PRELIMINARY UTILITY REPORT

FOR

CRYSTAL VALLEY RANCH, FILING NO. 14 AMD 1

(SDP26-0005)

Castle Rock, Colorado

(Submitted: Feb 6th , 2026)

(Revised: April 20th, 2026)

Prepared For

CVR PA3A LLC

8031 S. Homesteader Drive

Morrison, CO 80465

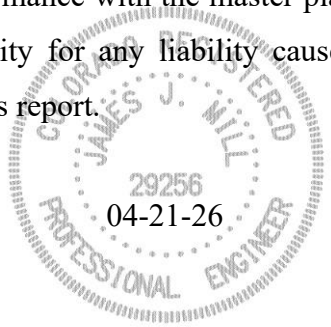
Attn: Gregory W. Brown

Prepared by

Legacy Consulting Engineers Inc.
1453 E Fremont Cir N
Centennial CO 80122
(720) 318-8862

ENGINEER'S STATEMENT:

The enclosed Utility Report (for Crystal Valley Ranch Filing No. 14 Amd 1), and exhibits (for the Utility Report) were prepared by me, or under my direct supervision, and are 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 plan for water and sewer in the effected area. I accept responsibility for any liability caused by negligent acts, errors or omissions on my part in preparing this report.



04-21-26

Legacy Engineering, Inc.
James J. Mill, P.E. (Colorado PE #29256)

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.

04-21-26

CVR PA3A LLC. Date
Gregory W. Brown

UTILITY REPORT

Crystal Valley Ranch Filing No. 14 Amd 1

Table of Contents

UTILITY REPORT

CRYSTAL VALLEY RANCH FILING NO. 14 Amd 1

I. INTRODUCTION

This utility report has been prepared to address the estimated water and sewer demands, water facility needs and timing, and sanitary sewer facility needs and timing. The attached utility plans in the back pocket show the existing and proposed water and sewer systems.

A. Location

CVR FILING NO. 14 Amd 1, containing a total of 21.1 acres, located in Castle Rock as depicted on Figure 1 in the Appendix. The site is located in the northeast quarter of Section 24, Township 8 South, Range 67 West of the Sixth Principal Meridian, Castle Rock, Colorado. The site resides in the northeast portion of Crystal Valley Ranch PD. The site is bounded by Rhyolite Park on the west, Crystal Valley Ranch northern boundary and rural estate lots on the north, CVR Filing 14 on the east, and Crystal Valley Parkway on the south.

B. Description of Property

The site is to consist of 21.1 acres site planned for 112 single family home sites and 112 sfe's. Existing vegetation covers the site, which is not irrigated, consisting mainly of native grasses and deciduous brush with steep topography ranging from 3% to 25%.

C. Phasing

It is anticipated that Crystal Valley Ranch Filing No. 14 will be constructed in one phase. Easements and tracts necessary for utilities will be provided at the time of either platting or at the time of final design/construction documents, in accordance with Town standards

II. WATER SYSTEM CHARACTERISTICS

A. Existing Supply

The proposed project will be served by the Town of Castle Rock's water mains and tanks. Currently, a 18-inch Red Zone water line exists within the ROW of Crystal Valley Parkway to the south side of the project. There will be two connections to existing stubs previously installed for this Parcel, one in Snow Goose Rd to the southeast and one in Loon Ln in CVR14 both sourced from the existing 18" main in CVP. The nearest tank serving the property is Tank-15 with a 4.03 MG capacity.

B. Proposed Facilities (Back Cover Pocket)

Within CVR Filing No. 14 Amd 1, water mains will be located entirely within the local road ROW. Water main extensions will be 8 inch distribution mains from the two aforementioned existing 8" stub-outs.

A modeled waterline hydraulic analysis has been prepared for CVR14 Amendment 1. Results from this modeling can be found in Appendix C. The anticipated static pressures (with the red zone tank at 20% full) at the southeast and northeast connection points are 89 psi (at elevation 6457) and 96 psi (at elevation 6439) respectively. The highest street elevation within CVR14 Amd 1 is 6471 at Jct 10 with a pressure of 83 psi. The lowest elevation will be near the northeast connection near Jct 4 with a pressure of 96 psi - comfortably within the operating pressure range of 43 psi to 125 psi specified in the Town's criteria manual.

C. Water Demand Analysis

The Crystal Valley Ranch Filing No. 14 Amd 1 water demands are based on the submittal of Crystal Valley Ranch Filing 14 Site Development Plan designed according to the *Town of Castle Rock Water System Design – 2018 Criteria Manual*. The CVR14 Amd 1 SDP proposes 112 single family residential lots on 21.1 acres. It is upon this plan and current existing demands within CVR all demand calculations are performed. Total water demands for CVR14 are shown in Appendix B. Specific assumed water demands for each filing and node are shown in Appendix C.

C.1. Irrigation Demand -

Water-wise landscaping is being proposed and indigenous planting is to be utilized. Trees, shrubs and ornamental plantings with some irrigated sod will utilize a low demand drip irrigation system or a polymer watering system. One 3/4" irrigation tap is anticipated and will be installed near the western entry to the site from Crystal Valley Parkway. An irrigation demand of 3750 gpd/ac is assumed.

D. Storage Tank Requirements

Storage requirements for Filing 14 Amd 1 have been calculated and shown in Appendix B. For the Red zone - based upon the Maximum Day Demand of 112,000 gpd and the two-hour fire flow of 240,000 gal - the total storage needed is 350,000 gal or 0.35 MG. This represents 8.7% of the existing Red zone tank's 4.03 MG capacity. The proposed water system for Filing 14 Amd 1 is connected to an existing 4.03 MG Red Zone Tank-15 north of Crystal Valley Parkway to the west.

At the time of the Town's *2010 Water Facilities Master Plan* (WFMP) (Reference 7) the Crystal Valley Ranch Preliminary PD (2nd Amendment) was approved and on record with an anticipated build-out of 3475 units. It is assumed that these plans were considered when this WFMP was put into effect.

III. SEWER SYSTEM CHARACTERISTICS

A. Existing Facilities (CVR Filing No. 14 Amd 1 outfalls - Appendix D & E)

The outfall to serve CVR Filing No. 14 Amd 1 currently exists in Crystal Valley Parkway at the southeast road connection of the project. The existing collector is a 10" diameter pipe & the site is within the Sellars Gulch Lift Station basin.

B. Proposed Facilities (back cover pocket)

Within CVR Filing No. 14 Amd 1, sanitary sewer mains will be located almost entirely within the local road ROW with the only exception being the outfall at the southeast corner of the site. The sanitary sewer system within Filing 14 Amd 1 is entirely a gravity system and therefore

wastewater system odors should not be a problem. Additionally, wastewater pretreatment is not expected to be necessary. *Utility Report Addendum for Crystal Valley Ranch* by Legacy Engineering, Inc. (Reference 5) provides capacity calculations for the sewer system downstream from Filing 14.

C. Proposed Sanitary Sewer Demands

The Crystal Valley Ranch Filing No. 14 Amd 1 sanitary sewer demands are located in Appendix D. These sewer demands are based on the SDP. CVR14 Amd 1 is planned with 112 single family residential lots on a total of 21.1 acres. The demand rates are per those set forth in the *Town of Castle Rock Wastewater Collection Design – 2018 Criteria Manual*. The demand rates were calculated for CVR14 Amd 1 alone and are show in Appendix D.

Lines within this filing with slopes of 2% or greater serving 13 or more homes will have equal to or greater than 2 fps velocity during peak flow. Wherever these two criteria are not met the flow formula does not yield velocities above 2 fps during peak flows. This is observable in the fact that one lot requires a 17.6% slope to gain 2 fps according to the ToCR PDF formula. An attempt will be made to optimize depth versus velocity but in most cases a maximum depth of approximately 12' will be adhered to. In almost all cases entire runs of sewer would have to be increased in depth to at least 20' deep or more if strict adherence to the 2 fps guideline was followed. The cost benefit of having additional lines with a peak velocity at or above would be far outweighed by the long term maintenance costs associated by having deep sewer lines. In addition, studies exist attesting that in fact the PDF formula for small numbers of residences have a much larger peaking factor than the standard Peaking Factor maximum of 5.

The flows identified in this report are consistent with those identified in *Utility Report Addendum For Crystal Valley Ranch* by Legacy Engineering, Inc. (Reference 5)

IV. Dry Utilities

Gas, electric and telecommunication lines follow the road right of way throughout the majority of Crystal Valley Ranch development. Crystal Valley Ranch will work with the Town of Castle Rock and the utility companies to provide service and to provide both with necessary easements.

The utility companies are planning for the Crystal Valley Ranch development along with the adjacent developments. Utilities, in place within Crystal Valley Parkway will provide a source for connection service.

V. Conclusion

Water service for Crystal Valley Ranch project will be provided through both existing and proposed facilities. This project will be served by the existing 18" Red Zone waterline located in Crystal Valley Parkway. Pipe sizing for the project will meet the *Town of Castle Rock Water System Design – 2018 Criteria Manual*. Computer water modeling analysis is presented in the body of this report. The system meets the Town requirements for pressure.

Sanitary Sewer service for Crystal Valley Ranch Filing 14 Amd 1 will be provided by the existing trunk line within Crystal Valley Parkway. The sewer layout for Filing 14 Amd 1 is in accordance with master studies for the Crystal Valley Ranch development. The project is anticipated to be built in one phase.

The *Utility Report Addendum For Crystal Valley Ranch* by Legacy Engineering, Inc. (Reference 5) identifies 7 sanitary runs in the outfall system that may eventually be found undersized according to Town of Castle Rock design criteria - if total build out occurs according to the current PD Amendment. Since this time all inadequate lines have been replaced.

Wastewater treatment is handled by the Plum Creek Wastewater Treatment Plant downstream. This plant is owned and operated by the Plum Creek Wastewater Authority. Since there is no pre-treatment necessary and the sewer mains proposed are expected to be constructed properly, no odor problems are anticipated nor are odor control mitigation measures projected.

The design and layout of the water distribution system and the sanitary sewer collection system as shown and discussed in this report and in the appendix conform to the "Town of Castle Rock, Public Works Regulations," and are in conformance with the Town's "Wastewater and Reclaimed Water Master Plans," dated December 2003 and the Town's "2010 Water Facilities Master Plan," dated August 2010. Any future development of the existing water & wastewater infrastructure needed to serve this site is the responsibility of the developer.

VI. REFERENCES

1. Town of Castle Rock Wastewater Collection Design Criteria Manual, Castle Rock, Colorado, December 4th, 2018.

2. Town of Castle Rock Water System Design Criteria Manual, Castle Rock, Colorado, December 4th, 2018.

3. Utility Report for Crystal Valley Parkway, Manhard Consulting, Ltd., February, 2003.

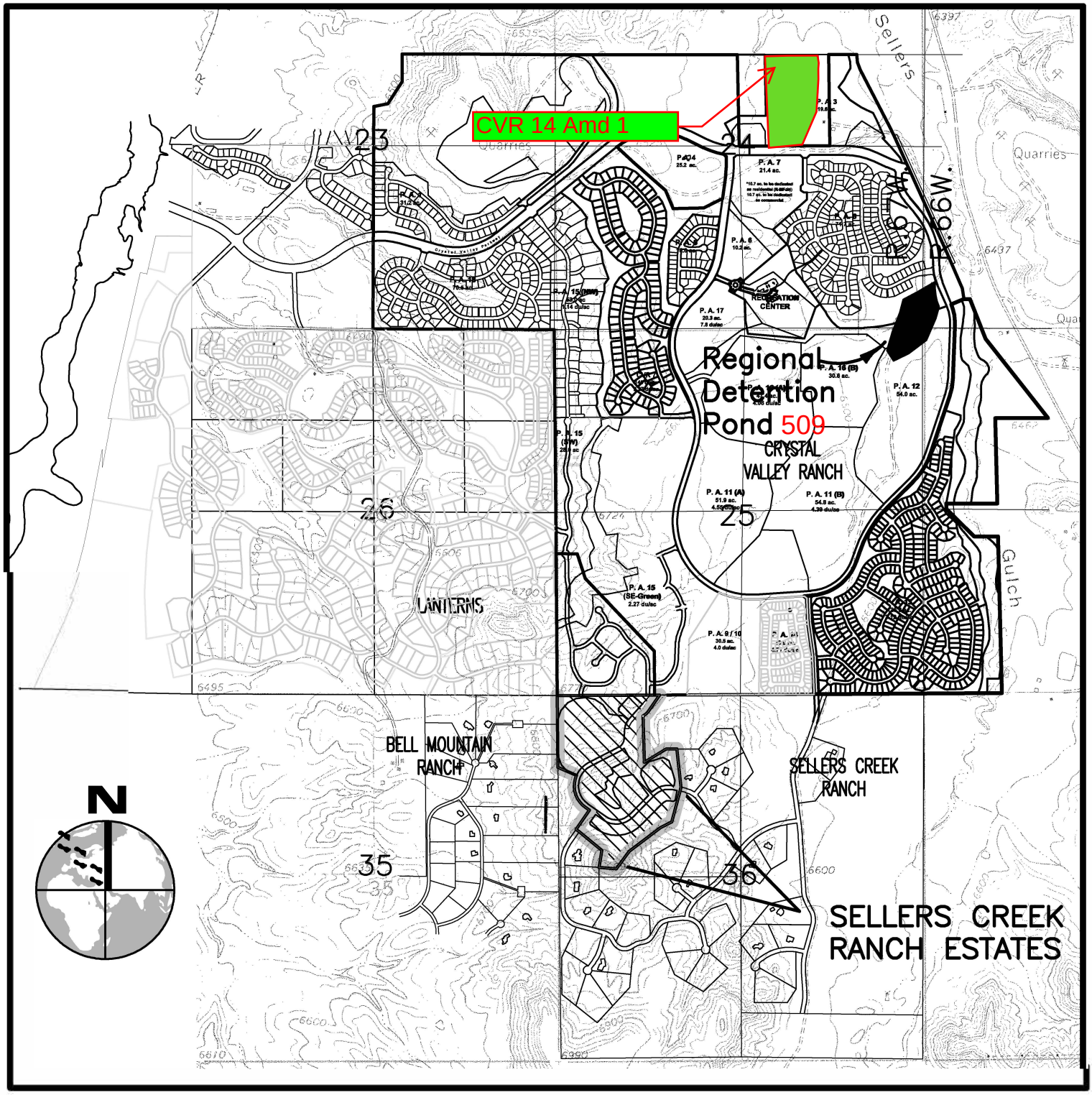
4. PRELIMINARY Utility System Analysis Report for Loop Road, Manhard Consulting, Ltd., January, 2004.

