

**PRELIMINARY UTILITY REPORT
FOR
LOTS 6-A-1A, 6-A-1B, AND 6-A-1C,
THE MEADOWS FILING NO. 17, AREA NO. 4,
LIMELIGHT CENTER AT THE MEADOWS**

Prepared for:

WESTBRIDGE DEVELOPMENT
Edward Franke

Prepared by:



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January 9, 2026

RLEG NO. 240701
TOWN NO. SDP25-0024

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CERTIFICATIONS

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.

Kevin S. Roth

Registered Professional Engineer

State of Colorado No. 35704

OWNER/APPLICANT 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

Date

1. GENERAL LOCATION AND DESCRIPTION

A. Location

Limelight Center at The Meadows (herein referred to as the Project) is located on Lots 6-A-1A, 6-A-1B, and 6-A-1C, The Meadows Filing No. 17, Area No. 4. The Project is proposed as mixed-use commercial with two, one-story buildings being proposed.

The Project is situated in the northwest quarter of Section 34, Township 7 South, Range 67 West of the Sixth Principal Meridian. The site is bound on the north by Meadows Parkway and the Atchison, Topeka, and Santa Fe Railroad, on the south by Lot 5 of The Meadows Filing No. 17, Area No. 4, which is currently developed as an AMC Theaters, on the east by the Atchison, Topeka, and Santa Fe Railroad, and on the west by Lot 6B-1 of The Meadows Filing No. 17, Area No. 4, which has been developed as a single story commercial strip mall. The project and the neighboring areas are designated as a COI planned development type per the Meadows Final P.D. Site Plan and The Meadows Fourth Amendment.

The Project site is approximately 4.25 acres spanning across the three lots of Lot 6-A-1A, Lot 6-A-1B, and Lot 6-A-1C. These three lots are a part of The Meadows Filing 17 Lot 5 and 6 Final Utility Report, dated February 15, 2005, as well as the subsequent Addendum to that report, dated May 9, 2006, and the Final Utility Report for Lot 6A, The Meadows Filing No. 17, dated September 13, 2006.

This Addendum to the Final Utility Report will quantify the water and sanitary sewer demands and flows associated with the development of Lots 6-A-1A, 6-A-1B, and 6-A-1C as The Limelight Center at The Meadows.

B. Description of Property and Land Use

The Project is located southeast of Meadows Parkway and northeast of Limelight Avenue and is currently vacant, undeveloped land. The proposed improvements will include two, one-story commercial buildings, parking lots, interior drive/fire lanes with three points of access to the site, interior sidewalks, providing pedestrian access, associated landscaping, a looped 8-inch water main with domestic and fire service stubs for the buildings as well as two new fire hydrants, an 8-inch sanitary sewer main with service stubs to the buildings, and storm drainage

improvements including inlets and a 15-inch storm main. The proposed construction site is approximately 4.25 acres. The total number of Single Family Equivalents (SFEs) that the proposed water system will serve is 67.5. The final assigned project SFEs will be determined at the time of permitting based on meter sizes.

Existing utilities are found on and adjacent to the Property. They include:

- An onsite, existing 8-inch water main that is located along the south property line of the Project with an existing fire hydrant located on the property.
- An onsite, existing 8-inch Redhawk reclaimed water main that is located along the northeast property line of the Project.
- An onsite, existing 18-inch storm sewer running along the south property line of the Project, near the existing 8-inch water main.
- An offsite, existing 8-inch sanitary sewer main that runs along the south property line, located on Lot 5 of The Meadows Filing No. 17, Area No. 4. This main has an existing 8-inch stub to the Project.

Existing and proposed utility easements and tracts are shown on the Overall Utility Plans showing the type and width and will be provided at time of either platting or at the time of final design/construction documents, in accordance with Town of Castle Rock standards regarding location and size of easements and tracts.

2. CALCULATED WATER DEMANDS

Average Day Demand (ADD), Max Day Demand (MDD), and Peak Hour Demand (PHD) calculations can be found in the Calculated Water Demands spreadsheet in Appendix B. All calculations were made in accordance with Chapter 4 of the *Town of Castle Rock (TOCR) Water System Design 2018 Criteria Manual*. The proposed water main will serve the two proposed buildings through domestic and fire service lines as well as two proposed onsite fire hydrants. An estimation of the required fire flow has been determined to be 1,500 gpm for a flow duration of 2 hours. This estimation was achieved using the conceptual building square footage, the assumption that the buildings will be fully sprinklered, and the IFC Table

B105.1(2). The type of construction assumed for this estimation was Type IIIB. The final required fire flow will be determined at final design.

A. Average Daily Demand (ADD)

The land uses for the Project are classified as Restaurant and Retail/Office. Demands of 3 gallons per day per square foot for Restaurant and 0.2 gallons per day per square foot for Retail/Office were used for calculations. These demands were obtained from Section 4.4.1 of the *Town of Castle Rock Water System Design 2018 Criteria Manual*. ADDs are sub-totaled by land use for each building as a flow rate in gallons per minute (GPM), gallons per day (GPD), and as an average annual supply in acre-feet per year (AF/YR).

LAND USE	QUANTITY	AVERAGE DAILY DEMAND (ADD)		
		(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	17.24	24,819	27.80
Retail/Offices (Building A)	3,499 sf	0.49	700	0.78
Retail/Offices (Building B)	7,500 sf	1.04	1,500	1.68
TOTAL		18.76	27,019	30.26

B. Max Daily Demand (MDD)

With a 2.5 peaking factor applied to the ADD, the MDD's are as follows:

LAND USE	QUANTITY	MAX DAILY DEMAND (MDD)		
		(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	43.09	62,048	69.50
Retail/Offices (Building A)	3,499 sf	1.21	1,750	1.96
Retail/Offices (Building B)	7,500 sf	2.60	3,750	4.20
TOTAL		46.91	67,547	75.66

The required storage volume based on MDD's and fire flows necessary to serve the development is 247,550 gallons. The fire flow used for this calculation is as discussed above. See Appendix B for demand and storage calculations.

STORAGE	MDD ⁽¹⁾ (gpm)	FIRE FLOW ⁽²⁾ (gpm)	TIME (hr)	STORAGE VOLUME ⁽³⁾ (gallons)
MDD	46.91		24	67,550
Fire Flow		1500	2	180,000
TOTAL				247,550

REFERENCE: *Town of Castle Rock Water System Design Criteria Manual*, Dec. 2018. Section 4.4.2

NOTES: (1) MDD = Maximum Day Demands = see spreadsheet: *Calculated Demands - Water*
 (2) Estimated Largest Potential Fire Flow Calculated From IFC
 (3) Storage Volume = MDD Storage + Fire Flow Storage = (MDD*60min*24hr) + (FF*60min*2hr)

C. Peak Hourly Demand (PHD)

With a 5.5 peaking factor applied to the ADD, the PHD's are as follows:

LAND USE	QUANTITY	PEAK HOURLY DEMAND (PHD)		
		(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	94.79	136,505	152.90
Retail/Offices (Building A)	3,499 sf	2.67	3,849	4.31
Retail/Offices (Building B)	7,500 sf	5.73	8,250	9.24
TOTAL		103.20	148,603	166.46

3. EXISTING WATER SYSTEM

A. Existing Water Distribution System

An existing 8-inch water main, located on the south side of the Project site, running parallel to the southern property line will serve this site. The Overall Utility Plan can be found in Appendix A. No known shortcomings or bottlenecks associated with the existing distribution system will impact the Town's ability to adequately deliver fire flows and meet the required demand conditions. This project is served by the Meadows Yellow water pressure zone by tanks 12A and 12B with a capacity of 10 MG. Developed site elevations range from 6120 to 6125.

Pressure Zone Designation	Max HGL Elev.	20% HGL	Top Elev. Served	Low Elev. Served
2 (Yellow)	6352	6334	6230	6065

Table from Section 4.4.3.1 Operating Pressures and Pressure Zone Characteristics from *Town of Castle Rock Water System Design Criteria Manual*, Dec 2018.

4. PROPOSED WATER SYSTEM

A. Proposed Water Distribution System

A proposed 8-inch PVC water main loop will run through the drive aisles of the Project site and tie into the existing 8-inch water main on the south side of the Project. The proposed water main shall serve the proposed two buildings of the Project on Lots 6-A-1A, 6-A-1B, and 6-A-1C. Two 2-inch domestic services, one 1-inch irrigation service, two 4-inch fire services, and two fire hydrants are currently being proposed. Meters will be set for these service taps within associated easements located within the parking lot and sidewalks of the proposed buildings. Meter size will be based on water supply fixture units and irrigation area at the time of building permitting.

B. Proposed Water Supply Facilities

No pump stations, wells, PRVs, storage reservoirs, purification facilities, or other elements will be required to adequately serve the development and its requirements. Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer.

C. Water Facilities Land Dedication Requirements

Water Facilities Land Dedication requirements are pursuant to Section 16.08.040 of the Town's *Municipal Code*. The code states that for Retail, office, light industrial and other commercial land uses, 0.0123 acres/acre is required.

5. PROPOSED WATER SYSTEM ANALYSIS

A. Criteria

The Town of Castle Rock criteria used for the analysis includes the following per Section 4.4.3 of the TOCR 2018 water manual:

Min. static pressure with zero demand (20% Tank Stage – Dynamic HGL) = 43 psi

Max. static pressure with zero demand (100% Tank Stage – Normal HGL) = 125 psi

Minimum dynamic pressures (based on 20% Tank Stage) for:

Max. Daily Demand + Fire Flow = 20 psi

Peak Hour Demand = 35 psi

Maximum velocity for:

Peak Hour Demands = 10 ft/sec

Max. Day Demands = 5 ft/sec

Max. Day + Fire Flow = 15 ft/sec

Hazen Williams ‘C’ factor (PVC) = 120

B. Analysis

The demands for the water system have been recalculated based on the proposed development. No additional area has been added to the system. These calculations can be found in Appendix B. Based on the TOCR criteria and the calculated water demands, the SFE’s attributed to the Project is 67.5. The proposed water system conforms to the *Town of Castle Rock Water System Design Criteria Manual, Dec. 2018*.

The following analysis/scenarios of the water system are included in Appendix E:

- Model #1 – Normal HGL (100% Static)
- Model #2 – Dynamic/Fire HGL (20% Static)
- Model #3 - Average Daily Demand (ADD)
- Model #4 – Max Daily Demand (MDD)

- Model #5 – Peak Hour Demand (PHD)
- Model #6 – MDD + Building A Fire (FH-1)
- Model #7 – MDD + Building A Fire (Existing EX-FH-1)
- Model #8 - MDD + Building B Fire (FH-2)
- Model #9 - MDD + Building A Fire + P-11 Pipe Out
- Model #10 - MDD + Building A Fire + P-5 Pipe Out

The water system analysis was performed using EPANET 2.2. The water loop is sized to convey water for the average day, max day + fire flow and peak hour. The proposed water system conforms to the *Town of Castle Rock Water System Design Criteria Manual, Dec. 2018*.

6. CALCULATED WASTEWATER FLOWS

Average Daily Wastewater Flows (ADF), Peaking Factor, and Peak Design Flow (PDF) calculations can be found in the *Calculated Wastewater Flows* spreadsheet in Appendix C. All calculations were made in accordance with Chapter 4 of the *Town of Castle Rock Wastewater Collection System Design Criteria Manual 2018 Edition*.

A. Average Day Wastewater (ADF)

The land uses for the project are classified as Restaurant and Retail/Office. Demands of 1.5 gallons per day per square foot for Restaurant and 0.1 gallons per day per square foot for Retail/Office were used for calculations. These demands were obtained from Section 4.4.1 of the *Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual*. ADFs are subtotaled by land use for each building as a flow rate in gallons per day (GPD), gallons per minute (GPM), and cubic feet per second (CFS).

LAND USE	QUANTITY	AVERAGE DAY WASTEWATER (ADF)		
		(GPM)	(GPD)	(CFS)
Restaurant (Building A)	8,273 sf	8.62	12,410	0.0192
Retail/Offices (Building A)	3,499 sf	0.24	350	0.0005
Retail/Offices (Building B)	7,500 sf	0.52	750	0.0012
TOTAL		8.62	12,410	0.019

B. Peaking Factor and Inflow

A maximum Peaking Factor of 5 was used for this project and Inflow and Infiltration was applied at a rate of $(0.1 * \text{ADF})$ per *Castle Rock Wastewater Collection System Design 2018 Criteria Manual*.

C. Peak Design Flows (PDF)

With a Peaking Factor of 5 applied to the ADF and with Inflow and Infiltration added to the Peak Flow, the resulting PDF's are as follows:

LAND USE	QUANTITY	PEAK DESIGN FLOW (PDF)		
		(GPM)	(GPD)	(CFS)
Restaurant (Building A)	8,273 sf	43.95	63,288	0.098
Retail/Offices (Building A)	3,499 sf	1.24	1,784	0.003
Retail/Offices (Building B)	7,500 sf	2.66	3,825	0.006
TOTAL		47.85	68,898	0.107

Note: PDF values include I&I added to ADF per TOCR 2018 Wastewater Collection Criteria Section 4.4.1.3 Peak Design Flow Rate.

7. EXISTING WASTEWATER SYSTEM

A. Existing Wastewater Collection System

An existing 8-inch PVC sanitary transmission line runs through the property to the south of the Project, on Lot 5 of The Meadows Filing No. 17, Area No. 4, with an existing 8-inch stub to the Project site (See Appendix A for GIS utility map of existing utilities).

8. PROPOSED WASTEWATER SYSTEM

A. Proposed Wastewater Collection System

An 8-inch PVC transmission line is proposed to connect to the existing 8-inch sanitary stub via a proposed manhole and extend northwest through proposed parking lot of the Project site. The proposed sanitary transmission line shall serve the proposed two buildings of the Project on Lots 6-A-1A, 6-A-1B, and 6-A-1C. Two 6-inch sanitary service lines are proposed to connect the two buildings to the proposed 8-inch transmission line.

