	43	5487			
36	Low	Shrub	Area for Dripline	0.4	0.96	12.51	3.94	246	25	3081			
37	Low	Shrub	Area for Dripline	0.4	0.96	12.07	3.94	246	25	2972			
38	Low	Native Seed	Turf Rotor	3	0.65	66	2.84	262	26	17302			
39	Low	Tree	Tree Ring	0.6	0.96	9.75	2.84	178	18	1731			
40	Low	Native Seed	Turf Rotary	MP	0.3	11.35	2.84	568	57	6447			
41	Low	Shrub	Area for Dripline	0.4	0.96	7.04	3.94	246	25	1734			
42	Low	Shrub	Area for Dripline	0.4	0.96	18.95	3.94	246	25	4666			
43	Low	Native Seed	Turf Rotor	3	0.65	23.5	2.84	262	26	6161			
44	Low	Native Seed	Turf Rotary	MP	0.40	16.31	2.84	426	43	6948			
45	Low	Native Seed	Turf Rotary	MP	0.40	23.74	2.84	426	43	10113			
46	Low	Native Seed	Turf Rotor	33	0.6	111.6	2.84	284	28	31694			
47	Low	Tree	Tree Ring	0.6	0.96	13.25	3.94	246	25	3263			
48	Low	Shrub	Area for Dripline	0.4	0.96	19.3	3.94	246	25	4753			
								Min/Month	**Min/cycle**	**Gallons/Month**			
Total								15121	1512	784262			
	Make sure all plants within like zones are compatible with each other. Similar water needs, exposure, slope…	Indicate plant type for each zone.	Indicate head make & model. Must be appropriate for specific application and be consistant with Town of Castle Rock standard set of details.	Indicate nozzle radius for spray heads or MPR rotors, nozzle size for all other rotors, and flow rate for drip, dripper line, and bubblers.	Application rate of each zone.	Total gallons per minute for each zone.	Enter the peak inches per month that you want for each zone. The next three columns should auto calculate for you.	This column represents total run time per month during PEAK SEASON. It is supposed to be a maximum number. Water less if conditions allow. Adjust down for early or late season watering.	Every third day watering gives an average of 10 watering days per month. Use cycle and soak programming to avoid runoff. Timing will vary depending on head type, slope, plant material, soil type, and exposure.	Gallons per month per zone and then added for a monthly total. This will only be a theoretical number unless you have actual flow data.			
		Temporary Irrigation											
49		Native Seed	Turf Rotor	33	0.6	111.6							
50		Tree	Tree Ring	0.6	0.65	5.5							
51		Native Seed	Turf Rotor	33	0.6	109.5							
52		Native Seed	Turf Rotor	33	0.6	111.6							
53		Native Seed	Turf Rotary	MP	0.4	49.34							

IRRIGATION CHART POC 3

Contact Information

Registered Landscaper_____
Company Name__Hines Inc._____
Address_1640 Riverside Ave #200, Fort Collins, CO 80524
Phone_(970) 282-1800 Email__Doug@HinesInc.com_____
Registration #_____ Design X r Maintenance r