5. Utility Report Addendum For Crystal Valley Ranch, Prepared by Legacy Engineering, Inc., February 17, 2007.

6. Wastewater and Reclaimed Water Master Plans, Prepared by CH2M Hill, December 2003.

7. Town of Castle Rock 2010 Water Facilities Master Plan, Prepared by CH2M Hill, August?, 2010.

8. Preliminary Utility Report for CVR - Sellers Creek Ranch Estates, Prepared by Legacy Engineering Inc., December, 14, 2012.



CVR 14 Amendment 1

VICINITY MAP

Scale: 1" = 2000'

Figure 1

APPENDIX A

Water Demand

Crystal Valley Ranch - Master Water Demand at time at CVR14 Amd 1 SDP

1/27/26 9:11 AM

	Gross Unit Count	Active SFE's	Irrig add (exist taps)	Use + Irrig	Avg Day Dem (ADD) gpd/SFE	Total Avg Demand (gpd)	Total Avg Day Demand (gpm)	Max Day Demand (2.5xAD)	5.5xAD = <Peak Hr>	Water Cad Node
PA8 (*CVR2*)	215 Units	215 SFE	11 SFE	226 SFE	400	90,400 gpd	62.8 gpm	156.9 gpm	345.3 gpm	
PA13 (CVR#5A.1)	107 Units	107 SFE	5 SFE	112 SFE	400	44,800 gpd	31.1 gpm	77.8 gpm	171.1 gpm	
North Park		2 SFE	8 SFE	10 SFE	400	4,000 gpd	2.8 gpm	6.9 gpm	15.3 gpm	
PA15W(CVR1)	60 Units	60 SFE	4 SFE	64 SFE	400	25,600 gpd	17.8 gpm	44.4 gpm	97.8 gpm	
PA1(CVR6)	42 Units	42 SFE	1 SFE	43 SFE	400	17,200 gpd	11.9 gpm	29.9 gpm	65.7 gpm	
CVR4		1 SFE		1 SFE	400	400 gpd	0.3 gpm	0.7 gpm	1.5 gpm	
PA18(CVR1)	150 Units	150 SFE		150 SFE	400	60,000 gpd	41.7 gpm	104.2 gpm	229.2 gpm	
Rec Center (*CVR#3*)		2 SFE		2 SFE	400	800 gpd	0.6 gpm	1.4 gpm	3.1 gpm	
PA15(NE) (CVR7N)	61 Units	113 SFE	1 SFE	114 SFE	400	45,600 gpd	31.7 gpm	79.2 gpm	174.2 gpm	
PA5 (*CVR3*)	52 Units	52 SFE	3 SFE	55 SFE	400	22,000 gpd	15.3 gpm	38.2 gpm	84.0 gpm	
PA4 (CVR11)	140 Units	140 SFE	1 SFE	141 SFE	400	56,400 gpd	39.2 gpm	97.9 gpm	215.4 gpm	
PA3 (CVR14)	142 Units	142 SFE	3.33 SFE	145 SFE	400	58,132 gpd	40.4 gpm	100.9 gpm	222.0 gpm	
CVR-SCR-Estates	52 Units	10 SFE	1.0 SFE	11 SFE	400	4,400 gpd	3.1 gpm	7.6 gpm	16.8 gpm	
PA15SE (Tan Zone)	90 Units	90 SFE	3.0 SFE	93 SFE	400	37,200 gpd	25.8 gpm	64.6 gpm	142.1 gpm	
PA15W(SO)	42 Units	42 SFE	1.0 SFE	43 SFE	400	17,200 gpd	11.9 gpm	29.9 gpm	65.7 gpm	
PA16 (*16A is CVR 8*)	303 Units	303	3.0 SFE	306 SFE	400	122,400 gpd	85 gpd	213 gpd	468 gpd	
PA11 (*11A is CVR 9*)	477 Units	477	3.0 SFE	480 SFE	400	192,000 gpd	133 gpd	333 gpd	733 gpd	
North School					400					
PA6 (CVR16)	58 Units	58 SFE	2 SFE	60 SFE	400	24,000 gpd	16.7 gpm	41.7 gpm	91.7 gpm	
PA17 (CVR17)	120 Units	120 SFE	2 SFE	122 SFE	400	48,800 gpd	33.9 gpm	84.7 gpm	186.4 gpm	
South School/Park					400					
PA15(NE) (CVR7S)	90 Units	90 SFE	2 SFE	92 SFE	400	36,800 gpd	25.6 gpm	63.9 gpm	140.6 gpm	
PA13 (CVR#5A.2-5)	299 Units	299 SFE	2 SFE	301 SFE	400	120,400 gpd	83.6 gpm	209.0 gpm	459.9 gpm	
PA14 (*CVR#5B*)	113 Units	113 SFE	2 SFE	115 SFE	400	46,000 gpd	31.9 gpm	79.9 gpm	175.7 gpm	
PA7 (CVR18)	90 Units	90 SFE	2 SFE	92 SFE	400	36,800 gpd	25.6 gpm	63.9 gpm	140.6 gpm	
PA7 (Tract C)	15 Units		1.0 SFE		400					
PA12	162 Units	162 SFE	2.0 SFE	164 SFE	400	65,600 gpd	45.6 gpm	113.9 gpm	250.6 gpm	
PA9/10	122 Units	122 SFE	2.0 SFE	124 SFE	400	49,600 gpd	34.4 gpm	86.1 gpm	189.4 gpm	
PA15SE (Green Zone)	100 Units	100 SFE	2.0 SFE	102 SFE	400	40,800 gpd	28.3 gpm	70.8 gpm	155.8 gpm	
	3102 Units	3102 SFE	67 SFE	3168 SFE		1,267,332 gpd	880.1 gpm	#########	4840.5 gpm	
		32.0 SFE								
		3134 SFE								

		FF	1500.0 gpm	
SFE = "Single Family Equivalent		Max Day+FF	3700.2 gpm	*(controlling scenario)*
Irrigation & Streetscape	3.4 ac			
Irrigation gpd/ac	3,750 gpd/ac			
SFE Average Day gpd	400 gpd/SFE			
Irrigation SFE/ac	9.38 SFE/ac			
Irrigation SFE's	32 SFE			

EXHIBIT A

APPENDIX B

Water Storage

CVR14 - WATER DEMANDS

Zone	Lots (SFE)	Average Day Demand	Maximum Day Demand	Peak Hour Demand
RED	112	**31.11 gpm**	**77.78 gpm**	**171.11 gpm**
RED		44800 gpd	112000 gpd	246400 gpd
RED		0.045 Mgd	0.112 Mgd	0.246 Mgd
RED		0.069 cfs	0.173 cfs	0.381 cfs

Residential Avg Day Demand	400 gpd/sfe	=	0.28 gpm/sfe
Irrigation Avg Day Demand	3750 gpd/ac	=	2.60 gpm/ac
Maximum Day Demand	Avg Day x 2.50	=	0.69 gpm/sfe
Peak Hour Demand	Avg Day x 5.50	=	1.53 gpm/sfe

CVR14 - WATER STORAGE REQUIREMENTS

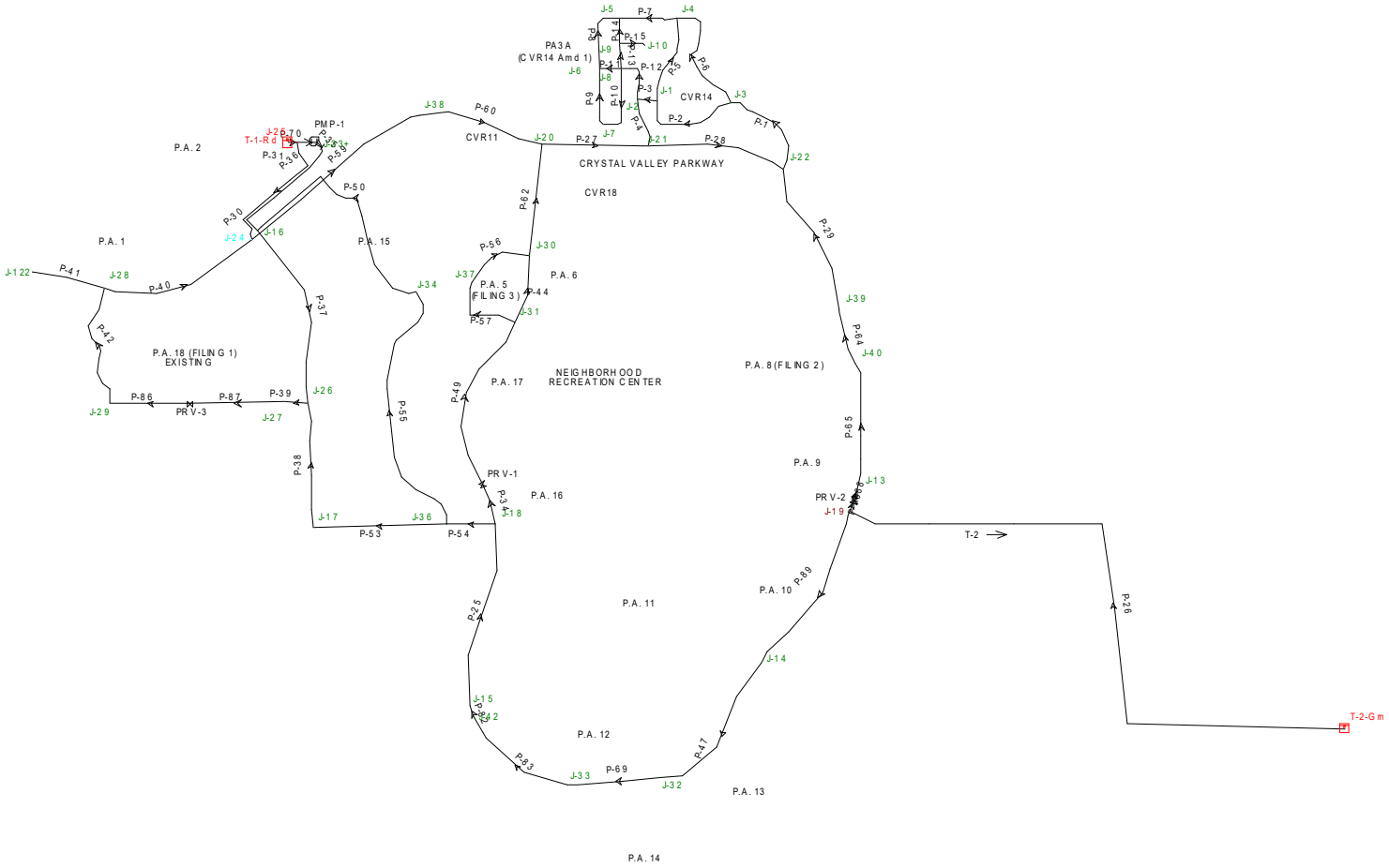
Total Max. Day Demand:	77.78 gpm	112000 gpd	0.11 MG
Required Fire Flow:	2000 gpm	**240,000 gal/2hr**	0.24 MG
Required Storage:		352000 gal	0.35 MG
Required Storage: (w/o FF)		*112000 gal*	*0.11 MG*