B. Proposed Wastewater Facilities

A grease interceptor for Building A is being proposed as this building is planned to be part restaurant. This grease interceptor will be analyzed and sized at time of tenant lease out in accordance with applicable Plum Creek Water Reclamation Authority (PCWRA) criteria. No lift stations, force mains, pretreatment facilities, or other elements are proposed to adequately serve the development. Influent flow from the Project is directed by the existing sanitary sewer main to the Plum Creek Wastewater Authority treatment plant, located north of the Project.

C. Wastewater Facilities Land Dedication Requirements

No land dedication requirements for wastewater facilities were found in the Town's *Municipal Code*.

9. PROPOSED WASTEWATER SYSTEM ANALYSIS

Sanitary sewer demands from table 4.4.1.1 of the *Town of Castle Rock Wastewater Collection System Design 2018 Criteria Manual* have been used to calculate proposed flows instead of the typical fixture counts. Currently, there are no building interior designs, therefore, fixture counts are not available. Based on the calculations, the Project will produce 9.38 gpm (0.019 cfs) of average flow. The peak design flow for the Project has been calculated to be 47.85 gpm (0.107 cfs). This peak design flow was used for hydraulic calculations. Both the average and peak flows are an increase from the flows identified in the Lot 5 and 6 Final Utility Report. However, hydraulic calculations show that the existing line downstream of the Project has capacity for this increased flow. See Appendix C for the demand calculations and hydraulic calculations. The proposed wastewater system conforms

to the *Town of Castle Rock Wastewater Collection System Design 2018 Criteria Manual*.

Any future development of the existing wastewater infrastructure needed to serve this site is the responsibility of the developer.

10. POTENTIAL PERMITTING REQUIREMENTS

This project is not anticipating any permits other than Town issued construction permits (building, right of way, etc.). Future permitting may include Plum Creek Water Reclamation Authority (PCWRA) for commercial developments.

11. CONCLUSION

The proposed utility demands and calculations presented herein for the Project are in conformance with and based upon the current Town of Castle Rock criteria. The proposed water and sanitary sewer as included in the Overall Utility Plan (see Appendix A) coincide with the demands set forth in the reports titled Amendment to the Final Utility Report for The Meadows Filing No. 17 – Lot 5 and 6; prepared by CVL Consultants of Colorado, Inc., May 9, 2006, and Final Utility Report for Lot 6A, The Meadows Filing No. 17; prepared by CVL Consultants of Colorado, Inc., September 13, 2006. Below is a comparison of the water and wastewater demands presented in these previous reports and the proposed demands presented herein:

WATER DEMANDS

	ADD (GPM)	MDD (GPM)	PHD (GPM)	SFE
PREVIOUS REPORT*	4.6	12.3	20.8	17
PROPOSED	18.8	46.9	103.2	67.5

*Amendment to the Final Utility Report for The Meadows Filing No. 17 – Lot 5 and 6; prepared by CVL Consultants of Colorado, Inc., May 9, 2006

WASTEWATER DEMANDS

	ADF (GPM)	PDF (GPM)	SFE
PREVIOUS REPORT*	1.6	8.0	17
PROPOSED	9.4	47.9	67.5

*Final Utility Report for Lot 6A, The Meadows Filing No. 17; prepared by CVL Consultants of Colorado, Inc., September 13, 2006

These comparison tables show an increase in demand for water and wastewater. The reason for this increase is primarily due to the change in how water and wastewater demands are

calculated since the previous reports were created. The analyses provided within this report show that there is capacity for the proposed water and wastewater demands.

The Project is proposing an 8-inch PVC water main loop to connect to the existing 8-inch PVC water main running through the south side of the subject property. This is being done for the purpose of providing domestic water service to the two proposed buildings of the development as well as to provide fire protection through fire service lines and fire hydrants.

The Project is also proposing an 8-inch sanitary line extension to connect to the existing 8-inch stub located on the south end of the site. This is being done for the purpose of providing sanitary service to the two proposed buildings of the development.

Neither the sanitary extension nor water loop connection for the Project will affect the system analysis presented in the previously approved reports.

REFERENCES

Amendment to the Final Utility Report for The Meadows Filing No. 17 – Lot 5 and 6; CVL Consultants of Colorado, Inc., May 9, 2006.

Final Utility Report for Lot 6A, The Meadows Filing No. 17; CVL Consultants of Colorado, Inc., September 13, 2006.

Final Utility Report for The Meadows Filing No. 17 – Lot 5 and 6; CVL Consultants of Colorado, Inc., February 15, 2005.

General Utility Map; Town of Castle Rock, Utilities Department, October 12, 2024.

International Fire Code 2021.

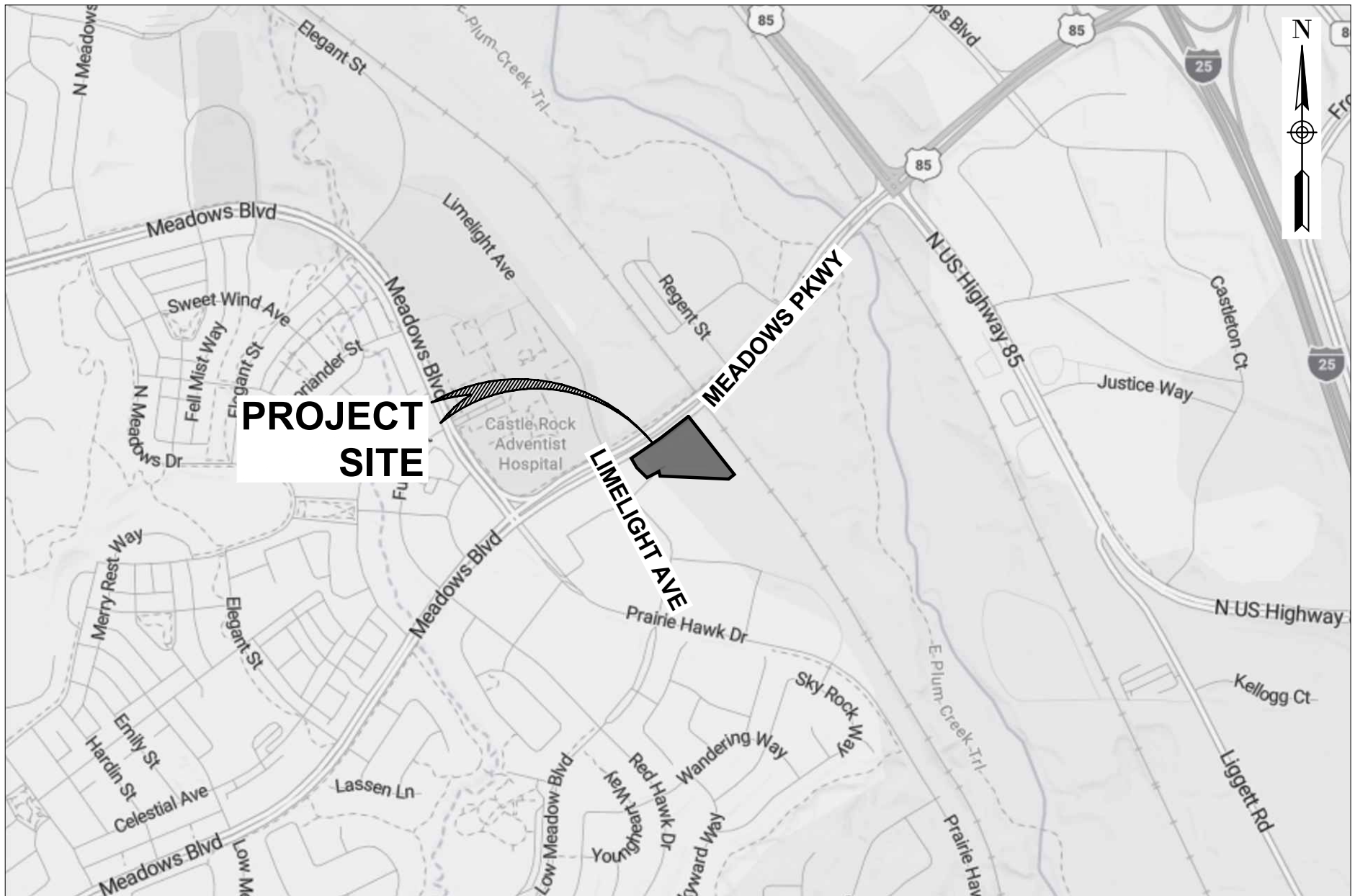
Wastewater Collection System Design Criteria Manual; Town of Castle Rock, December 4, 2018.

Water System Design Criteria Manual; Town of Castle Rock, December 4, 2018.

APPENDIX A – MAPS AND PLANS

VICINITY MAP

SCALE: 1" = 1000'





1 inch = 100 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) 733-6900. Copyright 2024, Town of Castle Rock Utilities Mapping.

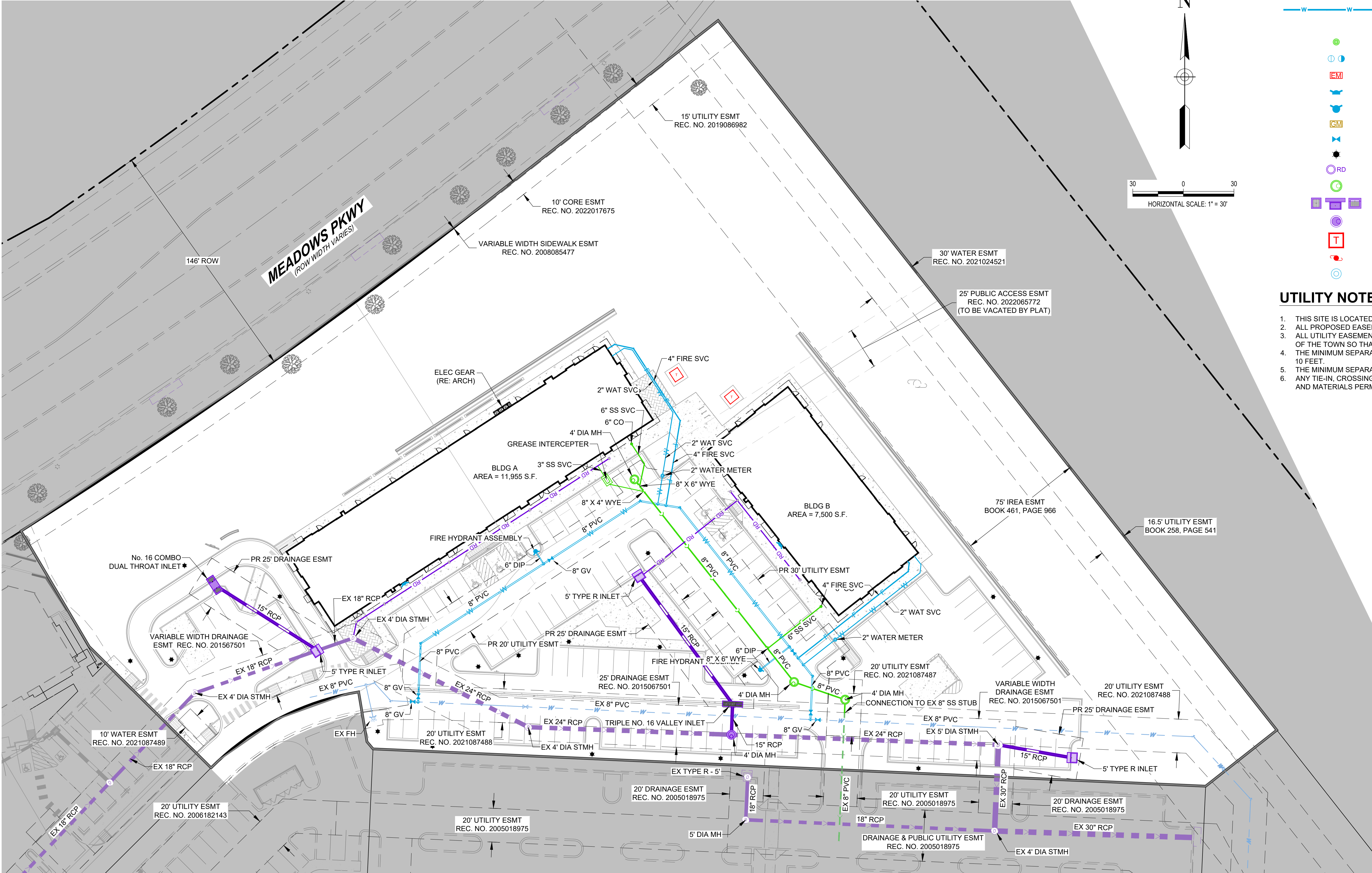
**CASTLE ROCK
UTILITIES MAP
(INTERNAL USE ONLY)**

Date: 10/12/2024

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SITE DEVELOPMENT PLAN
LOTS 6-A-1A, 6-A-1B, & 6-A-1C, MEADOWS 17,
AREA 4, AMD 14

LOCATED IN THE NORTHEAST QUARTER OF SECTION 34,
TOWNSHIP 7 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS,
STATE OF COLORADO



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

LINETYPE LEGEND

PROPOSED	EXISTING
CABLE TV	CABLE TV
ELECTRIC - UNDERGROUND	ELECTRIC - UNDERGROUND
FIBER OPTIC LINE	FIBER OPTIC LINE
FIRE SERVICE	FIRE SERVICE
GAS LINE	GAS LINE
IRRIGATION	IRRIGATION
OVERHEAD POWER	OVERHEAD POWER
ROOF DRAIN	ROOF DRAIN
SANITARY SEWER	SANITARY SEWER
STORM SEWER	STORM SEWER
TELEPHONE	TELEPHONE
UNDERDRAIN	UNDERDRAIN
WATER LINE	WATER LINE

SYMBOLS LEGEND

PROPOSED	EXISTING
CLEANOUT	CLEANOUT
CURB STOP/ CORP STOP	CURB STOP/ CORP STOP
ELECTRIC METER	ELECTRIC METER
FIRE DEPARTMENT CONNECTION	FIRE DEPARTMENT CONNECTION
FIRE HYDRANT	FIRE HYDRANT
GAS METER	GAS METER
GATE VALVE	GATE VALVE
LIGHT POLE	LIGHT POLE
ROOF DRAIN	ROOF DRAIN
SANITARY MANHOLE	SANITARY MANHOLE
STORM INLET	STORM INLET
STORM MANHOLE	STORM MANHOLE
TRANSFORMER	TRANSFORMER
UTILITY POLE	UTILITY POLE
WATER METER	WATER METER