Zone	Hydrozone Low (5"-10") Med. (10"-15") High (>15")	Plant Type (Turf, Native, Shrubs, Perennials, Trees, Annuals, etc.)	Head Type (Rotors, Sprays, Bubblers, Drip, SDI, etc.)	Nozzle (Nozzle/ Emmitter size)	App. Rate (inches/hour)	GPM (Per Zone)	Inches/Month (Peak not to exceed 6"/month or 1.5"/week)	Run Time (Minutes/ Month)	Run Time (Minutes/Day)	Water Usage (Gallons per month)			
Ex: 1	*High*	*Blue Grass*	*RB 1806 SAM PRS*	*15'*	*1.83*	*15*	*6*	*197*		*2951*			
Ex: 2	*low*	*Buffalo Grass*	*Hunter I-20*	*3*	*0.4*	*15*	*1*	*150*	*15*	*2250*		Monthly AR	Weekly AR
1	Low	Shrub	Area for Dripline	0.4	0.96	19.53	3.94	246	25	4809	May	1.50	0.375
2	Low	Native Seed	Turf Rotary	MP	0.4	11.1	2.84	426	43	4729	June	3.00	0.75
3	Low	Tree	Tree Ring	0.6	0.96	7	3.94	246	25	1724	July	6.00	1.5
4	Low	Native Seed	Turf Rotor	33	0.57	119	3.94	415	41	49354	August	3.00	0.75
5	Low	Native Seed	Turf Rotor	3	0.57	124.1	2.84	299	30	37099	September	1.50	0.375
6	Low	Native Seed	Turf Rotor	33	0.57	111.6	2.84	299	30	33363	Seasonal Total	15.00	
7	Low	Shrub	Point Source	1	1	10	2.84	170	17	1704			
8	Low	Native Seed	Turf Rotor	33	0.57	124.1	3.94	415	41	51469			
9	Low	Native Seed	Turf Rotor	33	0.57	119	2.84	299	30	35575			
10	Low	Shrub	Point Source	1	1		2.84	170	17	0			
11	Low	Native Seed	Turf Rotor	33	0.57	80	3.94	415	41	33179			
12	Low	Native Seed	Turf Rotor	3	0.57	44.5	2.84	299	30	13303			
13	Low	Native Seed	Turf Rotor	33	0.6	92.5	2.84	284	28	26270			
14	Low	Native Seed	Turf Rotor	33	0.6	85.1	3.94	394	39	33529			
15	Low	Shrub	Area for Dripline	0.4	0.96	32.9	2.84	178	18	5840			
16	Low	Tree	Tree Ring	0.6	0.96	10.75	3.94	246	25	2647			
17	Low	Native Seed	Turf Rotor	3	0.57	22.5	2.84	299	30	6726			
18	Low	Shrub	Area for Dripline	0.4	0.96	19.57	2.84	178	18	3474			
19	Low	Turf	Turf Rotor	3	0.6	28.5	3.94	394	39	11229			
20	Low	Turf	Turf Rotor	3	0.6	31	3.94	394	39	12214			
21	Low	Tree	Tree Ring	0.6	0.96	26.68	2.84	178	18	4736			
22	Low	Shrub	Area for Dripline	0.4	0.96	20.96	3.94	246	25	5161			
23	Low	Native Seed	Turf Rotor	MP	0.55	19.6	3.94	430	43	8424			
24	Low	Tree	Tree Ring	0.6	0.96	2.75	2.84	178	18	488			
25	Low	Shrub	Area for Dripline	0.4	0.96	19.71	2.84	178	18	3499			
26	Low	Shrub	Area for Dripline	0.4	0.96	14.19	2.84	178	18	2519			
27	Low	Native Seed	Turf Rotor	33	0.57	155.7	3.94	415	41	64575			
28	Low	Native Seed	Turf Rotor	33	0.57	92.5	2.84	299	30	27653			
29	Low	Native Seed	Turf Rotor	MP	0.4	92.6	2.84	426	43	39448			
30	Low	Tree	Tree Ring	0.6	0.65	9.25	2.84	262	26	2425			
31	Low	Tree	Tree Ring	0.6	0.65	5	2.84	262	26	1311			
32	Low	Native Seed	Turf Rotor	33	0.57	126.4	3.94	415	41	52423			
33	Low	Native Seed	Turf Rotor	33	0.57	92.6	3.94	415	41	38405			
34	Low	Native Seed	Turf Rotor	MP	0.4	31.83	3.94	591	59	18812			
35	Low	Native Seed	Turf Rotor	33	0.57	126.4	2.84	299	30	37787			
36	Low	Native Seed	Turf Rotor	33	0.57	92.6	2.84	299	30	27683			
37	Low	Shrub	Area for Dripline	0.4	0.96	12.05	3.94	246	25	2967			
38	Low	Tree	Tree Ring	0.6	0.96	6.25	3.94	246	25	1539			
39	Low	Shrub	Area for Dripline	0.4	0.96	22.1	2.84	178	18	3923			
40	Low	Native Seed	Turf Rotor	33	0.57	109.5	2.84	299	30	32735			
41	Low	Native Seed	Turf Rotor	33	0.57	92.6	2.84	299	30	27683			
42	Low	Native Seed	Turf Rotor	33	0.57	109.5	3.94	415	41	45414			
43	Low	Native Seed	Turf Rotor	33	0.57	92.6	3.94	415	41	38405			
44	Low	Native Seed	Turf Rotor	33	0.57	25.88	2.84	299	30	7737			
45	Low	Native Seed	Turf Rotor	33	0.57	129.1	2.84	299	30	38594			
46	Low	Native Seed	Turf Rotary	MP	0.65	8.6	2.84	262	26	2255			
47	Low	Tree	Tree Ring	0.6	0.96	10.5	2.84	178	18	1864			
48	Low	Native Seed	Turf Rotor	33	0.57	119	3.94	415	41	49354			
49	Low	Native Seed	Turf Rotor	33	0.57	116.7	3.94	415	41	48400			
								Min/Month	**Min/cycle**	**Gallons/Month**			
Total								15098	1510	1004449			
	Make sure all plants within like zones are compatible with each other. Similar water needs, exposure, slope…	Indicate plant type for each zone.	Indicate head make & model. Must be appropriate for specific application and be consistant with Town of Castle Rock standard set of details.	Indicate nozzle radius for spray heads or MPR rotors, nozzle size for all other rotors, and flow rate for drip, dripper line, and bubblers.	Application rate of each zone.	Total gallons per minute for each zone.	Enter the peak inches per month that you want for each zone. The next three columns should auto calculate for you.	This column represents total run time per month during PEAK SEASON. It is supposed to be a maximum number. Water less if conditions allow. Adjust down for early or late season watering.	Every third day watering gives an average of 10 watering days per month. Use cycle and soak programming to avoid runoff. Timing will vary depending on head type, slope, plant material, soil type, and exposure.	Gallons per month per zone and then added for a monthly total. This will only be a theoretical number unless you have actual flow data.			
			Temporary Irrigation										

Irrigation System Hydraulic Worksheet

Project Name:	**Bela Mesa Filing 1 POC 1**	**Date:**	September 9, 2026
Project Location:			
Prepared by:	**Douglas Dickerman**	**Current TOCR Registration #**	
Tap Size	**1.50** "	**Source of Pressure**	City
Static Water Pressure:	**112** psi		
Hydraulic Grade At Zone:		**Company**	Hines Inc.