EXHIBIT B

APPENDIX C

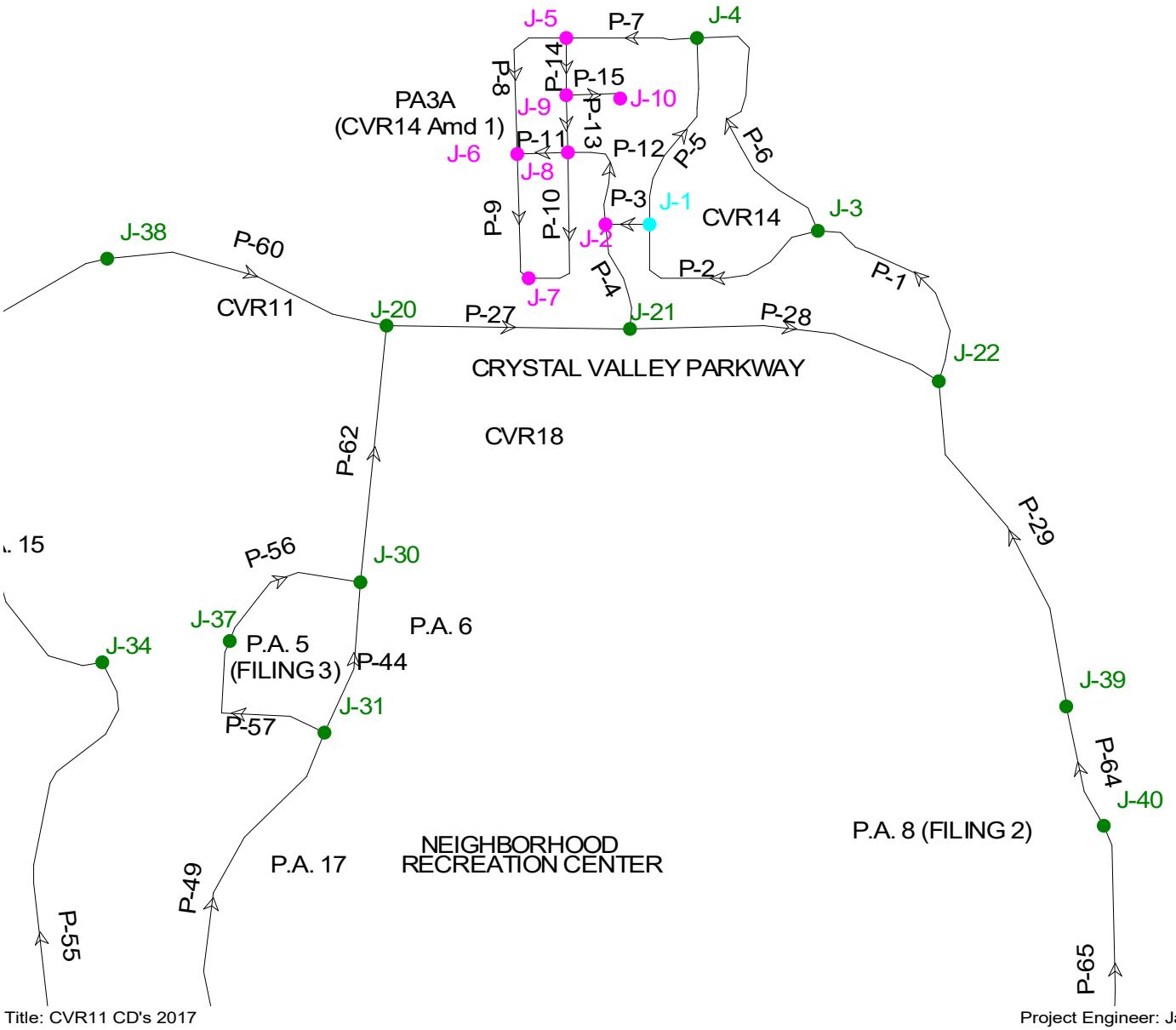
WaterCAD

Scenario: MD; FF@JP5; P-4 out



Legacy Engineering Inc.
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Scenario: MD; FF@JP7; P-4 out



CVR14 & CVR14 Amd 1 water demands

Jct	Elev	Filing	Lots (sfe)	Ave Day	Avg Day Flow		Max Day	Peak Hr
1	6,457.30	CVR14	36.5	400 gpd/sfe	14600 gpd	10.1 gpm	25.3 gpm	55.8 gpm
2	6,457.30	CVR14	36.5	400 gpd/sfe	14600 gpd	10.1 gpm	25.3 gpm	55.8 gpm
3	6,425.70	CVR14	36.5	400 gpd/sfe	14600 gpd	10.1 gpm	25.3 gpm	55.8 gpm
4	6,439.30	CVR14	36.5	400 gpd/sfe	14600 gpd	10.1 gpm	25.3 gpm	55.8 gpm
5	6,462.20	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm
6	6,464.20	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm
7	6,456.00	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm
8	6,463.90	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm
9	6,466.70	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm
10	6,471.20	CVR14A1	19.3	400 gpd/sfe	7733 gpd	5.4 gpm	13.4 gpm	29.5 gpm

Scenario Hierarchy Report

Average Day Hierarchy

Label	Notes
Average Day	Created: 01/30/08 05:33:52 PM
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MD; FF; P-4 out	Created: 02/02/08 10:26:59 AM
MD; FF@JP5; P-4 out	Created: 02/22/08 03:37:51 PM
MD; FF@JP7; P-4 out	Created: 02/22/08 03:58:18 PM
Peak Hour	Created: 01/30/08 06:01:17 PM
PH; P-4 out	Created: 02/02/08 10:57:32 AM

Static Hierarchy

Label	Notes
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Stc; Max; Tanks @ 100%	Created: 02/25/08 06:25:43 PM

Scenario Summary Report

Average Day

Scenario Summary	
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Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Scenario Summary Report

Max Day

Scenario Summary	
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Physical Alternative	Base-Physical
Demand Alternative	Max Day
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Scenario Summary Report

MD; FF

Scenario Summary	
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Physical Alternative	Base-Physical
Demand Alternative	Max Day
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Scenario Summary Report

MD; FF; P-4 out

Scenario Summary	
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Demand Alternative	Max Day
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Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Scenario Summary Report

MD; FF@JP5; P-4 out

Scenario Summary	
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Physical Alternative	Base-Physical
Demand Alternative	MD & FF@JP5
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Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Demand	0.00	Roughness	0.00

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Scenario Summary Report

MD; FF@JP7; P-4 out

Scenario Summary	
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Physical Alternative	Base-Physical
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Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
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Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
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Scenario Summary Report

Peak Hour

Scenario Summary	
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Physical Alternative	Base-Physical
Demand Alternative	Peak Hour
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
Demand Operation	<None>	Roughness Operation	<None>
Demand	0.00	Roughness	0.00

Created: 01/30/08 06:01:17 PM

Scenario Summary Report

PH; P-4 out

Scenario Summary	
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Peak Hour
Initial Settings Alternative	P-4 in Red Zone out; PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
Demand Operation	<None>	Roughness Operation	<None>
Demand	0.00	Roughness	0.00

Created: 02/02/08 10:57:32 AM

Scenario Summary Report

Static

Scenario Summary	
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	No Demand
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
Demand Operation	<None>	Roughness Operation	<None>
Demand	0.00	Roughness	0.00

Created: 01/30/08 06:11:20 PM

Scenario Summary Report

Stc; Min; Tnks@20%

Scenario Summary	
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	No Demand
Initial Settings Alternative	Tanks @ 20%; PRV's adjusted
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
Demand Operation	<None>	Roughness Operation	<None>
Demand	0.00	Roughness	0.00

Created: 02/22/08 05:15:46 PM

Scenario Summary Report

Stc; Max; Tanks @ 100%

Scenario Summary	
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	No Demand
Initial Settings Alternative	Tanks @ 100%; PRV's adjusted
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Hydraulic Analysis Summary	
Analysis	Steady State
Friction Method	Hazen-Williams Formula
Accuracy	0.001000
Trials	40

Quality Analysis Summary					
Analysis	Constituent		Quality Time Step	N/A	hr
Age Tolerance	0.01	hr	Constituent Tolerance	0.0	mg/l
Trace Tolerance	1.0	%			

Global Adjustments			
Demand Operation	<None>	Roughness Operation	<None>
Demand	0.00	Roughness	0.00

Created: 02/25/08 06:25:43 PM

Detailed Report for Pressure Junction: J-1

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,942.44 ft	Elevation	6,457.30 ft
Y	1,550,436.95 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	10	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	89	205	10

Detailed Report for Pressure Junction: J-2

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,742.76 ft	Elevation	6,457.30 ft
Y	1,550,442.91 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	10	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	89	205	10

Detailed Report for Pressure Junction: J-3

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,189,690.52 ft	Elevation	6,425.70 ft
Y	1,550,410.13 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	10	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	102	236	10

Detailed Report for Pressure Junction: J-4

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,189,154.05 ft	Elevation	6,439.30 ft
Y	1,551,262.52 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	10	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	96	223	10

Detailed Report for Pressure Junction: J-5

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,569.90 ft	Elevation	6,462.20 ft
Y	1,551,265.50 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	86	200	6

Detailed Report for Pressure Junction: J-6

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,355.31 ft	Elevation	6,464.20 ft
Y	1,550,752.87 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	86	198	6

Detailed Report for Pressure Junction: J-7

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,405.98 ft	Elevation	6,456.00 ft
Y	1,550,198.52 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	89	206	6

Detailed Report for Pressure Junction: J-8

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,578.84 ft	Elevation	6,463.90 ft
Y	1,550,758.83 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	86	198	6

Detailed Report for Pressure Junction: J-9

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,569.90 ft	Elevation	6,466.70 ft
Y	1,551,009.18 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	84	195	6

Detailed Report for Pressure Junction: J-10

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Geometric Summary			
X	3,188,814.29 ft	Elevation	6,471.20 ft
Y	1,550,994.28 ft	Zone	Red

Demand Summary

Type	Base Flow (gpm)	Pattern
Demand	6	Fixed

User Data			
Observed Concentration	0.0 ppm	Observed Pressure	0.0 psi
SCADA ID		Existing	false
Hydrant Location	false	Sampling Point	false

Calculated Results Summary

Time (hr)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
0.00	6,662	83	191	6

Scenario: Average Day
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	10	Fixed	10	6,662	89
J-2	6,457.30	Red	Demand	10	Fixed	10	6,662	89
J-3	6,425.70	Red	Demand	10	Fixed	10	6,662	102
J-4	6,439.30	Red	Demand	10	Fixed	10	6,662	96
J-5	6,462.20	Red	Demand	6	Fixed	6	6,662	86
J-6	6,464.20	Red	Demand	6	Fixed	6	6,662	86
J-7	6,456.00	Red	Demand	6	Fixed	6	6,662	89
J-8	6,463.90	Red	Demand	6	Fixed	6	6,662	86
J-9	6,466.70	Red	Demand	6	Fixed	6	6,662	84
J-10	6,471.20	Red	Demand	6	Fixed	6	6,662	83
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,807	109
J-15	6,630.00	Green	Demand	0	Fixed	0	6,807	76
J-16	6,583.00	Green	Demand	0	Fixed	0	6,807	97
J-17	6,634.00	Green	Demand	0	Fixed	0	6,807	75
J-18	6,578.50	Green	Demand	0	Fixed	0	6,807	99
J-19	6,488.00	Green	Demand	0	Fixed	0	6,807	138
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,807	68
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,807	89
J-27	6,580.00	Green	Demand	0	Fixed	0	6,807	98
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,807	114
J-33	6,567.00	Green	Demand	0	Fixed	0	6,807	104
J-34	6,585.00	Green	Demand	0	Fixed	0	6,807	96
J-36	6,592.00	Green	Demand	0	Fixed	0	6,807	93
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,807	76
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Detailed Report for Pressure Pipe: P-1

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	1,011.00 ft
From Node	J-22	To Node	J-3

Elevations			
From Elevation	6,413 ft	To Elevation	6,426 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	31	0.1987	6,662	6,662	0	0	0	0.03

Detailed Report for Pressure Pipe: P-2

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	1,032.00 ft
From Node	J-3	To Node	J-1

Elevations			
From Elevation	6,426 ft	To Elevation	6,457 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	9	0.0575	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-3

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	200.00 ft
From Node	J-1	To Node	J-2

Elevations			
From Elevation	6,457 ft	To Elevation	6,457 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-11	0.0730	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-4

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	493.00 ft
From Node	J-2	To Node	J-21

Elevations			
From Elevation	6,457 ft	To Elevation	6,447 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-43	0.2768	6,662	6,662	0	0	0	0.06

Detailed Report for Pressure Pipe: P-5

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	890.00 ft
From Node	J-4	To Node	J-1

Elevations			
From Elevation	6,439 ft	To Elevation	6,457 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-10	0.0667	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-6