ROTH LANG
ENGINEERING GROUP, LLC
6855 S. HAVANA STREET, SUITE 600
CENTENNIAL, CO 80112
PHONE: 303-841-9365

OVERALL UTILITY PLAN
SHEET NUMBER:
4
4 of 14

APPENDIX B – WATER DEMANDS AND STORAGE



CALCULATED DEMANDS - WATER

LIMELIGHT CENTER AT THE MEADOWS
 LOTS 6-A-1A AND 6-A-1B
 THE MEADOWS FILING NO. 17, AREA NO. 4
 8/21/2025
 JJH

LAND USE	QUANTITY	ADD/UNIT ⁽¹⁾	SFEs/UNIT ⁽²⁾	SFE's	FACTORS ⁽³⁾		ESTIMATED DEMANDS (GPD)		
					MDD FACTOR	PHD FACTOR	ADD ⁽⁴⁾	MDD ⁽⁵⁾	PHD ⁽⁶⁾
Restaurant (Building A)	8,273 sf	3.0 gpd/sf	0.0075 /sf	62.0	2.5	5.5	24,819	62,048	136,505
Retail/Offices (Building A)	3,499 sf	0.2 gpd/sf	0.0005 /sf	1.7	2.5	5.5	700	1,750	3,849
Retail/Offices (Building B)	7,500 sf	0.2 gpd/sf	0.0005 /sf	3.8	2.5	5.5	1,500	3,750	8,250
TOTAL				67.5			27,019	67,547	148,603

REFERENCE: Town of Castle Rock Water System Design Criteria Manual, December 2018

- NOTES:
- ⁽¹⁾ ADD = Average Daily Demand = 600 gpm Reference Table 4.4.1
 - ⁽²⁾ SFE = Single Family Equivalent = Reference Table 4.4.1
 - ⁽³⁾ Reference Section 4.4.1.2
 - ⁽⁴⁾ ADD includes irrigation demands for specified land use.
 - ⁽⁵⁾ MDD = Maximum Day Demands = ADD * MDD Factor + Irrigation ADD
 - ⁽⁶⁾ PHD = Peak Hour Demand = ADD * PHD Factor + Irrigation ADD



CALCULATE DEMANDS - WATER

LIMELIGHT CENTER AT THE MEADOWS
LOTS 6-A-1A AND 6-A-1B
THE MEADOWS FILING NO. 17, AREA NO. 4
8/21/2025
JJH

		AVERAGE DAILY DEMAND (ADD)		
LAND USE	QUANTITY	(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	17.24	24,819	27.80
Retail/Offices (Building A)	3,499 sf	0.49	700	0.78
Retail/Offices (Building B)	7,500 sf	1.04	1,500	1.68
TOTAL		18.76	27,019	30.26

		MAX DAILY DEMAND (MDD)		
LAND USE	QUANTITY	(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	43.09	62,048	69.50
Retail/Offices (Building A)	3,499 sf	1.21	1,750	1.96
Retail/Offices (Building B)	7,500 sf	2.60	3,750	4.20
TOTAL		46.91	67,547	75.66

		PEAK HOURLY DEMAND (PHD)		
LAND USE	QUANTITY	(GPM)	(GPD)	(AF/YR)
Restaurant (Building A)	8,273 sf	94.79	136,505	152.90
Retail/Offices (Building A)	3,499 sf	2.67	3,849	4.31
Retail/Offices (Building B)	7,500 sf	5.73	8,250	9.24
TOTAL		103.20	148,603	166.46



LIMELIGHT CENTER AT THE MEADOWS
LOTS 6-A-1A AND 6-A-1B
THE MEADOWS FILING NO. 17, AREA NO. 4
8/21/2025
JJH

STORAGE REQUIREMENTS - WATER

STORAGE	MDD ⁽¹⁾ (gpm)	FIRE FLOW ⁽²⁾ (gpm)	TIME (hr)	STORAGE VOLUME ⁽³⁾ (gallons)
MDD	46.91		24	67,550
Fire Flow		1,500	2	180,000
TOTAL				247,550

REFERENCE: Town of Castle Rock Water System Design Criteria Manual, Dec. 2018. Section 4.4.2

NOTES:

- ⁽¹⁾ MDD = Maximum Day Demands = see spreadsheet: *Calculated Demands - Water*
- ⁽²⁾ Estimated Largest Potential Fire Flow Calculated From IFC
- ⁽³⁾ Storage Volume = MDD Storage + Fire Flow Storage = (MDD*60min*24hr) + (FF*60min*2hr)



LIMELIGHT CENTER AT THE MEADOWS
LOTS 6-A-1A AND 6-A-1B
THE MEADOWS FILING NO. 17, AREA NO. 4
8/21/2025
JJH

Operating Pressures and Pressure Zone Characteristics

Pressure Zone Designation	Max HGL Elev.	20% HGL	Top Elev. Served	Low Elev. Served
2 (Yellow)	6352	6334	6230	6065

REFERENCE: Town of Castle Rock Water System Design Criteria Manual, Dec. 2018. Section 4.4.3.1

APPENDIX C – WASTEWATER DEMANDS AND HYDRAULIC CALCULATIONS



CALCULATED FLOWS - WASTEWATER

LIMELIGHT CENTER AT THE MEADOWS
 LOTS 6-A-1A AND 6-A-1B
 THE MEADOWS FILING NO. 17, AREA NO. 4
 1/8/2026
 JJH

LAND USE	QUANTITY	ADF/UNIT ⁽¹⁾	SFEs/UNIT ⁽²⁾	SFE's	FACTORS		ESTIMATED FLOW (MGD)	
					PF ⁽³⁾	I/I ⁽⁴⁾	ADF ⁽⁵⁾	PDF ⁽⁶⁾
Restaurant (Building A)	8,273 sf	1.5 gpd/sf	0.0075 /sf	62.0	5.0	0.00124	0.0124	0.0633
Retail/Offices (Building A)	3,499 sf	0.1 gpd/sf	0.0005 /sf	1.7	5.0	0.00003	0.0003	0.0018
Retail/Offices (Building B)	7,500 sf	0.1 gpd/sf	0.0005 /sf	3.8	5.0	0.00008	0.0008	0.0038
TOTALS				67.5			0.0135	0.0689

REFERENCE: Town of Castle Rock Wastewater Collection System Design Criteria Manual, Dec. 2018

NOTES:

⁽¹⁾ ADF = Average Daily Flow = Reference Table 4.4.1.1

⁽²⁾ SFE = Single Family Equivalent = Reference Table 4.4.1.1

⁽³⁾ PF = Peaking Factor = $(3.65) * (ADF^{-0.168})$ or Max of 5.0

⁽⁴⁾ I/I = Infiltration and Inflow = $(0.1 * ADF)$

⁽⁵⁾ ADF represents winter or dry weather with no allowance for infiltration or inflow

⁽⁶⁾ PDF = Peak Design Flow = $ADF * Peaking Factor + I/I$



CALCULATED FLOWS - WASTEWATER

LIMELIGHT CENTER AT THE MEADOWS
LOTS 6-A-1A AND 6-A-1B
THE MEADOWS FILING NO. 17, AREA NO. 4
1/8/2026
JJH

LAND USE	QUANTITY	AVERAGE DAY WASTEWATER (ADF)		
		(GPM)	(GPD)	(CFS)
Restaurant (Building A)	8,273 sf	8.62	12,410	0.0192
Retail/Offices (Building A)	3,499 sf	0.24	350	0.0005
Retail/Offices (Building B)	7,500 sf	0.52	750	0.0012
TOTAL		9.38	12,410	0.019

LAND USE	QUANTITY	PEAK DESIGN FLOW (PDF)		
		(GPM)	(GPD)	(CFS)
Restaurant (Building A)	8,273 sf	43.95	63,288	0.098
Retail/Offices (Building A)	3,499 sf	1.24	1,784	0.003
Retail/Offices (Building B)	7,500 sf	2.66	3,825	0.006
TOTAL		47.85	68,898	0.107

Note: PDF values include I&I added to ADF per TOCR 2018 Wastewater Collection Criteria
Section 4.4.1.3 Peak Design Flow Rate

Channel Report

Proposed Onsite Pipe Section (Proposed Peak Flow Only)

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 10.00

Slope (%) = 1.00

N-Value = 0.011

Calculations

Compute by:
Known Q (cfs) Known Q = 0.11

Proposed Peak Flow

Highlighted

Depth (ft) = 0.13

Q (cfs) = 0.110

Area (sqft) = 0.05

Velocity (ft/s) = 2.27

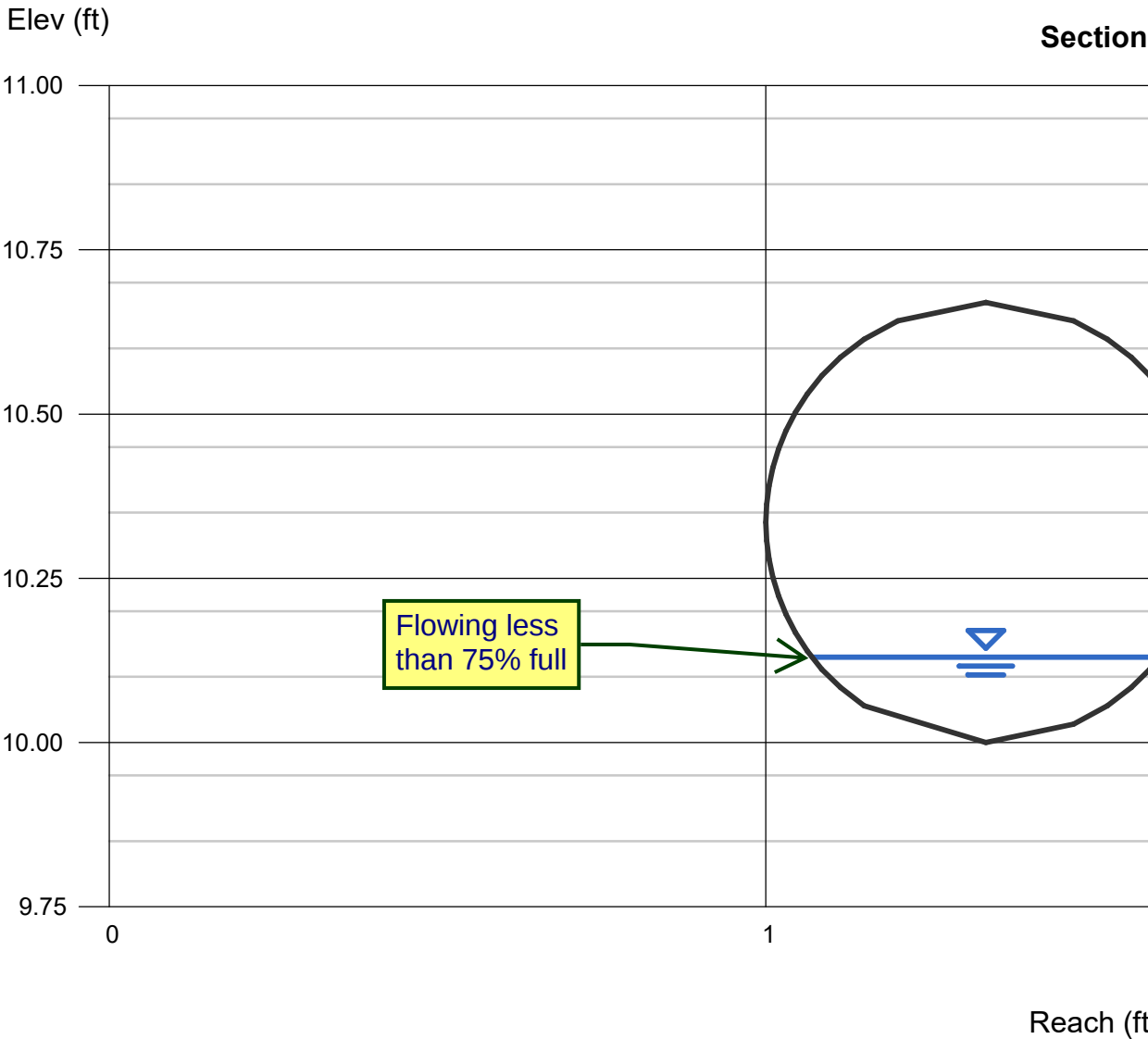
Wetted Perim (ft) = 0.61

Crit Depth, Yc (ft) = 0.15

Top Width (ft) = 0.53

EGL (ft) = 0.21

Velocity
> 2 ft/s



Thursday, Nov 21 2024

Flowing less than 75% full

Channel Report

Exsiting Offsite Pipe Section - Downstream of Proposed Inflows (Existing + Proposed P

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 10.00

Slope (%) = 0.50

N-Value = 0.011

Conservative assumption of downstream existing pipe slope.