	Ft. of Copper		Pipe Size (")	K Copper	Friction Loss (from chart)		Flow-GPM	Loss/Gain
Service Line (tap to meter):	8	LF	1.50	K Copper	6.63	/100 FT	40	0.53
Water Meter:			1.50		3.30		40	3.30
Service Line (meter to backflow):	8	LF	1.50	K Copper	6.63	/100 FT	40	0.53
Backflow:			1.50		12		40	12.00
Master Valve:			1 1/2		3.5		40	3.50
Pressure Required at Head:								45
Lateral Allowance:								5.00
Control Valve Allowance:								3.50

Mainline Allowances:

Length of Mainline	Pipe Material	Size		Gals.				
	LF CL200BE	4.000	"@	40	GPM	0.00	/100 FT	0.00
4820	LF CL200BE	4.000	"@	40	GPM-Looped	0.02	/100 FT	0.96

Elevation:

Tap elevation	0	High/Low:	-28	-12.12

Green shading indicates <u>required</u> information you must provide

Total System requirements (PSI) ***62.20***

Available System Pressure (PSI) ***112.00***

Town of Castle Rock provides a minimum of 43 psi

Total irrigated area for tap # POC 1 ***is*** 55,757 (1.28 AC) ***sq. ft.***

Revised 11/3/2026

Irrigation System Hydraulic Worksheet

Project Name:	**Bela Mesa Filing 1 POC 2**	**Date:**	September 9, 2026
Project Location:			
Prepared by:	**Douglas Dickerman**	**Current TOCR Registration #**	
Tap Size	**1.50** "	**Source of Pressure**	City
Static Water Pressure:	**112** psi		
Hydraulic Grade At Zone:		**Company**	Hines Inc.

	Ft. of Copper		Pipe Size (")	K Copper	Friction Loss (from chart)		Flow-GPM	Loss/Gain
Service Line (tap to meter):	8	LF	1.50	K Copper	6.63	/100 FT	40	0.53
Water Meter:			1.50		3.30		40	3.30
Service Line (meter to backflow):	8	LF	1.50	K Copper	6.63	/100 FT	40	0.53
Backflow:			1.50		12		40	12.00
Master Valve:			1 1/2		3.5		40	3.50
Pressure Required at Head:								45
Lateral Allowance:								5.00
Control Valve Allowance:								3.50

Mainline Allowances:

Length of Mainline	Pipe Material	Size		Gals.				
	LF CL200BE	4.000	"@	40	GPM		/100 FT	0.00
4230	LF CL200BE	4.000	"@	40	GPM-Looped	0.02	/100 FT	0.85

Elevation:

Tap elevation	0	High/Low:	28	12.12

Green shading indicates <u>required</u> information you must provide

Total System requirements (PSI) ***86.33***

Available System Pressure (PSI) ***112.00***

Town of Castle Rock provides a minimum of 43 psi

Total irrigated area for tap # POC 2 ***is*** 27,878 (0.64 AC) ***sq. ft.***

Revised 11/3/2026

Irrigation System Hydraulic Worksheet

Project Name:	**Bela Mesa Filing 1 POC 3**	**Date:**	September 9, 2026
Project Location:			
Prepared by:	**Douglas Dickerman**	**Current TOCR Registration #**	
Tap Size	**1.50** "	**Source of Pressure**	City
Static Water Pressure:	**112** psi		
Hydraulic Grade At Zone:		**Company**	Hines Inc.

	Ft. of Copper		Pipe Size (")		K Copper	Friction Loss (from chart)		Flow-GPM	Loss/Gain
Service Line (tap to meter):	8	LF	1.50		K Copper	6.63	/100 FT	40	0.53
Water Meter:			1.50			3.30		40	3.30
Service Line (meter to backflow):	8	LF	1.50		K Copper	6.63	/100 FT	40	0.53
Backflow:			1.50			12		40	12.00
Master Valve:			1 1/2			3.5		40	3.50
Pressure Required at Head:									45
Lateral Allowance:									5.00
Control Valve Allowance:									3.50

Mainline Allowances:

Length of Mainline	Pipe Material	Size		Gals.				
930	LF CL200BE	4.000	"@	40	GPM	0.09	/100 FT	0.84
	LF CL200BE		"@	40	GPM-Looped		/100 FT	0.00

Elevation:

Tap elevation	0	High/Low:	40	17.32

Green shading indicates <u>required</u> information you must provide

Total System requirements (PSI) ***91.52***

Available System Pressure (PSI) ***112.00***

Town of Castle Rock provides a minimum of 43 psi

Total irrigated area for tap # POC 3 ***is*** 13,939 (0.32 AC) ***sq. ft.***

Revised 11/3/2026