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	1,271.00 ft
From Node	J-3	To Node	J-4

Elevations			
From Elevation	6,426 ft	To Elevation	6,439 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	12	0.0774	6,662	6,662	0	0	0	0.01

Detailed Report for Pressure Pipe: P-7

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	586.00 ft
From Node	J-4	To Node	J-5

Elevations			
From Elevation	6,439 ft	To Elevation	6,462 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	13	0.0802	6,662	6,662	0	0	0	0.01

Detailed Report for Pressure Pipe: P-8

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	711.00 ft
From Node	J-5	To Node	J-6

Elevations			
From Elevation	6,462 ft	To Elevation	6,464 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	2	0.0118	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-9

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	570.00 ft
From Node	J-6	To Node	J-7

Elevations			
From Elevation	6,464 ft	To Elevation	6,456 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	2	0.0126	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-10

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	725.00 ft
From Node	J-7	To Node	J-8

Elevations			
From Elevation	6,456 ft	To Elevation	6,464 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-4	0.0225	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-11

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	224.00 ft
From Node	J-6	To Node	J-8

Elevations			
From Elevation	6,464 ft	To Elevation	6,464 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-6	0.0359	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-12

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	483.00 ft
From Node	J-8	To Node	J-2

Elevations			
From Elevation	6,464 ft	To Elevation	6,457 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-22	0.1400	6,662	6,662	0	0	0	0.02

Detailed Report for Pressure Pipe: P-13

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	251.00 ft
From Node	J-8	To Node	J-9

Elevations			
From Elevation	6,464 ft	To Elevation	6,467 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	7	0.0433	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-14

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	256.00 ft
From Node	J-9	To Node	J-5

Elevations			
From Elevation	6,467 ft	To Elevation	6,462 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	-5	0.0333	6,662	6,662	0	0	0	0.00

Detailed Report for Pressure Pipe: P-15

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Global Adjustments Summary			
	<None>	Roughness	<None>

Pipe Characteristics			
Material	PVC	Hazen- Williams C	120.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	254.00 ft
From Node	J-9	To Node	J-10

Elevations			
From Elevation	6,467 ft	To Elevation	6,471 ft

Initial Status	
Initial Status	Open

User Data			
Date Installed		Date Retired	
Inspection Date		Nominal Diameter	0.0 ft
Observed Flow	0.0 gpm	Condition	
Exterior Coating		Lining	
Pipe Class		Existing	false
Metered	false	Skeletonized	false

Calculated Results Summary

Time (hr)	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00	Open	6	0.0383	6,662	6,662	0	0	0	0.00

Analysis Results
Scenario: Average Day
Steady State Analysis

Title: CVR14 Amendment 1 2026
Project Engineer: James J. Mill
Project Date: 02/02/26
Comments:

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	1.0804e-5 ft²/s		

Network Inventory			
Pressure Pipes	54	Number of Tanks	2
Number of Reservoirs	0	- Constant Area:	2
Number of Pressure Junctic	39	- Variable Area:	0
Number of Pumps	1	Number of Valves	3
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	3
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	- GPV's:	0
Number of Spot Elevations	0		

Pressure Pipes Inventory			
8.0 in	18,828.00 ft	16.0 in	24,827.00 ft
10.0 in	254.00 ft	18.0 in	13,728.00 ft
Total Length	57,637.00 ft		

Pressure Junctions @ 0.00 hr

Label	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
J-1	6,662	89	205	10
J-2	6,662	89	205	10
J-3	6,662	102	236	10
J-4	6,662	96	223	10
J-5	6,662	86	200	6
J-6	6,662	86	198	6
J-7	6,662	89	206	6

Analysis Results
Scenario: Average Day
Steady State Analysis

Pressure Junctions @ 0.00 hr				
Label	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
J-8	6,662	86	198	6
J-9	6,662	84	195	6
J-10	6,662	83	191	6

Analysis Results
Scenario: Average Day
Steady State Analysis

Title: CVR14 Amendment 1 2026
Project Engineer: James J. Mill
Project Date: 02/02/26
Comments:

Scenario Summary	
Scenario	Average Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Base-Average Daily
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	1.0804e-5 ft²/s		

Network Inventory			
Pressure Pipes	54	Number of Tanks	2
Number of Reservoirs	0	- Constant Area:	2
Number of Pressure Junctic	39	- Variable Area:	0
Number of Pumps	1	Number of Valves	3
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	3
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	- GPV's:	0
Number of Spot Elevations	0		

Pressure Pipes Inventory			
8.0 in	18,828.00 ft	16.0 in	24,827.00 ft
10.0 in	254.00 ft	18.0 in	13,728.00 ft
Total Length	57,637.00 ft		

Pressure Pipes @ 0.00 hr

Label	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-1	Open	31	0.1987	6,662	6,662	0	0	0	0.03
P-2	Open	9	0.0575	6,662	6,662	0	0	0	0.00
P-3	Open	-11	0.0730	6,662	6,662	0	0	0	0.00
P-4	Open	-43	0.2768	6,662	6,662	0	0	0	0.06
P-5	Open	-10	0.0667	6,662	6,662	0	0	0	0.00
P-6	Open	12	0.0774	6,662	6,662	0	0	0	0.01
P-7	Open	13	0.0802	6,662	6,662	0	0	0	0.01

Analysis Results
Scenario: Average Day
Steady State Analysis

Pressure Pipes @ 0.00 hr

Label	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-8	Open	2	0.0118	6,662	6,662	0	0	0	0.00
P-9	Open	2	0.0126	6,662	6,662	0	0	0	0.00
P-10	Open	-4	0.0225	6,662	6,662	0	0	0	0.00
P-11	Open	-6	0.0359	6,662	6,662	0	0	0	0.00
P-12	Open	-22	0.1400	6,662	6,662	0	0	0	0.02
P-13	Open	7	0.0433	6,662	6,662	0	0	0	0.00
P-14	Open	-5	0.0333	6,662	6,662	0	0	0	0.00
P-15	Open	6	0.0383	6,662	6,662	0	0	0	0.00

Analysis Results
Scenario: Max Day
Steady State Analysis

Title: CVR14 Amendment 1 2026
Project Engineer: James J. Mill
Project Date: 02/02/26
Comments:

Scenario Summary	
Scenario	Max Day
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Max Day
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	1.0804e-5 ft²/s		

Network Inventory			
Pressure Pipes	54	Number of Tanks	2
Number of Reservoirs	0	- Constant Area:	2
Number of Pressure Junctic	39	- Variable Area:	0
Number of Pumps	1	Number of Valves	3
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	3
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	- GPV's:	0
Number of Spot Elevations	0		

Pressure Pipes Inventory			
8.0 in	18,828.00 ft	16.0 in	24,827.00 ft
10.0 in	254.00 ft	18.0 in	13,728.00 ft
Total Length	57,637.00 ft		

Pressure Junctions @ 0.00 hr

Label	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
J-1	6,662	88	204	25
J-2	6,662	88	204	25
J-3	6,662	102	236	25
J-4	6,662	96	222	25
J-5	6,662	86	200	14
J-6	6,662	85	198	0
J-7	6,662	89	206	14

Analysis Results
Scenario: Max Day
Steady State Analysis

Pressure Junctions @ 0.00 hr

Label	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
J-8	6,662	86	198	14
J-9	6,662	84	195	14
J-10	6,662	82	191	14

Pressure Pipes @ 0.00 hr

Label	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-1	Open	69	0.4373	6,662	6,662	0	0	0	0.15
P-2	Open	18	0.1147	6,662	6,662	0	0	0	0.01
P-3	Open	-30	0.1916	6,662	6,662	0	0	0	0.03
P-4	Open	-101	0.6478	6,662	6,662	0	0	0	0.31
P-5	Open	-23	0.1467	6,662	6,662	0	0	0	0.02
P-6	Open	26	0.1630	6,662	6,662	0	0	0	0.02
P-7	Open	24	0.1502	6,662	6,662	0	0	0	0.02
P-8	Open	-3	0.0160	6,662	6,662	0	0	0	0.00
P-9	Open	6	0.0410	6,662	6,662	0	0	0	0.00
P-10	Open	-8	0.0483	6,662	6,662	0	0	0	0.00
P-11	Open	-9	0.0570	6,662	6,662	0	0	0	0.00
P-12	Open	-46	0.2966	6,662	6,662	0	0	0	0.07
P-13	Open	16	0.1019	6,662	6,662	0	0	0	0.01
P-14	Open	-12	0.0768	6,662	6,662	0	0	0	0.01
P-15	Open	14	0.0894	6,662	6,662	0	0	0	0.01

Scenario: Max Day
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	25	Fixed	25	6,662	88
J-2	6,457.30	Red	Demand	25	Fixed	25	6,662	88
J-3	6,425.70	Red	Demand	25	Fixed	25	6,662	102
J-4	6,439.30	Red	Demand	25	Fixed	25	6,662	96
J-5	6,462.20	Red	Demand	14	Fixed	14	6,662	86
J-6	6,464.20	Red	Demand	0	Fixed	0	6,662	85
J-7	6,456.00	Red	Demand	14	Fixed	14	6,662	89
J-8	6,463.90	Red	Demand	14	Fixed	14	6,662	86
J-9	6,466.70	Red	Demand	14	Fixed	14	6,662	84
J-10	6,471.20	Red	Demand	14	Fixed	14	6,662	82
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,807	109
J-15	6,630.00	Green	Demand	0	Fixed	0	6,807	76
J-16	6,583.00	Green	Demand	0	Fixed	0	6,807	97
J-17	6,634.00	Green	Demand	0	Fixed	0	6,807	75
J-18	6,578.50	Green	Demand	0	Fixed	0	6,807	99
J-19	6,488.00	Green	Demand	0	Fixed	0	6,807	138
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,807	68
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,807	89
J-27	6,580.00	Green	Demand	0	Fixed	0	6,807	98
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,807	114
J-33	6,567.00	Green	Demand	0	Fixed	0	6,807	104
J-34	6,585.00	Green	Demand	0	Fixed	0	6,807	96
J-36	6,592.00	Green	Demand	0	Fixed	0	6,807	93
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,807	76
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Analysis Results
Scenario: MD; FF
Fire Flow Analysis

Title: CVR14 Amendment 1 2026
Project Engineer: James J. Mill
Project Date: 02/02/26
Comments:

Scenario Summary	
Scenario	MD; FF
Active Topology Alternative	Base-Active Topology
Physical Alternative	Base-Physical
Demand Alternative	Max Day
Initial Settings Alternative	Base-Initial Settings PMP-1 off
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow
Capital Cost Alternative	Base-Cost
Energy Cost Alternative	Base-Energy Cost
User Data Alternative	Base-User Data

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	1.0804e-5 ft²/s		

Network Inventory			
Pressure Pipes	54	Number of Tanks	2
Number of Reservoirs	0	- Constant Area:	2
Number of Pressure Junctions	39	- Variable Area:	0
Number of Pumps	1	Number of Valves	3
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	3
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	- GPV's:	0
Number of Spot Elevations	0		

Pressure Pipes Inventory			
8.0 in	19,082.00 ft	18.0 in	13,728.00 ft
16.0 in	24,827.00 ft		
Total Length	57,637.00 ft		

Analysis Results
Scenario: MD; FF
Fire Flow Analysis

Pressure Junctions @ 0.00 hr

Label	Calculated Hydraulic Grade (ft)	Pressure (psi)	Pressure Head (ft)	Demand (Calculated) (gpm)
J-1	6,662	88	204	25
J-2	6,662	88	204	25
J-3	6,662	102	236	25
J-4	6,662	96	222	25
J-5	6,662	86	200	14
J-6	6,662	85	198	0
J-7	6,662	89	206	14
J-8	6,662	86	198	14
J-9	6,662	84	195	14
J-10	6,662	82	191	14