Highlighted

Depth (ft) = 0.22

Q (cfs) = 0.220

Area (sqft) = 0.10

Velocity (ft/s) = 2.16

Wetted Perim (ft) = 0.82

Crit Depth, Yc (ft) = 0.22

Top Width (ft) = 0.63

EGL (ft) = 0.29

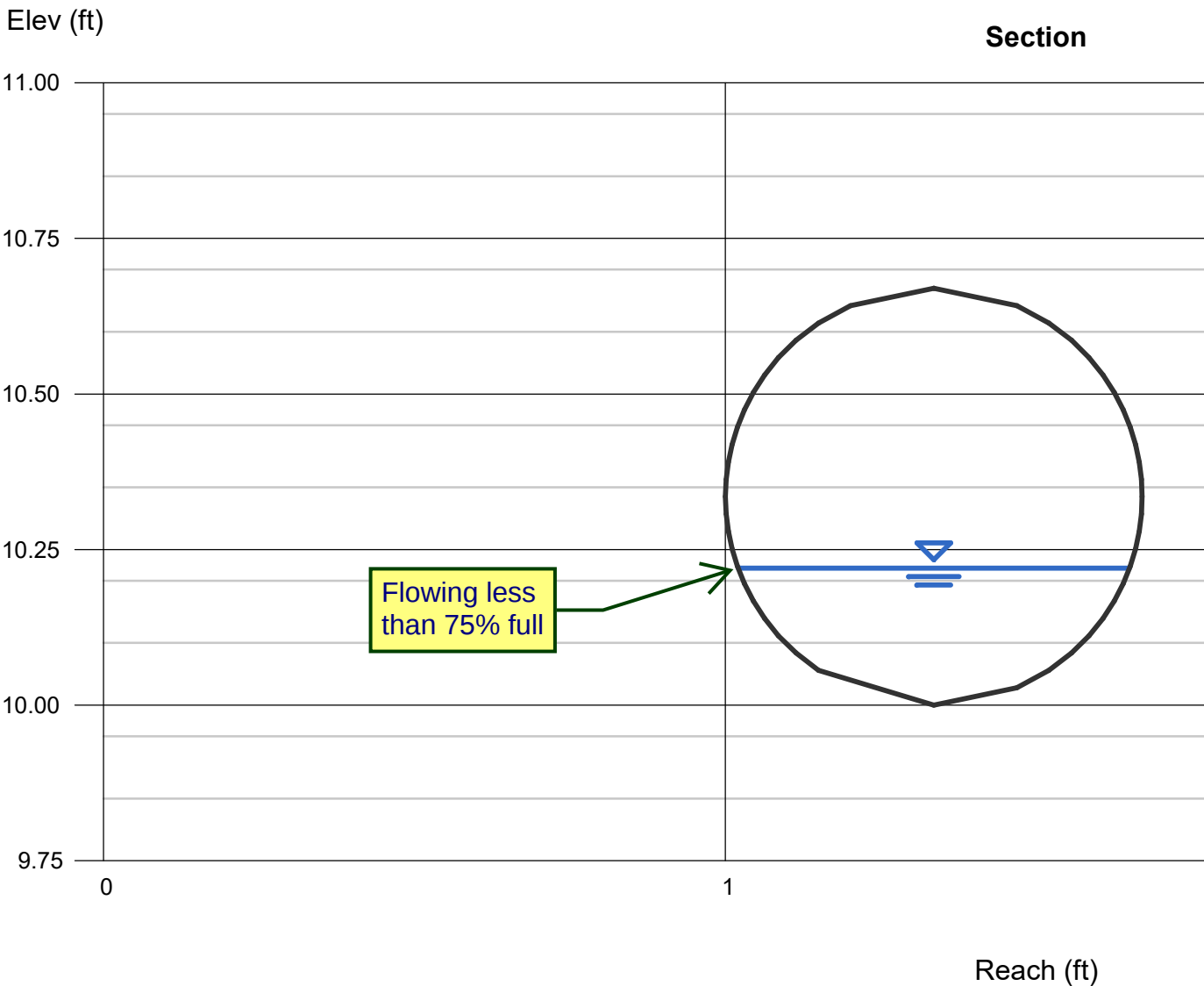
Velocity > 2 ft/s

Calculations

Compute by: Known Q

Known Q (cfs) = 0.22

Existing + Proposed Peak Flows



**APPENDIX D – EXCERPTS OF FINAL UTILITY REPORT FOR THE MEADOWS
FILING NO. 17, LOT 5 & LOT 6 AND FINAL UTILITY REPORT FOR LOT 6A, THE
MEADOWS FILING NO. 17**

**ADDENDUM TO THE
FINAL UTILITY REPORT**

For

**THE MEADOWS FILING NO. 17
LOT 5 & LOT 6
TOWN OF CASTLE ROCK**

Prepared for:

Castle Rock Development Company
3033 E. First Avenue Ste. 410
Denver, CO 80206

Prepared by:

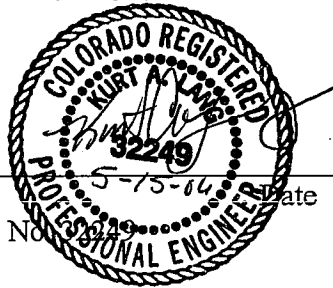
CVL Consultants of Colorado, Inc.
7901 E. Belleview Ave, Suite 150
Englewood, CO 80111
Phone (720) 482-9526

March 20, 2006
Revised: May 9, 2006

ADDENDUM TO THE FINAL UTILITY REPORT
Meadows Filing 17 Lot S & Lot 6
May 9, 2006

Engineer's Statement:

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



Kurt A. Lang
Colorado P.E. No. 32249 Date

Owner's/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.

5/12/06
Castle Rock Development Date

Town of Castle Rock Approvals:

Utilities Department

Date P. Clark

ACCEPTED

DATE 5/19/06

Development Services Director

Date

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Introduction

Filing 17 is a part of a 4000+ acre planned community named "The Meadows" located in the Town of Castle Rock west of Interstate 25 and north of Wolfensberger Road. Lot 5 and Lot 6 are located within the south quadrant of Filing 17. The site is bordered on the northwest by Meadows Parkway and the southwest by Prairie Hawk Drive and The Meadows Filing 18. The AT&SF railroad right-of-way borders the northeast side of the property. The site is approximately 48 acres and is slated for commercial, office, or industrial uses. At this time, only Lot 5, the existing theater site, has been developed. Please refer to the vicinity, water, and sanitary sewer maps located within the report appendices.

This addendum to the Final Utility Report addresses the effect of the additional water line infrastructure to the existing potable water system and verifies the water and wastewater demand assumptions for future commercial lots within Meadows Filing 17 Lots 5 and 6. A final utility report must be submitted with each Final PD Site Plan for each lot developed.

Potable Water System

Existing Potable Water and Related Studies

The site falls within the designated Yellow Zone per the Water Master Plan for the Meadows (Ref. 4.). There is an existing 16" waterline within Meadows Parkway along the length of the project. Prairie Hawk Drive contains an existing 12" waterline from the Meadows Parkway intersection to the existing fire station. The existing water mains adjacent to the Meadows Filing 17 site are fed from the nearby Yellow Zone storage tank of 4.0MG north of the Meadows Boulevard and Coachline Road intersection. Connections to the existing mains around the site have been modeled as reservoirs 1 and 2 in the WaterCAD water study.

The following utility reports were used in the analysis of the proposed water system.

- Water Master Plan for The Meadows by Rocky Mountain Consultants, Inc., February 2002.
- Preliminary Utility Report for The Meadows - Filing No. 17 by CVL Consultants of Colorado, Inc., May 18, 2004
- Town of Castle Rock – 2000 Water Facility Plan; Integra Engineering, Inc., August 2000.
- The Final Utility Report for Meadows Filing 17, Lots 5 and 6, by CVL Consultants, February 15, 2005.

Design Criteria

The potable water system is designed using the Town of Castle Rock – Public Works Regulations (Ref. 1.), Section 14 in conjunction with the Water Master Plan for the Meadows (Ref. 4.).

The Land Use Demand Rate (Ref. 1.) for commercial development is 1200 gpad (3 SFE/acre). Demand factors of 2.65 and 4.5 were used to figure Maximum Day Demand and Peak-Hour Demand respectively for commercial demands. (See appendix for calculations and related assumptions). Refer to Table 1.1.

Table 1.1: Demand Criteria

Land Use	Land Use Demand Rates (gpad)	Single Family Equivalent (SFE/Acre)	Max. Day Peaking Factor	Peak Hour Peaking Factor
Commercial	1200	3 SFE	2.65	4.5

Table 1.2 below presents the criteria for hydraulic performance including system pressure, velocity and head loss, which are used to verify the analysis results.

	Hydraulic Parameter	Maximum	Minimum
Static	Pressure	125 psi	43 psi
Dynamic	Pressure - Max. Day Demand + Fire Flow	-	20 psi
	Pressure – Peak Hour Demand	-	35 psi
	Velocity – Peak Hour Demands	5 fps	-
	Velocity – Max. Day Demands + Fire Flow	15 fps	-
	Head loss through 16-inch	2ft/1000ft	-

Table 1.2 System Criteria

The current Yellow Zone tank's HGLs were obtained from the Town of Castle Rock's Utilities Department and were modeled as reservoir elevations. Two phases with the tank 100% full and 20% full were modeled. Refer to Table 1.3.

	Maximum HGL	Initial HGL	Minimum HGL	Base HGL
100% Full	6349	6349	6326	6325
20% Full	6329.8	6329.8	6326	6325

Table 1.3: Yellow Zone Tank Elevations

Future development of these lots will be required to determine fire flows and durations depending on type of construction in conformance with Appendix III of the Uniform Fire Code (UFC). In following the Lot 5 and 6 Final Utility Report, the fire flow has been held at 1500 gpm for a two hour period in accordance with the 1997 Uniform Fire Code and Town of Castle Rock Fire Department. Fire flow requirements will need to be confirmed as each lot is developed. Within the Yellow Water Zone the top elevation served is 6230 and the low elevation served is 6072.

Addendum to the Proposed Design

This Final Utility Report was set up to analyze the proposed water system for two tank conditions, the tank at 20% full and the tank at 100% full. The water system has been revised to add two additional water mains to serve the Lot 6 layout. The first main connects the existing 12" water line in Prairie Hawk Drive to the existing 12" water line in Limelight Avenue with an 8" water line in Sol Danza Drive. This proposed line loop provides service for the future 6G lots.

The second additional main loops an 8" water line from the existing 12" water line in Limelight Avenue at Sol Danza Drive northeasterly towards the railroad, southeast behind the theater parking lot and then southwest along the parking lot to the existing 8" stub from the existing theater site. This additional main provides loop service for Lot 6A and the 6B lots without having to cut into Meadows Parkway for a loop connection. The future 12" water main by others in Prairie Hawk Drive shown on the preliminary plat and the water map is needed for the looping of Meadows Filing 17, Lots 5 and 6.

Analysis

Haestead's WaterCad version 6.5 was used to modify the model from the Lot 5 and 6 Final Utility Report. Additional pipes and nodes have been added to model the two additional 8" water lines.

The demands for the water system have been recalculated based on the current layout. No additional area has been added to the system, but the demands have been re-allocated based on the revised water system. A landscaping demand of 5 gpm has been added to Junction 19 anticipating potential landscaping for the developed Tract A1. Please see the updated Table 1, Demand Calculations, and Table 2, Water demands per node, provided in Appendix A.

The revised system was modeled for the static, peak hour, and maximum hour during fire flow with one critical connection closed. The detailed analysis results and map for the WaterCAD model is provided in Appendix C.

A fire flow of 1500 gpm for a 2-hour duration was placed at each junction to determine the junction with the lowest pressure. This resulted in applying the fire flow demand at Junction (J-44) in combination with the Max. Day demands. Velocity and pressure criteria were verified for all scenarios. The results of system analysis are summarized in the following tables.

Scenario	Minimum Pressure (psi)	Node	Maximum Pressure (psi)	Node	Maximum Velocity (fps)	Pipe ID
Static	84.8	J-1	102.8	J-14	N/A	N/A
Peak Hour	84.8	J-1	102.8	J-14	0.5	P-9
Max. Day + FF @ J-44 (w/ P-9 closed)	65.2	J-44	100.1	J-14	9.72	P-60
Max. Day + FF @ J-44 (w/ P-57 closed)	64.5	J-44	100.0	J-14	10.3	P-9

Table 1.4: Phase 1 - Tank 100% Full

Scenario	Minimum Pressure (psi)	Node	Maximum Pressure (psi)	Node	Maximum Velocity (fps)	Pipe ID
Static	76.5	J-1	94.5	J-14	N/A	N/A
Peak Hour	76.5	J-1	94.4	J-14	0.5	P-9
Max. Day + FF @ J-44 (w/ P-9 closed)	60.3	J-45	91.8	J-14	9.7	P-60
Max. Day + FF @ J-44 (w/ P-57 closed)	58.7	J-44	91.7	J-14	10.2	P-9

Table 1.5: Phase 1 - Tank 20% Full

Water Analysis Conclusion

The design and analysis depicted herein provides potable water and fire service for Filing 17, Lot 5 and Lot 6. The results of the system analysis indicate that the proposed water system conforms to the Town of Castle Rock's Public Works Regulations. This water analysis has been prepared in conformance with the Town of Castle Rock's Public Works Regulations and will be used as a guide in the final design of Phase II for the development of Lot 5 & 6.

As more specific design information is determined, changes and deviations may occur to create the most efficient and cost-effective system possible. If development occurs using the analysis contained herein, potable water and fire service can be provided for Lot 5 & 6 within the guidelines of the Town of Castle Rock requirements.

Sanitary Sewer System

The sanitary sewer system for the approved Lot 5 and 6 Final Utility report calculated the sanitary sewer demands and main sizes for the entire Lot 5 and 6 site. This report does not change the demand assumptions from the Final Utility report. The calculated sanitary sewer main sizes from this report were 8" pvc pipe for all lines accepting and conveying the sewer demands to the existing sanitary sewer interceptor main.

The proposed preliminary plat shows the extension of the sanitary sewer mains throughout Lot 6 as a conceptual layout. These main locations are subject to change and each lot will be required to submit a Final Utility Report with their respective Final PD Site Plan.

At this time, the 8" mains that serve the proposed design points in the Final Utility Report are still adequate for this analysis and will be verified in the Final Utility Report for each developed lot. The Sanitary Sewer Plan Map from the approved Final Utility Report and the Utility Plan from the Preliminary Plat, Amendment 2 have been provided in the appendix.