Scenario: MD; FF
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)
J-16	Green	7	true	true	2,000	2,995	2,000	2,995	20	49	20	20	J-23+	N/A
J-17	Green	6	true	true	2,000	3,216	2,000	3,216	20	27	20	20	J-23+	N/A
J-18	Green	5	true	true	2,000	3,404	2,000	3,404	20	51	20	20	J-23+	N/A
J-19	Green	2	true	true	2,000	4,000	2,000	4,000	20	107	20	37	J-23+	N/A
J-20	Red	2	true	true	2,000	4,000	2,000	4,000	20	85	20	48	J-31	N/A
J-22	Red	2	true	true	2,000	4,000	2,000	4,000	20	105	20	49	J-31	N/A
J-25	T-1 svc	1	true	false	2,000	0	2,000	0	20	5	20	35	J-24	N/A
J-24	T-1 svc	1	true	false	2,000	0	2,000	0	20	35	20	5	J-25	N/A
J-23+	Green	3	true	true	2,000	2,896	2,000	2,896	20	20	20	35	J-17	N/A
J-122	Red	2	true	true	2,000	4,000	2,000	4,000	20	68	20	49	J-31	N/A
J-26	Green	7	true	true	2,000	3,119	2,000	3,119	20	41	20	20	J-23+	N/A
J-27	Green	6	true	true	2,000	3,130	2,000	3,130	20	33	20	20	J-23+	N/A
J-28	Red	2	true	true	2,000	4,000	2,000	4,000	20	71	20	49	J-31	N/A
J-29	Red	2	true	true	2,000	4,000	2,000	4,000	20	26	20	49	J-31	N/A
J-30	Red	2	true	true	2,000	4,000	2,000	4,000	20	61	20	48	J-31	N/A
J-31	Red	2	true	true	2,000	4,000	2,000	4,000	20	48	20	55	J-37	N/A
J-21	Red	2	true	true	2,000	4,000	2,000	4,000	20	91	20	49	J-31	N/A
J-39	Red	2	true	true	2,000	4,000	2,000	4,000	20	98	20	49	J-31	N/A
J-13	Red	2	true	true	2,000	4,000	2,000	4,000	20	76	20	49	J-31	N/A
J-14	Green	2	true	true	2,000	4,000	2,000	4,000	20	71	20	29	J-23+	N/A
J-15	Green	5	true	true	2,000	3,683	2,000	3,683	20	29	20	20	J-23+	N/A
J-32	Green	2	true	true	2,000	4,000	2,000	4,000	20	68	20	22	J-23+	N/A
J-34	Green	3	true	true	2,000	2,691	2,000	2,691	20	20	20	33	J-23+	N/A
J-36	Green	5	true	true	2,000	3,344	2,000	3,344	20	45	20	20	J-23+	N/A
J-37	Red	2	true	true	2,000	4,000	2,000	4,000	20	30	20	48	J-31	N/A
J-38	Red	2	true	true	2,000	4,000	2,000	4,000	20	56	20	49	J-31	N/A
J-40	Red	2	true	true	2,000	4,000	2,000	4,000	20	92	20	49	J-31	N/A
J-33	Green	4	true	true	2,000	3,929	2,000	3,929	20	56	20	20	J-23+	N/A
J-42	Green	5	true	true	2,000	3,693	2,000	3,693	20	29	20	20	J-23+	N/A
J-1	Red	2	true	true	2,000	4,000	2,025	4,025	20	54	20	49	J-31	N/A
J-2	Red	2	true	true	2,000	4,000	2,025	4,025	20	59	20	49	J-31	N/A
J-3	Red	2	true	true	2,000	4,000	2,025	4,025	20	67	20	49	J-31	N/A
J-4	Red	2	true	true	2,000	4,000	2,025	4,025	20	51	20	47	J-10	N/A
J-5	Red	2	true	true	2,000	4,000	2,014	4,014	20	33	20	33	J-10	N/A
J-6	Red	2	true	true	2,000	4,000	2,000	4,000	20	28	20	33	J-10	N/A
J-7	Red	3	true	true	2,000	3,878	2,014	3,892	20	20	20	35	J-6	N/A
J-8	Red	2	true	true	2,000	4,000	2,014	4,014	20	35	20	34	J-10	N/A
J-9	Red	2	true	true	2,000	4,000	2,014	4,014	20	27	20	25	J-10	N/A
J-10	Red	3	true	true	2,000	3,309	2,014	3,323	20	20	20	43	J-9	N/A

Scenario: MD; FF
Fire Flow Analysis
Fire Flow Report

Calculated Minimum System Pressure (psi)	Minimum System Junction
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
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5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1

Scenario: MD; FF; P-4 out
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)
J-16	Green	7	true	true	2,000	2,996	2,000	2,996	20	49	20	20	J-23+	N/A
J-17	Green	6	true	true	2,000	3,217	2,000	3,217	20	27	20	20	J-23+	N/A
J-18	Green	5	true	true	2,000	3,405	2,000	3,405	20	51	20	20	J-23+	N/A
J-19	Green	2	true	true	2,000	4,000	2,000	4,000	20	107	20	37	J-23+	N/A
J-20	Red	2	true	true	2,000	4,000	2,000	4,000	20	85	20	48	J-31	N/A
J-22	Red	2	true	true	2,000	4,000	2,000	4,000	20	105	20	49	J-31	N/A
J-25	T-1 svc	1	true	false	2,000	0	2,000	0	20	5	20	35	J-24	N/A
J-24	T-1 svc	1	true	false	2,000	0	2,000	0	20	35	20	5	J-25	N/A
J-23+	Green	3	true	true	2,000	2,897	2,000	2,897	20	20	20	35	J-17	N/A
J-122	Red	2	true	true	2,000	4,000	2,000	4,000	20	68	20	49	J-31	N/A
J-26	Green	6	true	true	2,000	3,119	2,000	3,119	20	41	20	20	J-23+	N/A
J-27	Green	6	true	true	2,000	3,130	2,000	3,130	20	33	20	20	J-23+	N/A
J-28	Red	2	true	true	2,000	4,000	2,000	4,000	20	71	20	49	J-31	N/A
J-29	Red	2	true	true	2,000	4,000	2,000	4,000	20	26	20	49	J-31	N/A
J-30	Red	2	true	true	2,000	4,000	2,000	4,000	20	61	20	48	J-31	N/A
J-31	Red	2	true	true	2,000	4,000	2,000	4,000	20	48	20	55	J-37	N/A
J-21	Red	2	true	true	2,000	4,000	2,000	4,000	20	91	20	49	J-31	N/A
J-39	Red	2	true	true	2,000	4,000	2,000	4,000	20	98	20	49	J-31	N/A
J-13	Red	2	true	true	2,000	4,000	2,000	4,000	20	76	20	49	J-31	N/A
J-14	Green	2	true	true	2,000	4,000	2,000	4,000	20	71	20	29	J-23+	N/A
J-15	Green	5	true	true	2,000	3,684	2,000	3,684	20	29	20	20	J-23+	N/A
J-32	Green	2	true	true	2,000	4,000	2,000	4,000	20	68	20	22	J-23+	N/A
J-34	Green	3	true	true	2,000	2,691	2,000	2,691	20	20	20	33	J-23+	N/A
J-36	Green	5	true	true	2,000	3,345	2,000	3,345	20	45	20	20	J-23+	N/A
J-37	Red	2	true	true	2,000	4,000	2,000	4,000	20	30	20	48	J-31	N/A
J-38	Red	2	true	true	2,000	4,000	2,000	4,000	20	56	20	49	J-31	N/A
J-40	Red	2	true	true	2,000	4,000	2,000	4,000	20	92	20	49	J-31	N/A
J-33	Green	4	true	true	2,000	3,929	2,000	3,929	20	56	20	20	J-23+	N/A
J-42	Green	5	true	true	2,000	3,694	2,000	3,694	20	29	20	20	J-23+	N/A
J-1	Red	5	true	true	2,000	2,236	2,025	2,261	20	25	20	20	J-10	N/A
J-2	Red	5	true	true	2,000	2,183	2,025	2,208	20	24	20	20	J-10	N/A
J-3	Red	6	true	true	2,000	2,602	2,025	2,627	20	40	20	20	J-10	N/A
J-4	Red	5	true	true	2,000	2,227	2,025	2,252	20	32	20	20	J-10	N/A
J-5	Red	5	true	true	2,000	2,093	2,014	2,107	20	23	20	20	J-10	N/A
J-6	Red	5	true	true	2,000	2,093	2,000	2,093	20	20	20	20	J-10	N/A
J-7	Red	3	true	true	2,000	2,077	2,014	2,091	20	20	20	21	J-10	N/A
J-8	Red	5	true	true	2,000	2,092	2,014	2,106	20	22	20	20	J-10	N/A
J-9	Red	5	true	true	2,000	2,045	2,014	2,059	20	22	20	20	J-10	N/A
J-10	Red	3	true	false	2,000	1,942	2,014	1,956	20	20	20	27	J-9	N/A

Scenario: MD; FF; P-4 out
Fire Flow Analysis
Fire Flow Report

Calculated Minimum System Pressure (psi)	Minimum System Junction
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
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5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1
5	PMP-1

Scenario: MD; FF@JP5; P-4 out
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	25	Fixed	25	6,543	37
J-2	6,457.30	Red	Demand	25	Fixed	25	6,539	35
J-3	6,425.70	Red	Demand	25	Fixed	25	6,570	63
J-4	6,439.30	Red	Demand	25	Fixed	25	6,542	45
J-5	6,462.20	Red	Demand	2,014	Fixed	2,014	6,527	28
J-6	6,464.20	Red	Demand	0	Fixed	0	6,529	28
J-7	6,456.00	Red	Demand	14	Fixed	14	6,530	32
J-8	6,463.90	Red	Demand	14	Fixed	14	6,530	29
J-9	6,466.70	Red	Demand	14	Fixed	14	6,528	27
J-10	6,471.20	Red	Demand	14	Fixed	14	6,528	25
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,792	103
J-15	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-16	6,583.00	Green	Demand	0	Fixed	0	6,790	90
J-17	6,634.00	Green	Demand	0	Fixed	0	6,790	68
J-18	6,578.50	Green	Demand	0	Fixed	0	6,790	92
J-19	6,488.00	Green	Demand	0	Fixed	0	6,793	132
J-20	6,463.00	Red	Demand	0	Fixed	0	6,661	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,661	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,660	107
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,790	61
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,790	82
J-27	6,580.00	Green	Demand	0	Fixed	0	6,790	91
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,792	107
J-33	6,567.00	Green	Demand	0	Fixed	0	6,791	97
J-34	6,585.00	Green	Demand	0	Fixed	0	6,790	89
J-36	6,592.00	Green	Demand	0	Fixed	0	6,790	86
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,661	58
J-39	6,430.00	Red	Demand	0	Fixed	0	6,661	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,661	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: MD; FF@JP7; P-4 out
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	25	Fixed	25	6,543	37
J-2	6,457.30	Red	Demand	25	Fixed	25	6,538	35
J-3	6,425.70	Red	Demand	25	Fixed	25	6,570	63
J-4	6,439.30	Red	Demand	25	Fixed	25	6,543	45
J-5	6,462.20	Red	Demand	14	Fixed	14	6,530	29
J-6	6,464.20	Red	Demand	0	Fixed	0	6,525	26
J-7	6,456.00	Red	Demand	2,014	Fixed	2,014	6,512	24
J-8	6,463.90	Red	Demand	14	Fixed	14	6,527	27
J-9	6,466.70	Red	Demand	14	Fixed	14	6,528	27
J-10	6,471.20	Red	Demand	14	Fixed	14	6,528	25
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,792	103
J-15	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-16	6,583.00	Green	Demand	0	Fixed	0	6,790	90
J-17	6,634.00	Green	Demand	0	Fixed	0	6,790	68
J-18	6,578.50	Green	Demand	0	Fixed	0	6,790	92
J-19	6,488.00	Green	Demand	0	Fixed	0	6,793	132
J-20	6,463.00	Red	Demand	0	Fixed	0	6,661	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,661	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,660	107
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,790	61
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,790	82
J-27	6,580.00	Green	Demand	0	Fixed	0	6,790	91
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,792	107
J-33	6,567.00	Green	Demand	0	Fixed	0	6,791	97
J-34	6,585.00	Green	Demand	0	Fixed	0	6,790	89
J-36	6,592.00	Green	Demand	0	Fixed	0	6,790	86
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,661	58
J-39	6,430.00	Red	Demand	0	Fixed	0	6,661	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,661	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: MD; FF@JP10; P-4 out
Fire Flow Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-1	1,011.00	8.0	PVC	120.0	false	0.00	Open	2,170	6,660	6,570	90	88.95
P-2	1,032.00	8.0	PVC	120.0	false	0.00	Open	1,131	6,570	6,543	27	26.59
P-3	200.00	8.0	PVC	120.0	false	0.00	Open	1,019	6,543	6,538	4	21.92
P-4	493.00	8.0	PVC	120.0	false	0.00	Closed	0	6,538	6,661	0	0.00
P-5	890.00	8.0	PVC	120.0	false	0.00	Open	-87	6,543	6,543	0	0.23
P-6	1,271.00	8.0	PVC	120.0	false	0.00	Open	1,014	6,570	6,543	28	21.75
P-7	586.00	8.0	PVC	120.0	false	0.00	Open	1,076	6,543	6,528	14	24.28
P-8	711.00	8.0	PVC	120.0	false	0.00	Open	50	6,528	6,528	0	0.08
P-9	570.00	8.0	PVC	120.0	false	0.00	Open	18	6,528	6,528	0	0.01
P-10	725.00	8.0	PVC	120.0	false	0.00	Open	4	6,528	6,528	0	0.00
P-11	224.00	8.0	PVC	120.0	false	0.00	Open	32	6,528	6,528	0	0.03
P-12	483.00	8.0	PVC	120.0	false	0.00	Open	-994	6,528	6,538	10	20.94
P-13	251.00	8.0	PVC	120.0	false	0.00	Open	1,016	6,528	6,523	5	21.82
P-14	256.00	8.0	PVC	120.0	false	0.00	Open	-1,012	6,523	6,528	6	21.66
P-15	254.00	12.0	PVC	120.0	false	0.00	Open	2,014	6,523	6,520	3	10.75
P-25	1,945.00	16.0	DIP	120.0	false	0.00	Open	-657	6,790	6,791	1	0.33
P-26	3,812.00	16.0	DIP	120.0	false	0.00	Open	1,762	6,807	6,793	14	2.07
P-27	1,080.00	18.0	DIP	120.0	false	0.00	Open	1,065	6,661	6,661	0	0.46
P-28	1,419.00	18.0	DIP	120.0	false	0.00	Open	1,065	6,661	6,660	1	0.46
P-29	1,601.00	18.0	DIP	120.0	false	0.00	Open	-1,105	6,660	6,661	1	0.49
P-30	1,344.00	16.0	DIP	120.0	false	0.00	Open	408	6,662	6,662	0	0.14
P-31	97.00	16.0	DIP	120.0	false	0.00	Open	408	6,662	6,662	0	0.14
P-34	423.00	18.0	DIP	120.0	false	0.00	Open	-600	6,790	6,790	0	0.16
P-35	95.00	16.0	DIP	120.0	true	0.00	Open	0	6,790	6,790	0	0.00
P-36	1,231.00	16.0	DIP	120.0	false	0.00	Open	-0	6,790	6,790	0	0.00
P-37	1,925.00	16.0	DIP	120.0	false	0.00	Open	6	6,790	6,790	0	0.00
P-38	1,267.00	16.0	DIP	120.0	false	0.00	Open	-51	6,790	6,790	0	0.00
P-39	230.00	8.0	PVC	120.0	false	0.00	Open	57	6,790	6,790	0	0.10
P-40	1,658.00	16.0	DIP	120.0	false	0.00	Open	-57	6,662	6,662	0	0.00
P-41	741.00	16.0	DIP	120.0	false	0.00	Open	0	6,662	6,662	0	0.00
P-42	1,301.00	8.0	PVC	120.0	false	0.00	Open	-57	6,662	6,662	0	0.10
P-44	698.00	18.0	DIP	120.0	false	0.00	Open	-557	6,662	6,662	0	0.14
P-47	1,671.00	16.0	DIP	120.0	false	0.00	Open	-657	6,792	6,792	1	0.33
P-49	1,856.00	18.0	DIP	120.0	false	0.00	Open	-600	6,662	6,662	0	0.16
P-50	2,548.00	8.0	PVC	120.0	false	0.00	Open	6	6,790	6,790	0	0.00
P-53	1,351.00	16.0	DIP	120.0	false	0.00	Open	-51	6,790	6,790	0	0.00
P-54	504.00	16.0	DIP	120.0	false	0.00	Open	-57	6,790	6,790	0	0.00
P-55	2,751.00	8.0	PVC	120.0	false	0.00	Open	-6	6,790	6,790	0	0.00
P-56	726.00	8.0	PVC	120.0	false	0.00	Open	-43	6,662	6,662	0	0.06
P-57	800.00	8.0	PVC	120.0	false	0.00	Open	-43	6,662	6,662	0	0.06
P-59	2,129.00	18.0	DIP	120.0	false	0.00	Open	465	6,662	6,661	0	0.10
P-60	1,300.00	18.0	DIP	120.0	false	0.00	Open	465	6,661	6,661	0	0.10
P-62	1,143.00	18.0	PVC	120.0	false	0.00	Open	600	6,662	6,661	0	0.16
P-64	562.00	18.0	DIP	120.0	false	0.00	Open	-1,105	6,661	6,661	0	0.49
P-65	1,292.00	18.0	DIP	120.0	false	0.00	Open	-1,105	6,661	6,662	1	0.49
P-69	813.00	16.0	DIP	120.0	false	0.00	Open	-657	6,791	6,792	0	0.33
P-70	165.00	16.0	DIP	120.0	true	0.00	Open	0	6,662	6,662	0	0.00
P-82	62.00	16.0	DIP	120.0	false	0.00	Open	-657	6,791	6,791	0	0.33
P-83	1,337.00	16.0	DIP	120.0	false	0.00	Open	-657	6,791	6,791	0	0.33
P-86	803.00	8.0	PVC	120.0	false	0.00	Open	-57	6,662	6,662	0	0.10
P-87	966.00	8.0	PVC	120.0	false	0.00	Open	-57	6,790	6,790	0	0.10
P-88	103.00	18.0	DIP	120.0	false	0.00	Open	-1,105	6,662	6,662	0	0.49
P-89	1,809.00	16.0	DIP	120.0	false	0.00	Open	-657	6,792	6,793	1	0.33

Scenario: MD; FF@JP10; P-4 out
Fire Flow Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-90	122.00	18.0	DIP	120.0	false	0.00	Open	1,105	6,793	6,793	0	0.49

Scenario: MD; FF@JP10; P-4 out
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	25	Fixed	25	6,543	37
J-2	6,457.30	Red	Demand	25	Fixed	25	6,538	35
J-3	6,425.70	Red	Demand	25	Fixed	25	6,570	63
J-4	6,439.30	Red	Demand	25	Fixed	25	6,543	45
J-5	6,462.20	Red	Demand	14	Fixed	14	6,528	29
J-6	6,464.20	Red	Demand	0	Fixed	0	6,528	28
J-7	6,456.00	Red	Demand	14	Fixed	14	6,528	31
J-8	6,463.90	Red	Demand	14	Fixed	14	6,528	28
J-9	6,466.70	Red	Demand	14	Fixed	14	6,523	24
J-10	6,471.20	Red	Demand	2,014	Fixed	2,014	6,518	20
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,792	103
J-15	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-16	6,583.00	Green	Demand	0	Fixed	0	6,790	90
J-17	6,634.00	Green	Demand	0	Fixed	0	6,790	68
J-18	6,578.50	Green	Demand	0	Fixed	0	6,790	92
J-19	6,488.00	Green	Demand	0	Fixed	0	6,793	132
J-20	6,463.00	Red	Demand	0	Fixed	0	6,661	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,661	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,660	107
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,790	61
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,790	82
J-27	6,580.00	Green	Demand	0	Fixed	0	6,790	91
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,792	107
J-33	6,567.00	Green	Demand	0	Fixed	0	6,791	97
J-34	6,585.00	Green	Demand	0	Fixed	0	6,790	89
J-36	6,592.00	Green	Demand	0	Fixed	0	6,790	86
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,661	58
J-39	6,430.00	Red	Demand	0	Fixed	0	6,661	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,661	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,791	70
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	56	Fixed	56	6,661	88
J-2	6,457.30	Red	Demand	56	Fixed	56	6,661	88
J-3	6,425.70	Red	Demand	56	Fixed	56	6,661	102
J-4	6,439.30	Red	Demand	56	Fixed	56	6,661	96
J-5	6,462.20	Red	Demand	30	Fixed	30	6,661	86
J-6	6,464.20	Red	Demand	30	Fixed	30	6,661	85
J-7	6,456.00	Red	Demand	30	Fixed	30	6,661	89
J-8	6,463.90	Red	Demand	30	Fixed	30	6,661	85
J-9	6,466.70	Red	Demand	30	Fixed	30	6,661	84
J-10	6,471.20	Red	Demand	30	Fixed	30	6,661	82
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,806	109
J-15	6,630.00	Green	Demand	0	Fixed	0	6,806	76
J-16	6,583.00	Green	Demand	0	Fixed	0	6,806	96
J-17	6,634.00	Green	Demand	0	Fixed	0	6,806	74
J-18	6,578.50	Green	Demand	0	Fixed	0	6,806	98
J-19	6,488.00	Green	Demand	0	Fixed	0	6,806	138
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,806	67
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,806	89
J-27	6,580.00	Green	Demand	0	Fixed	0	6,806	98
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,806	114
J-33	6,567.00	Green	Demand	0	Fixed	0	6,806	103
J-34	6,585.00	Green	Demand	0	Fixed	0	6,806	96
J-36	6,592.00	Green	Demand	0	Fixed	0	6,806	93
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,806	76
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: PH; P-4 out
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	56	Fixed	56	6,657	86
J-2	6,457.30	Red	Demand	56	Fixed	56	6,657	86
J-3	6,425.70	Red	Demand	56	Fixed	56	6,658	100
J-4	6,439.30	Red	Demand	56	Fixed	56	6,657	94
J-5	6,462.20	Red	Demand	30	Fixed	30	6,657	84
J-6	6,464.20	Red	Demand	30	Fixed	30	6,657	83
J-7	6,456.00	Red	Demand	30	Fixed	30	6,657	87
J-8	6,463.90	Red	Demand	30	Fixed	30	6,657	83
J-9	6,466.70	Red	Demand	30	Fixed	30	6,657	82
J-10	6,471.20	Red	Demand	30	Fixed	30	6,657	80
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,806	109
J-15	6,630.00	Green	Demand	0	Fixed	0	6,806	76
J-16	6,583.00	Green	Demand	0	Fixed	0	6,806	96
J-17	6,634.00	Green	Demand	0	Fixed	0	6,806	74
J-18	6,578.50	Green	Demand	0	Fixed	0	6,806	98
J-19	6,488.00	Green	Demand	0	Fixed	0	6,806	138
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,806	67
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,806	89
J-27	6,580.00	Green	Demand	0	Fixed	0	6,806	98
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,806	114
J-33	6,567.00	Green	Demand	0	Fixed	0	6,806	103
J-34	6,585.00	Green	Demand	0	Fixed	0	6,806	96
J-36	6,592.00	Green	Demand	0	Fixed	0	6,806	93
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,806	76
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: Static
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	0	Fixed	0	6,662	89
J-2	6,457.30	Red	Demand	0	Fixed	0	6,662	89
J-3	6,425.70	Red	Demand	0	Fixed	0	6,662	102
J-4	6,439.30	Red	Demand	0	Fixed	0	6,662	96
J-5	6,462.20	Red	Demand	0	Fixed	0	6,662	86
J-6	6,464.20	Red	Demand	0	Fixed	0	6,662	86
J-7	6,456.00	Red	Demand	0	Fixed	0	6,662	89
J-8	6,463.90	Red	Demand	0	Fixed	0	6,662	86
J-9	6,466.70	Red	Demand	0	Fixed	0	6,662	84
J-10	6,471.20	Red	Demand	0	Fixed	0	6,662	83
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,807	109
J-15	6,630.00	Green	Demand	0	Fixed	0	6,807	77
J-16	6,583.00	Green	Demand	0	Fixed	0	6,807	97
J-17	6,634.00	Green	Demand	0	Fixed	0	6,807	75
J-18	6,578.50	Green	Demand	0	Fixed	0	6,807	99
J-19	6,488.00	Green	Demand	0	Fixed	0	6,807	138
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,807	68
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,807	89
J-27	6,580.00	Green	Demand	0	Fixed	0	6,807	98
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,807	114
J-33	6,567.00	Green	Demand	0	Fixed	0	6,807	104
J-34	6,585.00	Green	Demand	0	Fixed	0	6,807	96
J-36	6,592.00	Green	Demand	0	Fixed	0	6,807	93
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,807	77
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: Stc; Min; Tnks@20%
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	0	Fixed	0	6,662	89
J-2	6,457.30	Red	Demand	0	Fixed	0	6,662	89
J-3	6,425.70	Red	Demand	0	Fixed	0	6,662	102
J-4	6,439.30	Red	Demand	0	Fixed	0	6,662	96
J-5	6,462.20	Red	Demand	0	Fixed	0	6,662	86
J-6	6,464.20	Red	Demand	0	Fixed	0	6,662	86
J-7	6,456.00	Red	Demand	0	Fixed	0	6,662	89
J-8	6,463.90	Red	Demand	0	Fixed	0	6,662	86
J-9	6,466.70	Red	Demand	0	Fixed	0	6,662	84
J-10	6,471.20	Red	Demand	0	Fixed	0	6,662	83
J-13	6,486.50	Red	Demand	0	Fixed	0	6,662	76
J-14	6,554.00	Green	Demand	0	Fixed	0	6,801	107
J-15	6,630.00	Green	Demand	0	Fixed	0	6,801	74
J-16	6,583.00	Green	Demand	0	Fixed	0	6,801	94
J-17	6,634.00	Green	Demand	0	Fixed	0	6,801	72
J-18	6,578.50	Green	Demand	0	Fixed	0	6,801	96
J-19	6,488.00	Green	Demand	0	Fixed	0	6,801	135
J-20	6,463.00	Red	Demand	0	Fixed	0	6,662	86
J-21	6,447.00	Red	Demand	0	Fixed	0	6,662	93
J-22	6,413.00	Red	Demand	0	Fixed	0	6,662	108
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,801	65
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,662	35
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,662	5
J-26	6,601.00	Green	Demand	0	Fixed	0	6,801	87
J-27	6,580.00	Green	Demand	0	Fixed	0	6,801	96
J-28	6,482.00	Red	Demand	0	Fixed	0	6,662	78
J-29	6,505.00	Red	Demand	0	Fixed	0	6,662	68
J-30	6,518.00	Red	Demand	0	Fixed	0	6,662	62
J-31	6,548.20	Red	Demand	0	Fixed	0	6,662	49
J-32	6,543.50	Green	Demand	0	Fixed	0	6,801	111
J-33	6,567.00	Green	Demand	0	Fixed	0	6,801	101
J-34	6,585.00	Green	Demand	0	Fixed	0	6,801	93
J-36	6,592.00	Green	Demand	0	Fixed	0	6,801	90
J-37	6,532.00	Red	Demand	0	Fixed	0	6,662	56
J-38	6,526.50	Red	Demand	0	Fixed	0	6,662	59
J-39	6,430.00	Red	Demand	0	Fixed	0	6,662	100
J-40	6,445.00	Red	Demand	0	Fixed	0	6,662	94
J-42	6,630.00	Green	Demand	0	Fixed	0	6,801	74
J-122	6,483.00	Red	Demand	0	Fixed	0	6,662	77