Appendix A:

Water Demands

THE MEADOWS
FILING NO. 17 Lot 5 & Lot 6
TOWN OF CASTLE ROCK
WATER PLAN
TABLE 1.0: DEMAND CALCULATIONS

Max Day Demand 2.65 x Avg. Day Demand
Peak Hour Demand 4.5 x Avg. Day Demand
Commercial Land Use Demand 3 SFE/ac

Lot Type	Gross area (Acres)	Commercial Land Use Demand Rate (GPAD)*	Total Average Day Demand (GPM)	Total Max Day Demand (GPM)	Total Peak Hour Demand (GPM)	Commercial Equivalent Demand SFE
Lot 5	7.24	1200	6.0	16.0	27.2	22
Lot 6-A	1.78	1200	1.5	3.9	6.7	5
Lot 6-B	5.55	1200	4.6	12.3	20.8	17
Lot 6-C	6.15	1200	5.1	13.6	23.1	18
Lot 6-D	5.75	1200	4.8	12.7	21.6	17
Lot 6-E	6.54	1200	5.5	14.4	24.5	20
Lot 6-F	7.79	1200	6.5	17.2	29.2	23
Lot 6-G	6.10	1200	5.1	13.5	22.9	18
Tract A1	1.79	0	5.0	5.0	5.0	0
TOTALS	50.23		44.1	108.6	180.9	141

*Land use demands are per "Town of Castle Rock Public Works Regulations, Chapter 14"
SFE=Single Family Equivalent

FINAL UTILITY REPORT

For

**Lot 6A, THE MEADOWS
FILING NO. 17
Castle Rock, Colorado
(Project No. PWP 06-021)**

Prepared for:

**Castle Rock Development Company
3303 E. 1st Avenue
Suite 410
Denver, CO 80206
Attn: Greg Meeter
Phone (303) 394-5030
Fax (303) 394-5508**

Prepared by:

**CVL Consultants of Colorado, Inc.
7901 E. Belleview Ave, Suite 150
Englewood, CO 80111
Attn: Kurt Lang
Phone (720) 482-9526
Fax (720) 482-9546**

July 27, 2006

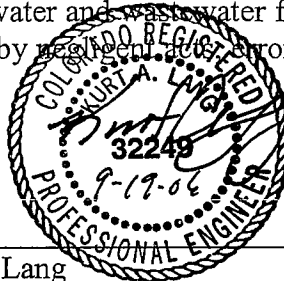
August 17, 2006

Revised: September 13, 2006

THE FINAL UTILITY REPORT
Meadows Filing 17 Lot 6A
September 13, 2006

Engineer's Statement:

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



Kurt A. Lang
Colorado P.E. No. 32249

Date

Owner's/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.

 9/20/06

Castle Rock Development Date

Town of Castle Rock Approvals:

Utilities Department

ACCEPTED

Date



Development Services Director

DATE

9/27/06

Date

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Introduction

Filing 17 is a part of a 4000+ acre planned community named "The Meadows" located in the Town of Castle Rock west of Interstate 25 and north of Wolfensberger Road. The proposed Lot 6A is located within the Meadows Filing 17 Lot 6. Meadows Filing 17 Lot 6 is located southeast of Meadows Parkway, north of Prairie Hawk Drive, and The Meadows Filing 18. The AT&SF railroad right-of-way is located east of Lot 6A.

More specifically, the proposed Lot 6A is located in the western portion of the Meadows Filing 17 Lot 6 and is bordered by Limelight Avenue to the west, the existing Castle Rock Stadium 12 theater to the east, and undeveloped Lot B-1 to the north. The site proposes two commercial/office buildings, is approximately 1.77 acres, and is zoned for commercial, office, or industrial uses.

Lot 6A is 1.77 acres and is located within the area studied as part of the approved Lot 5 and 6 Final Utility Report. This Final Utility Report will show that the developed Lot 6A proposes demands at or below the assumed demand assumptions of the approved Lot 5 and 6 Final Utility Report. Lot 6A's SFE count is 10.0 SFE.

Potable Water System

Existing Potable Water Line

The Lot 6A site falls within the designated Yellow water pressure zone per the Water Master Plan for the Meadows. There is an existing 12" waterline within Limelight along the length of Meadows Filing 17 Lot 6A. Meadows Parkway contains an existing 16" waterline from the Meadows Boulevard intersection north to its end just south of Highway 85.

The existing water mains adjacent to the Meadows Filing 17 site are fed from the nearby Yellow Zone storage tank north of the Meadows Boulevard and Coachline Road intersection. The capacity of the existing Yellow Zone tank is 4.0 M.G., 0.96 M.G. of which is reserved for fire flow. As the existing Yellow Zone tank is nearing capacity, the construction of an additional Yellow Zone tank, which will provide an additional 6 M.G. of storage, is under construction and anticipated to be online by late fall of 2006 or early 2007.

Table 1.1: Yellow Tank Elevations

	Maximum HGL	Initial HGL	Minimum HGL	Base HGL
100% Full	6349	6349	6326	6325
20% Full	6329.8	6329.8	6326	6325

Design Criteria

The Potable water system was designed using the Town of Castle Rock – Public Works Regulations, PWR Section 14 in conjunction with the Water Master Plan for the Meadows. Table 1.2 below presents the PWR criteria for hydraulic performance including system pressure, velocity and head loss, which are used to verify the analysis.

Table 1.2: System Criteria

	Hydraulic Parameter	Maximum	Minimum
Static	Pressure	125 psi	43 psi
Dynamic	Pressure-Max. Day Demand + Fire Flow*	-	20 psi
	Pressure-Peak Hour Demand*	-	35 psi
	Velocity-Peak Hour Demand*	5 fps	-
	Velocity-Max. Day Demands + Fire Flow*	15 fps	-
	Head loss through 16-inch pipe	2ft/1000ft	-

* - with one critical loop out of service

Proposed Water System

For the purposes of this report, the proposed water system will entail the construction of an 8" watermain approximately 360 feet long to be connected to an existing 12" watermain in Limelight Avenue. Lot 6A will be served with a proposed fire hydrant, a 1 ½" domestic tap, and a 1" irrigation tap, all from the proposed 8" line. The said 8" line will extend in the future to loop north and east as development occurs.

The demands presented in the approved Lot 5 and 6 Final Utility Report still hold true for the development of Lot 6A. This area was re-examined within the Amendment to the Lot 5 and 6 Final Utility Report, which recalculated the demands for this area, including the adjacent lots, based on the Town of Castle Rock Criteria. The Amendment to the Lot 5 and 6 Final Utility Report estimated the demand from Lot 6A would be 1.5 GPM for average day flows and this report also estimates 1.5 GPM for average day flows. The proposed building for the Lot 6A site falls within the constraints used to define the water demand calculations in the Amendment to the Lot 5 and 6 Final Utility Report.

The proposed fire flow for Lot 6A was assumed to be 2000 gpm for a two hour period in accordance with the 1997 Uniform Fire Code and Town of Castle Rock Fire Department and is in conformance with the approved Lot 5 and 6 Final Utility Report. A memo from Chad Hamilton stating the revised building type and fire flow has been included in Appendix A. A hydrant test has also been conducted and the results have been included in Appendix A of this report.

A WaterCAD model was setup to incorporate the proposed 8" water main ending at the north end of Lot 6A. Water demands based on Town of Castle Rock demand criteria have been included in Appendix A and water demands per node used in the WaterCAD model have also been included in Appendix A. The system was analyzed to serve the proposed site with a break in each of the two supply lines during a fire flow scenario. Each of these scenarios had results that were acceptable by Town of Castle Rock criteria. All of the WaterCAD results based on a 100% and a 20% full reservoir have been included in Appendix C. A Water Map from the Amendment to the Lot 5 and 6 Final Utility Report has been included in the back map pocket in Appendix E.

Water System Storage

The proposed site will draw water from the Yellow Zone storage tank located just south of Meadows Parkway between the Meadows Filing 16 and 18. Currently the existing Yellow Zone Tank has capacity to serve Lot 6A with water for the proposed development. As the areas under the service of the Yellow Zone tank are constructed, this tank will run out of storage as shown in Table 3.1 in Appendix B. Construction has begun on a storage tank and is planned to be finished by this fall or by early 2007. This tank should be online by the time it is needed, however, the developer will have to verify the Yellow Zone capacity at time of SIA to ensure that the project can be operational.

Water storage calculations for Lot 6A have been provided in Table 3.0, Appendix B and water storage calculations for The Meadows Filing 17 Lots 5 and 6 have been provided in Table 3.1, Appendix B. In addition, water storage calculations for the entire Meadows development have been provided in Appendix B.

Sanitary Sewer System

The sanitary sewer system for the approved Lot 5 and 6 Final Utility report calculated the sanitary sewer demands and main sizes for the entire Lot 5 and 6 site. This Final Utility Report proves that the sewer demands are consistent with the approved Lot 5 and 6 Final Utility report, calculates the minimum onsite sewer main slopes, and verifies the capacity of the downstream sewer main pipe capacity.

The approved Lot 5 and 6 Final Utility report locates the proposed Lot 6A within Lot 6-Area 6 of said report which is bounded by Limelight Avenue to the west, the existing theater to the east, and Lot 6B-1 to the north. This report will split Lot 6-Area 6 into two basins: Lot 6A and Lot 6B-1 (north of Lot 6A). The lines dividing Lot 6A and Lot 6B-1 have been taken from the Meadows Filing 17 – Preliminary Plat 2nd Amendment.

The proposed flows from this area drain easterly to connect to the existing 8" sanitary sewer main that runs east / west along the northern lot line of Lot 5. The design points used in this analysis are the same design points used in the approved Lot 5 and 6 Final Utility report except for the addition of design points 7a and 7b, which are the input flows from Lots 6B-1 and 6A. The proposed 8" sanitary sewer line ties into the existing 8" main at design point 7. The flow at design point 7 was calculated to be .114 cfs at a peaked condition in the Lot 5 and 6 report and .113 at a peaked condition in this report. Therefore the proposed design for Lot 6A is in conformance with the approved Lot 5 and 6 Final Utility report. Sanitary sewer basin summaries and routed flows for this report and the approved Lot 5 and 6 utility report have been included in Appendix D as well as Flowmaster calculations for the existing lines upstream and downstream of design point 7. A sanitary sewer basin map from the approved Lot 5 and 6 utility report and an amended basin map for this report have been included in Appendix E.

Due to the uncertainty of the future development of Lot 6B-1, the proposed sanitary sewer line was extended from the existing main in Lot 5 at 0.50% to provide as much depth at Lot 6B-1 as possible. The velocities within the line are below 2.0 fps because the smallest line that can be used is an 8" line and the flows that will be generated will be far too small to reach pipe capacity. Because the line will only be about 10.0% full and at only 0.50% the standard 2.0 fps velocity cannot be reached.

Conclusion

The proposed utilities for the development of Lot 6A are in direct conformance with the Lot 5 and 6 Final Utility Report, the Amendment to the Lot 5 and 6 Utility report, and the Town of Castle Rock's Public Works Regulations.

Appendix A:

Water Demands

TOWN OF
CASTLE ROCK
C O L O R A D O

Utilities Department

FIRE FLOW TEST RESULTSPRESSURE TEST ONLY (if circled)

DISCLAIMER NOTICE

The following results are for the determination of fire flow parameters in the immediate area as identified. It shall be expressly understood that the results of the below noted fire flow test are representative of the Town's water system at the time of actual testing. The flow results may be subject to change in the future. The Town shall not be held responsible for any such change due to either system failure or system reconfiguration.

Requested by: Marilyn Company: _____Phone #: 3-770-8884 Fax #: 3-770-3636Date requested: 7-13-06 Date of test: 7/18/06Flow tester: Nathan Travis Residual tester: Zoe BeaversHydrant flowed: E11 H27 Location: On McInnis Pkwy - NE of LimestoneHydrant read: E11 H29 Location: On McInnis Pkwy - W of LimestoneProject location:
Lot: _____ Block: _____ Address: _____Type of hydrant: waterous Nozzle: 2.5Main line size: 16" Main line type: _____Static pressure: 93 Residual pressure: 85 Pitot reading: 92

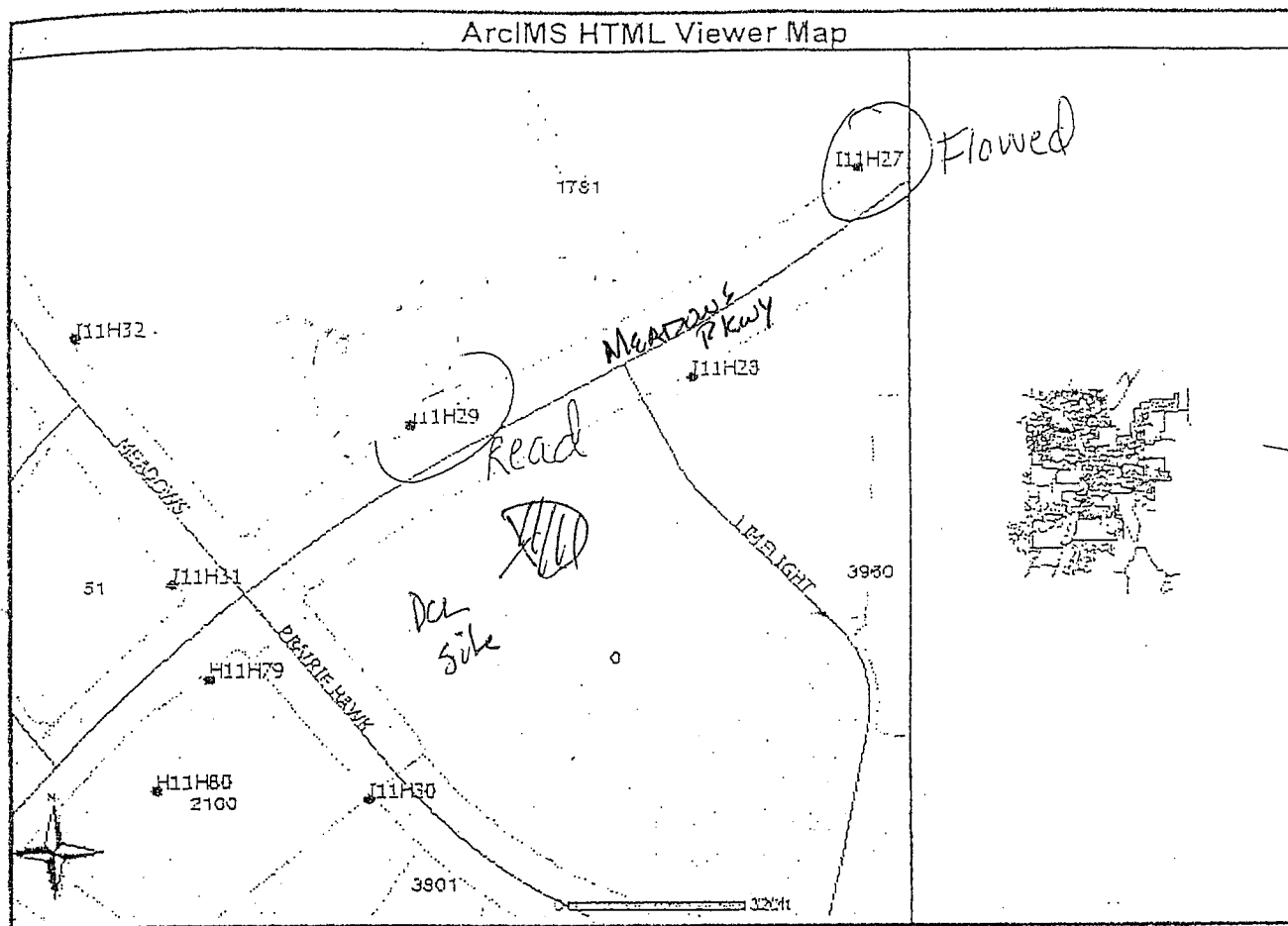
Attachments to fax:

Comments:

yellow zone

Map Output

Page 1 of 1



- Legend
- Fire Hydrants
 - ~ Streets
 - Parcel Boundaries
 - Town of Castle Rock

Appendix D:

Wastewater Flows

The Meadows
Filing No. 17, Lot 5 & Lot 6
Sanitary Sewer Analysis

2/4/2005

Flow Rate
Commercial 600 gpd/acre
Single Family 200 gpd/dwelling unit
Multi-Family 130 gpd/dwelling unit
Peak Factor = $3.79 \times [(Avg. Flow \text{ in cfs})^{0.168}]$, where Max. Peaking Factor = 5.0

Table A

Basins	Lot Type	Gross Area** (Acres)	Typical Demand/Unit (gpd/acre)	Avg. Flow (gpd)	Avg. Flow (gpm)	Avg. Flow (cfs)	Equivalent SFEs/Unit (SFE/acre)	Equivalent Demand SFE	Peak Factor
OS-1*	Multi-Family	-	-	27,000	18.8	0.042	-	135	5.00
OS-2*	Single Family	-	-	64,400	44.7	0.100	-	322	5.00
OS-3*	Single-Family	-	-	114,400	79.4	0.177	-	572	5.00
SUB-TOTAL				205,800	142.9	0.318		1,029	
LOT 5	Commercial	7.24	600	4,344	3.0	0.007	3	22	5.00
LOT 6-AREA 1	Commercial	6.37	600	3,822	2.7	0.006	3	19	5.00
LOT 6-AREA 2	Commercial	7.27	600	4,362	3.0	0.007	3	22	5.00
LOT 6-AREA 3	Commercial	6.44	600	3,864	2.7	0.006	3	19	5.00
LOT 6-AREA 4	Commercial	4.50	600	2,700	1.9	0.004	3	14	5.00
LOT 6-AREA 5	Commercial	9.31	600	5,586	3.9	0.009	3	28	5.00
LOT 6-AREA 6	Commercial	3.47	600	2,082	1.4	0.003	3	10	5.00
LOT 6-AREA 7	Commercial	3.85	600	2,310	1.6	0.004	3	12	5.00
SUB-TOTAL		48.45		29,070	20.2	0.045		145	
TOTALS		48.45		234,870	163.1	0.363		1,174	

* Design points flows by Engineering Partners, Inc., Received 10/12/2004

**Gross Areas are based on total lot areas and do not take into account additional dedication of right-of-way or tracts.

Sanitary Sewer Flow downstream of DP7
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Meadows sewer calculations
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

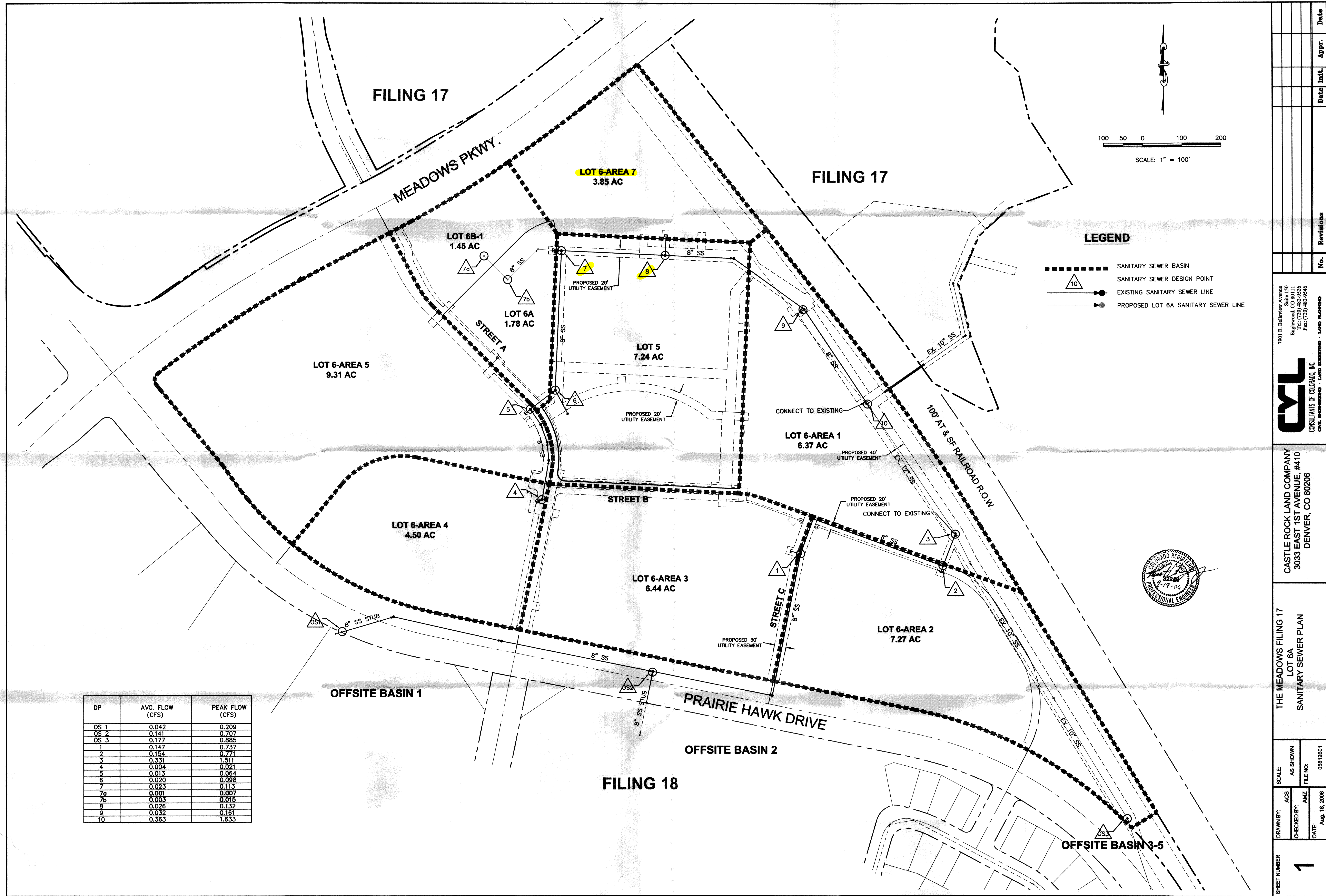
Input Data		
Mannings Coefficient	0.011	
Channel Slope	0.010300	ft/ft
Diameter	8.00	in
Discharge	0.11	cfs

Results		
Depth	0.13	ft
Flow Area	0.05	ft ²
Wetted Perimeter	0.60	ft
Top Width	0.52	ft
Critical Depth	0.15	ft
Percent Full	18.89	
Critical Slope	0.004660	ft/ft
Velocity	2.47	ft/s
Velocity Head	0.09	ft
Specific Energy	0.22	ft
Froude Number	1.47	
Maximum Discharge	1.56	cfs
Full Flow Capacity	1.45	cfs
Full Flow Slope	0.000063	ft/ft
Flow is supercritical.		

Appendix E:

Maps / Plans

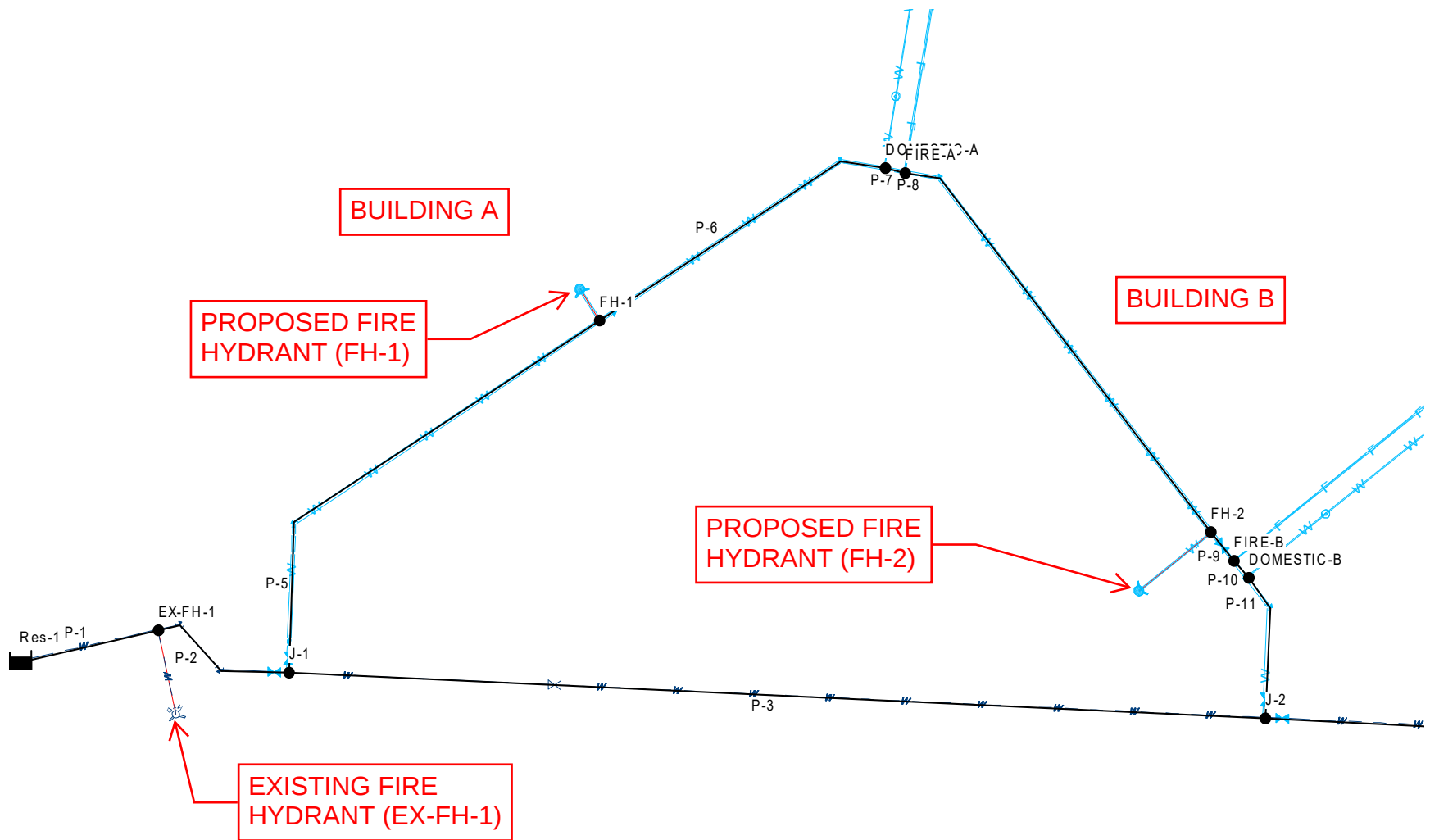
project:081128011dwg:001 FOLDER:SS-MAP.dwg, 9/18/2006 4:14:23 PM, ACS



SHEET NUMBER	1	DRAWN BY:	ACS	CHECKED BY:	AMZ	DATE:	AUG. 18, 2006	SCALE:	AS SHOWN	FILE NO:	08812801	Revisions			No.	Date	Appr.	Date
THE MEADOWS FILING 17 LOT 6A SANITARY SEWER PLAN																		
CASTLE ROCK LAND COMPANY 3033 EAST 1ST AVENUE, #410 DENVER, CO 80206																		
7901 E. Belview Avenue Suite 100 Englewood, CO 80110 Tel: (720) 482-5526 Fax: (720) 482-5546 CIVIL ENGINEERING · LAND SURVEYING · LAND MARKING																		

APPENDIX E – EPA NET WATER MODELING

OVERALL WATER MAP



NORMAL HGL (100% STATIC)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6352.00	98.92
Junc J-1	6123.0	0.00	6352.00	99.23
Junc J-2	6122.1	0.00	6352.00	99.62
Junc FH-1	6123.1	0.00	6352.00	99.18
Junc DOMESTIC-A	6122.9	0.00	6352.00	99.27
Junc FIRE-A	6123.0	0.00	6352.00	99.23
Junc FH-2	6122.7	0.00	6352.00	99.36
Junc FIRE-B	6122.7	0.00	6352.00	99.36
Junc DOMESTIC-B	6122.7	0.00	6352.00	99.36
Resvr Res-1	6352	-0.05	6352.00	0.00
Resvr Res-2	6352	0.05	6352.00	0.00

STATIC PRESSURE
WITH ZERO DEMAND IS
LESS THAN 125 PSI



NORMAL HGL (100% STATIC)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	0.05
Pipe P-2	35.58	8	120	0.05
Pipe P-3	232.42	8	120	0.02
Pipe P-4	88.26	8	120	0.05
Pipe P-5	121.41	8	120	0.02
Pipe P-6	78.70	8	120	0.02
Pipe P-7	4.90	8	120	0.02
Pipe P-8	112.84	8	120	0.02
Pipe P-9	8.66	8	120	0.02
Pipe P-10	5.27	8	120	0.02
Pipe P-11	34.32	8	120	0.02

NORMAL HGL (100% STATIC)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	0.00	0.00	0.000	Open
Pipe P-2	0.00	0.00	0.000	Open
Pipe P-3	0.00	0.00	0.000	Open
Pipe P-4	0.00	0.00	0.000	Open
Pipe P-5	0.00	0.00	0.000	Open
Pipe P-6	0.00	0.00	0.000	Open
Pipe P-7	0.00	0.00	0.000	Open
Pipe P-8	0.00	0.00	0.000	Open
Pipe P-9	0.00	0.00	0.000	Open
Pipe P-10	0.00	0.00	0.000	Open
Pipe P-11	0.00	0.00	0.000	Open

DYNAMIC/FIRE HGL (20% STATIC)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6334.00	91.12
Junc J-1	6123.0	0.00	6334.00	91.43
Junc J-2	6122.1	0.00	6334.00	91.82
Junc FH-1	6123.1	0.00	6334.00	91.38
Junc DOMESTIC-A	6122.9	0.00	6334.00	91.47
Junc FIRE-A	6123.0	0.00	6334.00	91.43
Junc FH-2	6122.7	0.00	6334.00	91.56
Junc FIRE-B	6122.7	0.00	6334.00	91.56
Junc DOMESTIC-B	6122.7	0.00	6334.00	91.56
Resvr Res-1	6334	-0.05	6334.00	0.00
Resvr Res-2	6334	0.05	6334.00	0.00

STATIC PRESSURE
WITH ZERO DEMAND IS
GREATER THAN 43 PSI



DYNAMIC/FIRE HGL (20% STATIC)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	0.05
Pipe P-2	35.58	8	120	0.05
Pipe P-3	232.42	8	120	0.02
Pipe P-4	88.26	8	120	0.05
Pipe P-5	121.41	8	120	0.02
Pipe P-6	78.70	8	120	0.02
Pipe P-7	4.90	8	120	0.02
Pipe P-8	112.84	8	120	0.02
Pipe P-9	8.66	8	120	0.02
Pipe P-10	5.27	8	120	0.02
Pipe P-11	34.32	8	120	0.02

DYNAMIC/FIRE HGL (20% STATIC)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	0.00	0.00	0.000	Open
Pipe P-2	0.00	0.00	0.000	Open
Pipe P-3	0.00	0.00	0.000	Open
Pipe P-4	0.00	0.00	0.000	Open
Pipe P-5	0.00	0.00	0.000	Open
Pipe P-6	0.00	0.00	0.000	Open
Pipe P-7	0.00	0.00	0.000	Open
Pipe P-8	0.00	0.00	0.000	Open
Pipe P-9	0.00	0.00	0.000	Open
Pipe P-10	0.00	0.00	0.000	Open
Pipe P-11	0.00	0.00	0.000	Open

AVERAGE DAILY DEMAND (ADD)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6334.00	91.12
Junc J-1	6123.0	0.00	6334.00	91.43
Junc J-2	6122.1	0.00	6334.00	91.82
Junc FH-1	6123.1	0.00	6334.00	91.38
Junc DOMESTIC-A	6122.9	17.73	6334.00	91.47
Junc FIRE-A	6123.0	0.00	6334.00	91.43
Junc FH-2	6122.7	0.00	6334.00	91.56
Junc FIRE-B	6122.7	0.00	6334.00	91.56
Junc DOMESTIC-B	6122.7	1.04	6334.00	91.56
Resvr Res-1	6334	-9.82	6334.00	0.00
Resvr Res-2	6334	-8.95	6334.00	0.00

AVERAGE DAILY DEMAND (ADD)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	9.82
Pipe P-2	35.58	8	120	9.82
Pipe P-3	232.42	8	120	1.22
Pipe P-4	88.26	8	120	-8.95
Pipe P-5	121.41	8	120	8.60
Pipe P-6	78.70	8	120	8.60
Pipe P-7	4.90	8	120	-9.13
Pipe P-8	112.84	8	120	-9.13
Pipe P-9	8.66	8	120	-9.13
Pipe P-10	5.27	8	120	-9.13
Pipe P-11	34.32	8	120	-10.17

AVERAGE DAILY DEMAND (ADD)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	0.06	0.00	0.000	Open
Pipe P-2	0.06	0.01	0.150	Open
Pipe P-3	0.01	0.00	0.000	Open
Pipe P-4	0.06	0.01	0.073	Open
Pipe P-5	0.05	0.00	0.000	Open
Pipe P-6	0.05	0.01	0.088	Open
Pipe P-7	0.06	0.00	0.000	Open
Pipe P-8	0.06	0.00	0.055	Open
Pipe P-9	0.06	0.00	0.000	Open
Pipe P-10	0.06	0.00	0.000	Open
Pipe P-11	0.06	0.00	0.000	Open

MAX DAILY DEMAND (MDD)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6334.00	91.12
Junc J-1	6123.0	0.00	6334.00	91.43
Junc J-2	6122.1	0.00	6334.00	91.82
Junc FH-1	6123.1	0.00	6334.00	91.38
Junc DOMESTIC-A	6122.9	44.30	6334.00	91.47
Junc FIRE-A	6123.0	0.00	6334.00	91.42
Junc FH-2	6122.7	0.00	6334.00	91.56
Junc FIRE-B	6122.7	0.00	6334.00	91.56
Junc DOMESTIC-B	6122.7	2.60	6334.00	91.56
Resvr Res-1	6334	-24.54	6334.00	0.00
Resvr Res-2	6334	-22.36	6334.00	0.00

MAX DAILY DEMAND (MDD)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	24.54
Pipe P-2	35.58	8	120	24.54
Pipe P-3	232.42	8	120	3.05
Pipe P-4	88.26	8	120	-22.36
Pipe P-5	121.41	8	120	21.49
Pipe P-6	78.70	8	120	21.49
Pipe P-7	4.90	8	120	-22.81
Pipe P-8	112.84	8	120	-22.81
Pipe P-9	8.66	8	120	-22.81
Pipe P-10	5.27	8	120	-22.81
Pipe P-11	34.32	8	120	-25.41

MAX DAILY DEMAND (MDD)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	0.16	0.03	0.050	Open
Pipe P-2	0.16	0.01	0.024	Open
Pipe P-3	0.02	0.00	0.000	Open
Pipe P-4	0.14	0.02	0.035	Open
Pipe P-5	0.14	0.02	0.037	Open
Pipe P-6	0.14	0.02	0.042	Open
Pipe P-7	0.15	0.00	0.000	Open
Pipe P-8	0.15	0.02	0.035	Open
Pipe P-9	0.15	0.06	0.114	Open
Pipe P-10	0.15	0.00	0.000	Open
Pipe P-11	0.16	0.03	0.046	Open

VELOCITY IS LESS THAN 5 FPS



PEAK HOUR DEMAND (PHD)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6334.00	91.12
Junc J-1	6123.0	0.00	6333.99	91.42
Junc J-2	6122.1	0.00	6333.99	91.81
Junc FH-1	6123.1	0.00	6333.98	91.38
Junc DOMESTIC-A	6122.9	97.46	6333.98	91.46
Junc FIRE-A	6123.0	0.00	6333.98	91.42
Junc FH-2	6122.7	0.00	6333.99	91.55
Junc FIRE-B	6122.7	0.00	6333.99	91.55
Junc DOMESTIC-B	6122.7	5.73	6333.99	91.55
Resvr Res-1	6334	-53.99	6334.00	0.00
Resvr Res-2	6334	-49.20	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 35 PSI



PEAK HOUR DEMAND (PHD)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	53.99
Pipe P-2	35.58	8	120	53.99
Pipe P-3	232.42	8	120	6.71
Pipe P-4	88.26	8	120	-49.20
Pipe P-5	121.41	8	120	47.28
Pipe P-6	78.70	8	120	47.28
Pipe P-7	4.90	8	120	-50.18
Pipe P-8	112.84	8	120	-50.18
Pipe P-9	8.66	8	120	-50.18
Pipe P-10	5.27	8	120	-50.18
Pipe P-11	34.32	8	120	-55.91

PEAK HOUR DEMAND (PHD)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	0.34	0.10	0.036	Open
Pipe P-2	0.34	0.10	0.035	Open
Pipe P-3	0.04	0.00	0.000	Open
Pipe P-4	0.31	0.08	0.034	Open
Pipe P-5	0.30	0.07	0.034	Open
Pipe P-6	0.30	0.07	0.035	Open
Pipe P-7	0.32	0.10	0.042	Open
Pipe P-8	0.32	0.08	0.034	Open
Pipe P-9	0.32	0.06	0.024	Open
Pipe P-10	0.32	0.09	0.039	Open
Pipe P-11	0.36	0.11	0.038	Open

VELOCITY IS LESS THAN 10 FPS



MDD + BLDG A FIRE (FH-1)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6333.16	90.76
Junc J-1	6123.0	0.00	6332.27	90.68
Junc J-2	6122.1	0.00	6332.28	91.07
Junc FH-1	6123.1	1500.00	6329.07	89.25
Junc DOMESTIC-A	6122.9	44.30	6329.34	89.45
Junc FIRE-A	6123.0	500.00	6329.36	89.42
Junc FH-2	6122.7	0.00	6331.40	90.43
Junc FIRE-B	6122.7	0.00	6331.56	90.50
Junc DOMESTIC-B	6122.7	2.60	6331.66	90.54
Resvr Res-1	6334	-1091.15	6334.00	0.00
Resvr Res-2	6334	-955.75	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 20 PSI



MDD + BLDG A FIRE (FH-1)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	1091.15
Pipe P-2	35.58	8	120	1091.15
Pipe P-3	232.42	8	120	-34.38
Pipe P-4	88.26	8	120	-955.75
Pipe P-5	121.41	8	120	1125.54
Pipe P-6	78.70	8	120	-374.46
Pipe P-7	4.90	8	120	-418.76
Pipe P-8	112.84	8	120	-918.76
Pipe P-9	8.66	8	120	-918.76
Pipe P-10	5.27	8	120	-918.76
Pipe P-11	34.32	8	120	-921.36

MDD + BLDG A FIRE (FH-1)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	6.96	24.90	0.022	Open
Pipe P-2	6.96	24.89	0.022	Open
Pipe P-3	0.22	0.04	0.037	Open
Pipe P-4	6.10	19.48	0.022	Open
Pipe P-5	7.18	26.37	0.022	Open
Pipe P-6	2.39	3.43	0.026	Open
Pipe P-7	2.67	4.28	0.026	Open
Pipe P-8	5.86	18.11	0.023	Open
Pipe P-9	5.86	18.10	0.023	Open
Pipe P-10	5.86	18.07	0.023	Open
Pipe P-11	5.88	18.21	0.023	Open

VELOCITY IS LESS THAN 15 FPS



MDD + BLDG A FIRE (EX-FH-1)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	1500.00	6332.68	90.55
Junc J-1	6123.0	0.00	6332.70	90.86
Junc J-2	6122.1	0.00	6333.14	91.44
Junc FH-1	6123.1	0.00	6332.61	90.78
Junc DOMESTIC-A	6122.9	44.30	6332.56	90.84
Junc FIRE-A	6123.0	500.00	6332.55	90.80
Junc FH-2	6122.7	0.00	6332.96	91.11
Junc FIRE-B	6122.7	0.00	6332.99	91.12
Junc DOMESTIC-B	6122.7	2.60	6333.01	91.13
Resvr Res-1	6334	-1388.04	6334.00	0.00
Resvr Res-2	6334	-658.86	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 20 PSI



MDD + BLDG A FIRE (EX-FH-1)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	1388.04
Pipe P-2	35.58	8	120	-111.96
Pipe P-3	232.42	8	120	-271.48
Pipe P-4	88.26	8	120	-658.86
Pipe P-5	121.41	8	120	159.51
Pipe P-6	78.70	8	120	159.51
Pipe P-7	4.90	8	120	115.21
Pipe P-8	112.84	8	120	-384.79
Pipe P-9	8.66	8	120	-384.79
Pipe P-10	5.27	8	120	-384.79
Pipe P-11	34.32	8	120	-387.39

MDD + BLDG A FIRE (EX-FH-1)

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	8.86	38.88	0.021	Open
Pipe P-2	0.71	0.36	0.030	Open
Pipe P-3	1.73	1.89	0.027	Open
Pipe P-4	4.21	9.78	0.024	Open
Pipe P-5	1.02	0.70	0.029	Open
Pipe P-6	1.02	0.71	0.029	Open
Pipe P-7	0.74	0.40	0.032	Open
Pipe P-8	2.46	3.61	0.026	Open
Pipe P-9	2.46	3.61	0.026	Open
Pipe P-10	2.46	3.61	0.026	Open
Pipe P-11	2.47	3.66	0.026	Open

VELOCITY IS LESS THAN 15 FPS



MDD + BLDG B FIRE (FH-2)

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6333.32	90.83
Junc J-1	6123.0	0.00	6332.61	90.82
Junc J-2	6122.1	0.00	6331.86	90.89
Junc FH-1	6123.1	0.00	6331.58	90.34
Junc DOMESTIC-A	6122.9	44.30	6330.92	90.13
Junc FIRE-A	6123.0	0.00	6330.88	90.07
Junc FH-2	6122.7	1500.00	6330.05	89.85
Junc FIRE-B	6122.7	500.00	6330.21	89.92
Junc DOMESTIC-B	6122.7	2.60	6330.43	90.01
Resvr Res-1	6334	-970.70	6334.00	0.00
Resvr Res-2	6334	-1076.20	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 20 PSI



MDD + BLDG B FIRE (FH-2)

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	970.70
Pipe P-2	35.58	8	120	970.70
Pipe P-3	232.42	8	120	361.99
Pipe P-4	88.26	8	120	-1076.20
Pipe P-5	121.41	8	120	608.71
Pipe P-6	78.70	8	120	608.71
Pipe P-7	4.90	8	120	564.41
Pipe P-8	112.84	8	120	564.41
Pipe P-9	8.66	8	120	-935.59
Pipe P-10	5.27	8	120	-1435.59
Pipe P-11	34.32	8	120	-1438.19

MDD + BLDG B FIRE (FH-2)

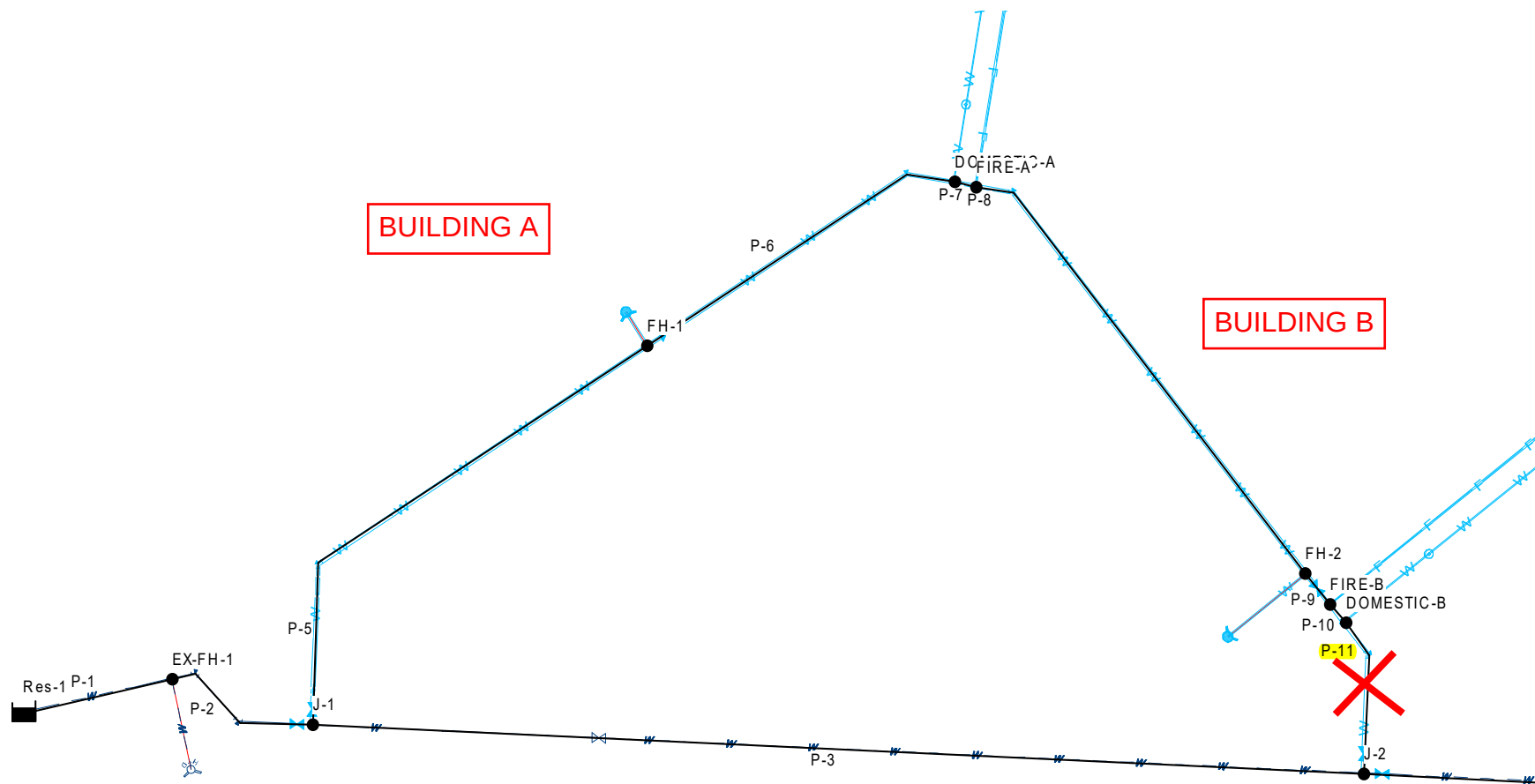
Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	6.20	20.04	0.022	Open
Pipe P-2	6.20	20.05	0.022	Open
Pipe P-3	2.31	3.23	0.026	Open
Pipe P-4	6.87	24.27	0.022	Open
Pipe P-5	3.89	8.45	0.024	Open
Pipe P-6	3.89	8.45	0.024	Open
Pipe P-7	3.60	7.27	0.024	Open
Pipe P-8	3.60	7.35	0.024	Open
Pipe P-9	5.97	18.78	0.023	Open
Pipe P-10	9.16	41.32	0.021	Open
Pipe P-11	9.18	41.53	0.021	Open

VELOCITY IS LESS THAN 15 FPS



MDD + FIRE FLOW + PIPE P-11 OUT/BROKEN



MDD + BLDG A FIRE (FH-1) WITH P-11 OUT/BROKEN

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6332.62	90.53
Junc J-1	6123.0	0.00	6331.17	90.20
Junc J-2	6122.1	0.00	6333.22	91.48
Junc FH-1	6123.1	1500.00	6321.48	85.96
Junc DOMESTIC-A	6122.9	44.30	6320.93	85.81
Junc FIRE-A	6123.0	500.00	6320.90	85.75
Junc FH-2	6122.7	0.00	6320.90	85.88
Junc FIRE-B	6122.7	0.00	6320.90	85.88
Junc DOMESTIC-B	6122.7	2.60	6320.90	85.88
Resvr Res-1	6334	-1423.69	6334.00	0.00
Resvr Res-2	6334	-623.21	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 20 PSI



MDD + BLDG A FIRE (FH-1) WITH P-11 OUT/BROKEN

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	1423.69
Pipe P-2	35.58	8	120	1423.69
Pipe P-3	232.42	8	120	-623.21
Pipe P-4	88.26	8	120	-623.21
Pipe P-5	121.41	8	120	2046.90
Pipe P-6	78.70	8	120	546.90
Pipe P-7	4.90	8	120	502.60
Pipe P-8	112.84	8	120	2.60
Pipe P-9	8.66	8	120	2.60
Pipe P-10	5.27	8	120	2.60
Pipe P-11	34.32	8	120	0.00

MDD + BLDG A FIRE (FH-1) WITH P-11 OUT/BROKEN

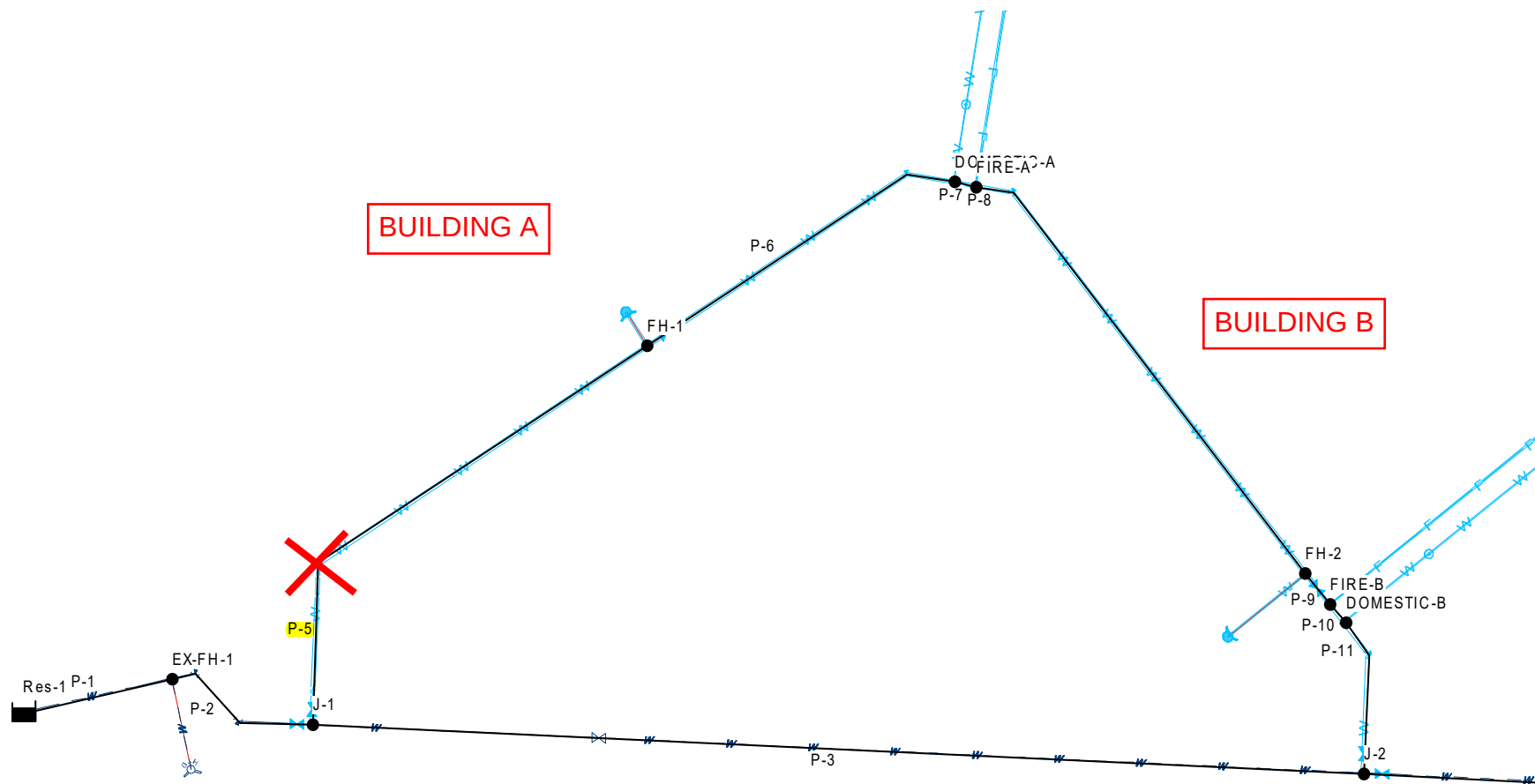
Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	9.09	40.75	0.021	Open
Pipe P-2	9.09	40.74	0.021	Open
Pipe P-3	3.98	8.82	0.024	Open
Pipe P-4	3.98	8.82	0.024	Open
Pipe P-5	13.06	79.83	0.020	Open
Pipe P-6	3.49	6.93	0.024	Open
Pipe P-7	3.21	5.98	0.025	Open
Pipe P-8	0.02	0.00	0.000	Open
Pipe P-9	0.02	0.00	0.000	Open
Pipe P-10	0.02	0.00	0.000	Open
Pipe P-11	0.00	0.00	0.000	Closed

VELOCITY IS LESS THAN 15 FPS



MDD + FIRE FLOW + PIPE P-5 OUT/BROKEN



MDD + BLDG A FIRE (FH-1) WITH P-5 OUT/BROKEN

Network Table - Nodes

Node ID	Elevation ft	Demand GPM	Head ft	Pressure psi
Junc EX-FH-1	6123.7	0.00	6333.63	90.96
Junc J-1	6123.0	0.00	6333.25	91.10
Junc J-2	6122.1	0.00	6330.73	90.40
Junc FH-1	6123.1	1500.00	6314.13	82.77
Junc DOMESTIC-A	6122.9	44.30	6317.67	84.39
Junc FIRE-A	6123.0	500.00	6317.90	84.45
Junc FH-2	6122.7	0.00	6326.89	88.47
Junc FIRE-B	6122.7	0.00	6327.58	88.77
Junc DOMESTIC-B	6122.7	2.60	6328.00	88.95
Resvr Res-1	6334	-695.63	6334.00	0.00
Resvr Res-2	6334	-1351.27	6334.00	0.00

DYNAMIC PRESSURE IS
GREATER THAN 20 PSI



MDD + BLDG A FIRE (FH-1) WITH P-5 OUT/BROKEN

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM
Pipe P-1	33.86	8	120	695.63
Pipe P-2	35.58	8	120	695.63
Pipe P-3	232.42	8	120	695.63
Pipe P-4	88.26	8	120	-1351.27
Pipe P-5	121.41	8	120	0.00
Pipe P-6	78.70	8	120	-1500.00
Pipe P-7	4.90	8	120	-1544.30
Pipe P-8	112.84	8	120	-2044.30
Pipe P-9	8.66	8	120	-2044.30
Pipe P-10	5.27	8	120	-2044.30
Pipe P-11	34.32	8	120	-2046.90

MDD + BLDG A FIRE (FH-1) WITH P-5 OUT/BROKEN

Network Table - Links

Link ID	Velocity fps	Unit Headloss ft/K ft	Friction Factor	Status
Pipe P-1	4.44	10.82	0.024	Open
Pipe P-2	4.44	10.81	0.024	Open
Pipe P-3	4.44	10.82	0.024	Open
Pipe P-4	8.62	36.99	0.021	Open
Pipe P-5	0.00	0.00	0.000	Closed
Pipe P-6	9.57	44.89	0.021	Open
Pipe P-7	9.86	47.33	0.021	Open
Pipe P-8	13.05	79.64	0.020	Open
Pipe P-9	13.05	79.67	0.020	Open
Pipe P-10	13.05	79.68	0.020	Open
Pipe P-11	13.06	79.83	0.020	Open

VELOCITY IS LESS THAN 15 FPS



APPENDIX F – GREASE INTERCEPTOR ACKNOWLEDGEMENT



Commercial Business Building Permit Grease Interceptor Requirement

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

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

CONSTRUCTION DRAWINGS

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

ACKNOWLEDGEMENT

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

Limelight Center at the Meadows
Name of Project

3978 Limelight Avenue
Address of property, if known

R Boude
Signature

1/8/2026
Date