Scenario: Stc; Min; Tnks@20%
Steady State Analysis
Tank Report

Label	Zone	Base Elevation (ft)	Minimum Elevation (ft)	Initial HGL (ft)	Maximum Elevation (ft)	Inactive Volume (ft^3)	Tank Diameter (ft)	Inflow (gpm)	Current Status	Calculated Hydraulic Grade (ft)	Calculated Percent Full (%)
T-1-Rd	Red	6,657.38	6,657.38	6,661.90	6,680.00	0.00	210.00	-0	Draining	6,662	20.0
T-2-Grn	Green	6,797.00	6,801.00	6,801.00	6,817.00	0.00	210.00	0	Filling	6,801	0.0

Scenario: Stc; Max; Tanks @ 100%
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	6,457.30	Red	Demand	0	Fixed	0	6,680	96
J-2	6,457.30	Red	Demand	0	Fixed	0	6,680	96
J-3	6,425.70	Red	Demand	0	Fixed	0	6,680	110
J-4	6,439.30	Red	Demand	0	Fixed	0	6,680	104
J-5	6,462.20	Red	Demand	0	Fixed	0	6,680	94
J-6	6,464.20	Red	Demand	0	Fixed	0	6,680	93
J-7	6,456.00	Red	Demand	0	Fixed	0	6,680	97
J-8	6,463.90	Red	Demand	0	Fixed	0	6,680	93
J-9	6,466.70	Red	Demand	0	Fixed	0	6,680	92
J-10	6,471.20	Red	Demand	0	Fixed	0	6,680	90
J-13	6,486.50	Red	Demand	0	Fixed	0	6,680	84
J-14	6,554.00	Green	Demand	0	Fixed	0	6,817	114
J-15	6,630.00	Green	Demand	0	Fixed	0	6,817	81
J-16	6,583.00	Green	Demand	0	Fixed	0	6,817	101
J-17	6,634.00	Green	Demand	0	Fixed	0	6,817	79
J-18	6,578.50	Green	Demand	0	Fixed	0	6,817	103
J-19	6,488.00	Green	Demand	0	Fixed	0	6,817	142
J-20	6,463.00	Red	Demand	0	Fixed	0	6,680	94
J-21	6,447.00	Red	Demand	0	Fixed	0	6,680	101
J-22	6,413.00	Red	Demand	0	Fixed	0	6,680	116
J-23+	6,650.00	Green	Demand	0	Fixed	0	6,817	72
J-24	6,580.00	T-1 svc	Demand	0	Fixed	0	6,680	43
J-25	6,650.00	T-1 svc	Demand	0	Fixed	0	6,680	13
J-26	6,601.00	Green	Demand	0	Fixed	0	6,817	93
J-27	6,580.00	Green	Demand	0	Fixed	0	6,817	103
J-28	6,482.00	Red	Demand	0	Fixed	0	6,680	86
J-29	6,505.00	Red	Demand	0	Fixed	0	6,680	76
J-30	6,518.00	Red	Demand	0	Fixed	0	6,680	70
J-31	6,548.20	Red	Demand	0	Fixed	0	6,680	57
J-32	6,543.50	Green	Demand	0	Fixed	0	6,817	118
J-33	6,567.00	Green	Demand	0	Fixed	0	6,817	108
J-34	6,585.00	Green	Demand	0	Fixed	0	6,817	100
J-36	6,592.00	Green	Demand	0	Fixed	0	6,817	97
J-37	6,532.00	Red	Demand	0	Fixed	0	6,680	64
J-38	6,526.50	Red	Demand	0	Fixed	0	6,680	66
J-39	6,430.00	Red	Demand	0	Fixed	0	6,680	108
J-40	6,445.00	Red	Demand	0	Fixed	0	6,680	102
J-42	6,630.00	Green	Demand	0	Fixed	0	6,817	81
J-122	6,483.00	Red	Demand	0	Fixed	0	6,680	85

Scenario: Stc; Max; Tanks @ 100%
Steady State Analysis
Tank Report

Label	Zone	Base Elevation (ft)	Minimum Elevation (ft)	Initial HGL (ft)	Maximum Elevation (ft)	Inactive Volume (ft^3)	Tank Diameter (ft)	Inflow (gpm)	Current Status	Calculated Hydraulic Grade (ft)	Calculated Percent Full (%)
T-1-Rd	Red	6,657.38	6,657.38	6,680.00	6,680.00	0.00	210.00	-0	Draining	6,680	100.0
T-2-Grn	Green	6,797.00	6,801.00	6,817.00	6,817.00	0.00	210.00	0	Full	6,817	100.0

Legacy
Consulting
Engineers

1453 E Fremont Cir N
Centennial CO 80122
720.318.8862
www.jim.engineer
jim@jim.engineer

Monday, February 2, 2026

RE: Confirmation Memo of Required Fire Flow

To Life Safety Division,

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

112 Single Family Homes
Crystal Valley Ranch Filing 14, Amendment 1

Total Fire Flow Calculation Area: **4,932** square feet *(largest home)*
Building Construction Type: **V-B**
Are fire sprinklers provided throughout this building? **NO**
Are you proposing a reduction in Required Fire Flow for fire sprinklers? **NO**
Are Fire walls provided in this building? **NO**

Reference Appendix B, Table B105.1

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

Reference Appendix C, Table C105.1

Required Number of Fire Hydrants: **2**
Maximum Average Spacing: **300'**
Maximum Distance from Fire Hydrant to Building: **150** feet, *as a fire truck would drive*

Design Engineers' Signature: _____ Date: 2026-02-02

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

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

Castle Rock Fire Signature: Steve Milburn

Digitally signed by Steve Milburn
DN: C=US, E=Smilburn@crgov.com, O=Castle Rock Fire Dept., OU=Fire & Life Safety Div., CN=Steve Milburn
Reason: I have reviewed this document
Date: 2026.02.05 09:37:16-07'00'

Date: 2/5/26 Fire Department Plan

Review Number: 18820

APPENDIX D

WASTEWATER FLOW ONSITE

APPENDIX D

Wastewater Flows

CVR14

Sanitary Sewer Calculations

Design Point	1	1	1	1	1	1	1
Areas	CVR14 Amd 1	CVR14 Amd 1	CVR14 Amd 1	CVR14 Amd 1	CVR14 Amd 1	CVR14 Amd 1	CVR14 Amd 1
Notation	Min Slp check	2 fps unit # at min	2 fps # at 2%	Min Slp at 1 SFE	2fps Slp at 1 SFE	10% Slope check	10 fps slope
Residential SFE's:	112 SFE	96 SFE	17 SFE	1 SFE	1 SFE	112 SFE	112 SFE
Commercial Acreage:	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC
Commercial SFE/Acre:	0 SFE/AC	0 SFE/AC	0 SFE/AC	0 SFE/AC	0 SFE/AC	0 SFE/AC	0 SFE/AC
Commercial SFE's:	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE
School SFE's:	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE	0 SFE
Total SFE's:	112 SFE	96 SFE	17 SFE	1 SFE	1 SFE	112 SFE	112 SFE
Typical Usage:	200 gpd/SFE	200 gpd/SFE	200 gpd/SFE	200 gpd/SFE	200 gpd/SFE	200 gpd/SFE	200 gpd/SFE
Average Day (gpd)	22400 gpd	19259 gpd	3361 gpd	200 gpd	200 gpd	22400 gpd	22400 gpd
Average Day (gpm)	16 gpm	13 gpm	2 gpm	0 gpm	0 gpm	16 gpm	16 gpm
Average Day (cfs)	0.0347 cfs	0.0298 cfs	0.0052 cfs	0.0003 cfs	0.0003 cfs	0.0347 cfs	0.0347 cfs
Peaking Factor	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Max Day (gpd)	112000 gpd	96295 gpd	16803 gpd	1000 gpd	1000 gpd	112000 gpd	112000 gpd
Max Day (MGD)	0.112 MGD	0.096 MGD	0.017 MGD	0.001 MGD	0.001 MGD	0.112 MGD	0.112 MGD
Max Day (gpm)	78 gpm	67 gpm	12 gpm	1 gpm	1 gpm	78 gpm	78 gpm
Max Day (cfs)	**0.173 cfs**	**0.149 cfs**	**0.026 cfs**	**0.002 cfs**	**0.002 cfs**	**0.173 cfs**	**0.173 cfs**
Depth of flow in Pipe	**0.192 ft**	**0.178 ft**	**0.053 ft**	**0.020 ft**	**0.010 ft**	**0.089 ft**	**0.065 ft**
Percent Full in Pipe	29%	27%	8%	3%	2%	13%	10%
Manning's "n"	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Manning's Conversion "k"	1.49	1.49	1.49	1.49	1.49	1.49	1.49
Pipe Slope	0.0045 ft/ft	0.0045 ft/ft	0.0200 ft/ft	0.0045 ft/ft	0.1760 ft/ft	0.1000 ft/ft	0.3825 ft/ft
Pipe Diameter (inches)	8 in	8 in	8 in	8 in	8 in	8 in	8 in
Pipe Diameter (feet)	0.67 ft	0.67 ft	0.67 ft	0.67 ft	0.67 ft	0.67 ft	0.67 ft
Pipe Area	0.35 sf	0.35 sf	0.35 sf	0.35 sf	0.35 sf	0.35 sf	0.35 sf
Pipe Perimeter	2.09 ft	2.09 ft	2.09 ft	2.09 ft	2.09 ft	2.09 ft	2.09 ft
Wetted Perimeter	0.75 ft	0.72 ft	0.38 ft	0.23 ft	0.16 ft	0.50 ft	0.42 ft
Wetted Area	0.08 sf	0.07 sf	0.01 sf	0.00 sf	0.00 sf	0.03 sf	0.02 sf
Theta	2.26 radians	2.17 radians	1.14 radians	0.70 radians	0.49 radians	1.50 radians	1.27 radians
Hydraulic Radius (Rh)	0.11 ft	0.10 ft	0.03 ft	0.01 ft	0.01 ft	0.06 ft	0.04 ft
Velocity	**2.09 fps**	**2.00 fps**	**2.00 fps**	**0.51 fps**	**2.00 fps**	**6.24 fps**	**10.00 fps**
Flow in Pipe	**0.173 cfs**	**0.149 cfs**	**0.026 cfs**	**0.002 cfs**	**0.002 cfs**	**0.173 cfs**	**0.174 cfs**
Correct Depth?	YES	YES	YES	YES	YES	YES	YES

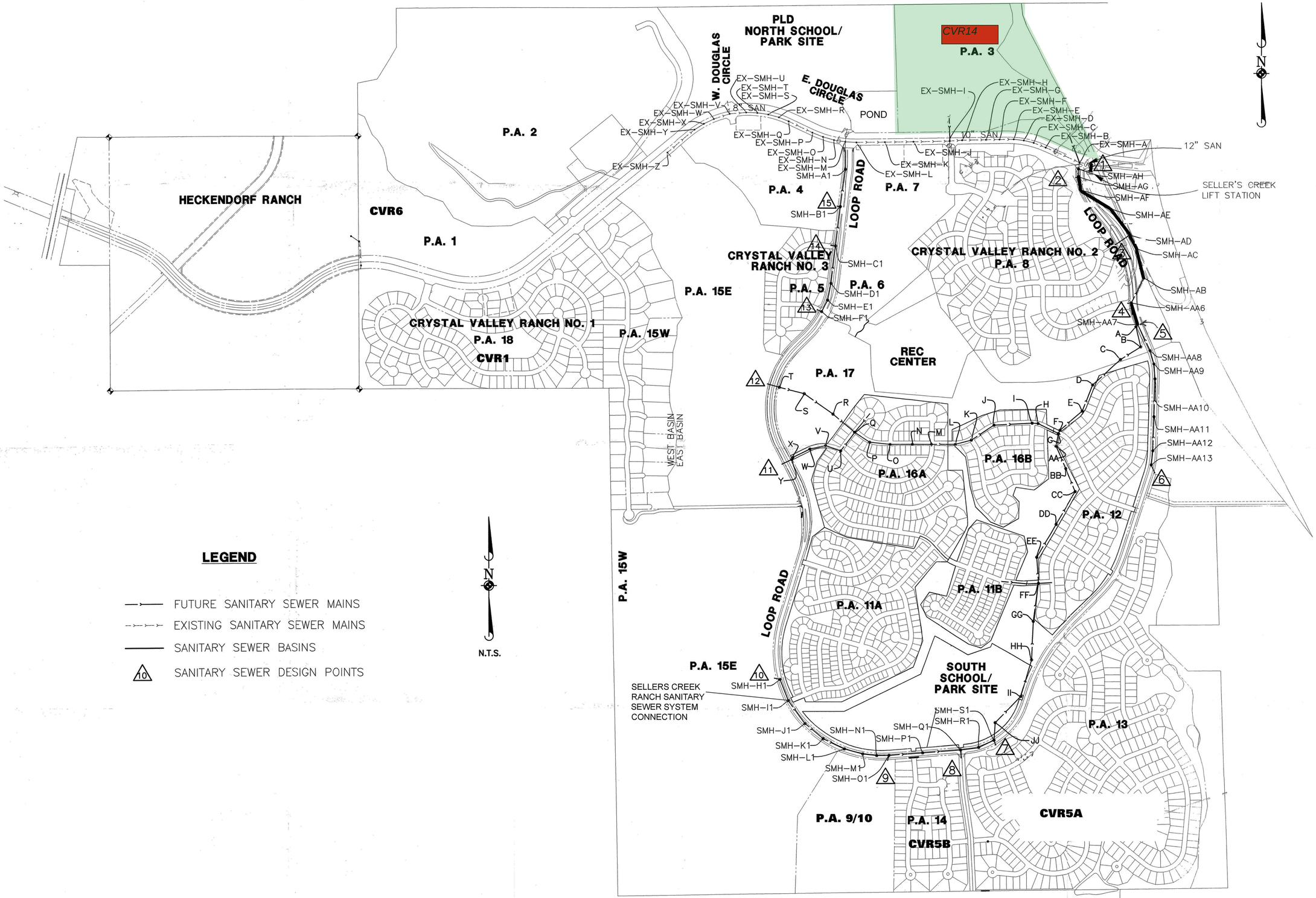
APPENDIX E

WASTEWATER FLOW (Master Plan)

LEGEND

- FUTURE SANITARY SEWER MAINS
- EXISTING SANITARY SEWER MAINS
- SANITARY SEWER BASINS
- 10 SANITARY SEWER DESIGN POINTS

N.T.S.



CVR Master Utility Study Exhibit
modified for SCR Estates PPD
Preliminary Utility Study 3/03/08

MANHARD CONSULTING LTD.
ENGINEERS • SURVEYORS • ENVIRONMENTAL SCIENTISTS
8232 E. Park Meadows Dr. Littleton, Colorado 80124
tel: 303/708-0500 fax: 303/708-0400 http://www.MANHARD.com

CRYSTAL VALLEY RANCH
TOWN OF CASTLE ROCK
OVERALL SANITARY SEWER CONCEPT

PROJ. MGR.:	WGB
PROJ. ENG.:	RLT
DRAWN BY:	RLT
CHECKED BY:	WGB
DATE:	6/09/03
SCALE:	NONE

SHEET 1 OF 1

CVCRCR6 C262

Oct 29, 2004 - 07:39 Dwg Name: P:\Cvrsa\documents\Utility Reports\Overall San Layout.DWG Updated By: jhuey

CASTLE ROCK Qwater
Securing our future drop by drop

1 inch = 208 feet

CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

APPENDIX F

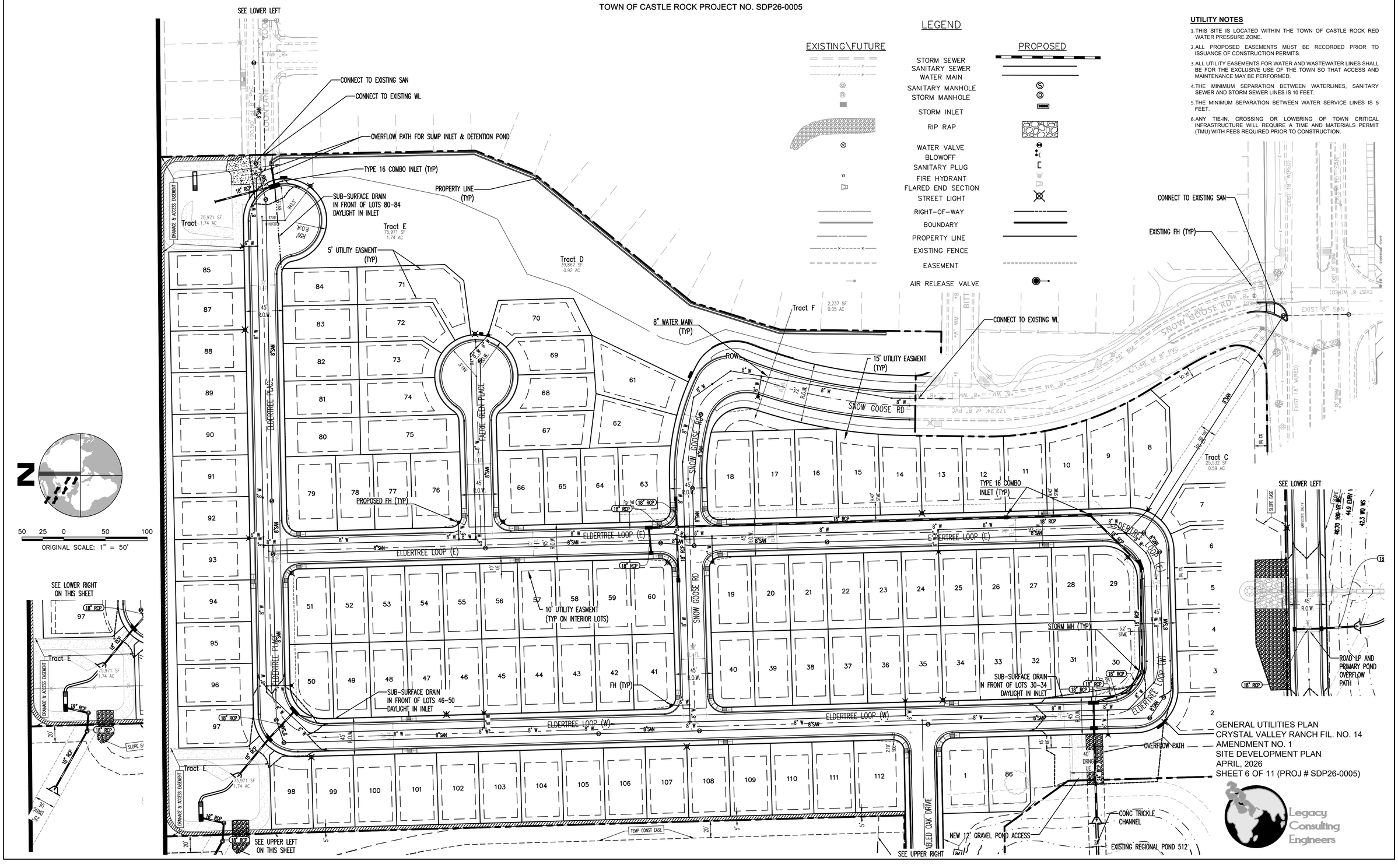
MAPS/PLANS

SITE DEVELOPMENT PLAN

CRYSTAL VALLEY RANCH FILING NO. 14, AMENDMENT NO. 1

A PARCEL OF LAND LOCATED IN SECTION 24, TOWNSHIP 8 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO

TOWN OF CASTLE ROCK PROJECT NO. SDP26-0005



LEGEND

EXISTING\FUTURE		PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	WATER MAIN	
	SANITARY MANHOLE	
	STORM MANHOLE	
	STORM INLET	
	RIP RAP	
	WATER VALVE	
	BLOWOFF	
	SANITARY PLUG	
	FIRE HYDRANT	
	FLARED END SECTION	
	STREET LIGHT	
	RIGHT-OF-WAY	
	BOUNDARY	
	PROPERTY LINE	
	EXISTING FENCE	
	EASEMENT	
	AIR RELEASE VALVE	

UTILITY NOTES

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

GENERAL UTILITIES PLAN
CRYSTAL VALLEY RANCH FIL. NO. 14
AMENDMENT NO. 1
SITE DEVELOPMENT PLAN
APRIL, 2026
SHEET 6 OF 11 (PROJ # SDP26-0005)

Legacy Consulting Engineers

Castle Rock Water
175 Kellogg Court, Castle Rock CO 80109
720-733-6000

Preliminary Utility Report Checklist

The Preliminary Utility Report must be in conformance with the latest Town of Castle Rock Water and Wastewater System Design Criteria Manuals, available on the Town's website.

For the Preliminary Utility Report, information contained in the Concept Utility Letter shall be updated to reflect the latest projections for land use and densities. Hydraulic modeling shall only be required for the site proposed in the Site Development Plan (SDP). This modeling may be waived on a case-by-case basis at the discretion of the Utilities Department if it is adequately demonstrated that the SDP is already consistent with the Town's Water/Wastewater Master Plans and that the existing adjacent water/wastewater infrastructure is adequate to support the development without modifications or if the SDP is for a commercial structure on a single lot. The modeling shall accurately reflect the sizes and locations of all proposed water mains associated with the SDP layout. In addition to providing updated land use and density information, the following items shall be specifically addressed:

- Further analysis of any concerns raised in the Concept Utility Letter regarding the Town's ability to serve the development.
- Updated discussion of appurtenant water/wastewater facilities other than distribution mains that will be necessary to serve the development, and the principal design parameters that will be utilized in the final design of such facilities.
- Status of any variances that have been obtained, or will be pursued.
- Updated discussion of maintenance access and any associated concerns.
- Updated status of permitting requirements.
- Updated appendices.

The following outline sets forth the **required minimum** content to be provided in the Preliminary Utility Report that shall be submitted with the SDP. This report must be prepared by, or the report preparation supervised by a registered Professional Engineer licensed in Colorado. A copy of this checklist must be submitted with the Preliminary Utility Report.

Please check off the following items to assure your report is complete. Appropriate notations shall be provided with the checklist. For example, if a specific item is not addressed or not applicable, an explanation needs to be provided.

Included	N/A	
		TITLE SHEET
☑		A. Name of Project, including legal name of development
☑		B. Address
☑		C. Owner
☑		D. Developer
☑		E. Engineer
☑		F. Submittal date and revision dates as applicable

Preliminary Utility Report – Formatting Checklist

Included	N/A	
☑		**APPROVAL BLOCK SHEET** (Available on Town's website)
☑		**TABLE OF CONTENTS**
☑		**PROJECT LOCATION AND DESCRIPTION**
☑		A. Site Location
☑		B. Description of Property and Land Use
☑		**CALCULATED WATER DEMANDS**
☑		A. Average Day Demands (ADD)
☑		B. Max Day Demands (MDD)
☑		C. Peak Hour Demands (PHD)
☑		**EXISTING WATER SYSTEM**
☑		A. Existing Distribution System
☑		B. Existing Supply Facilities
		PROPOSED WATER SYSTEM
☑		A. Proposed Distribution System
☑		B. Proposed Supply Facilities
☑		C. Land Dedication Requirements
		PROPOSED WATER SYSTEM ANALYSIS AND MODELING
☑		A. Hydraulic Models
☑		B. Hydraulic Modeling Scenarios
☑		C. Hydraulic Modeling Output and Required Schematics
		CALCULATED WASTEWATER FLOWS
☑		A. Average Day Wastewater Flows (ADF)
☑		B. Peaking Factor
☑		C. Peak Design Flows (PDF)
		EXISTING WASTEWATER SYSTEM
☑		A. Existing Collection System
		PROPOSED WASTEWATER SYSTEM
☑		A. Proposed Collection System
☑		B. Proposed Wastewater Facilities
☑		C. Land Dedication Requirements
		PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING
☑		A. Hydraulic Models
☑		B. Hydraulic Modeling Scenarios
☑		C. Hydraulic Modeling Output and Required Schematics

Preliminary Utility Report – Formatting Checklist

Included	N/A	
		POTENTIAL PERMITTING REQUIREMENTS
		REFERENCES
		APPENDICES
☑		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
☑		A. Vicinity Map
☑		B. Utility Map(s) provided by the Utilities Department
☑		C. Site Development Plan
☑		D. Water/Wastewater Utility Plan(s)

Notes/Comments: