

**Master Utility Design for
POTABLE WATER & FIRE FLOW ANALYSIS**

Hillside Groves

FOR

Lennar Homes LLC

Date: June 2022

BY



Connelly & Wicker Inc.

Planning • Engineering • Landscape Architecture

1560 North Orange Ave.

Suite 210

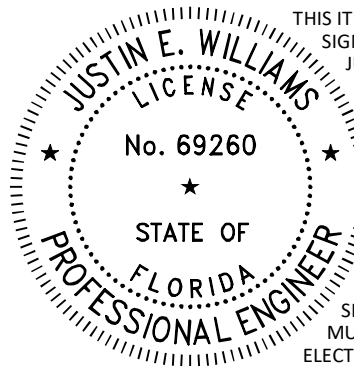
Winter Park, FL 32789

CWI Job #: 21-04-0008

Florida Registry No: 3650

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THIS ITEM HAS BEEN DIGITALLY
SIGNED AND SEALED BY
JUSTIN E. WILLIAMS

**Justin E
Williams**

Digitally signed by Justin E Williams
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Date: 2022.09.29 10:28:18 -04'00'

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Tab 1: Introduction



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A. Introduction

1. Project Overview

Hillside Groves is a 375.2-acre single-family residential home project located north of State Road 19 and southwest of W. Central Ave. and S. Florida Ave. in Howey in the Hills, Lake County, Florida. It is situated in Section 35, Township 20S, Range 25E. Please see Location Map and Figure 2 Aerial Map, both under Tab 2 of this report.

Hillside Groves is a large PUD with supporting roads and infrastructure. The purpose of this report is to demonstrate the potable water system is designed to meet the potable water demand for the proposed development.

2. Utility Provider

The City of Howey in the Hills is the potable water provider for this project. This analysis takes into consideration City of Howey in the Hills design criteria. Where specific criteria is not set by the City, standards from nearby utility providers will be utilized.

B. Design Criteria

1. Potable Water Demand

Maximum Daily Flow (MDF) is 1 gallon per minute (GPM) per single family home and a peaking factor of 2 is used for Peak Hourly Flow (PHF). Please refer to Table 1 for Potable Water Demand Calculations in Tab 3.

2. Fire Hydrant Demand

The water mains have been designed to meet the needs of the development's maximum day water demand plus fire flow. The design fire flow is 1000 GPM for this analysis.

3. Tie-in Conditions

Potable water tie-in pressure was obtained via a hydrant flow test near the project provided by JJ Southall from the town. Please see Hydrant Flow Test in Tab 3.

C. Methodology

1. Software

The analysis for the potable water system and reclaimed water system were performed using Bentley WaterCAD V8i SELECT series 3 (WaterCAD). This software analyzes flows and pressure distribution in a pressurized system given known parameters such as demands, pipe length, pipe size and other relevant distribution system properties.

2. Potable Water System Model

The proposed potable water network was set up in WaterCAD with pipes, junctions and hydrants. There are three (3) connections to an existing water system. These are located at Central Ave in front of the Citrus Plant, Corner of Mare Road, and the intersection of South Florida and State Road 19.

The connections are modeled as reservoirs with total head based on the pressure test and existing elevation.

Potable water demand was assigned at the junctions shown in Tab 4: WaterCad Reports for Potable Water System.

The fire hydrant demands are assigned to hydrants 1 through 32 in WaterCAD.

Minor losses have been added to the pipe network. Hazen-William's coefficient, 'C' of 140 is used for PVC pipe.

3. Potable Water System Scenarios

I. Maximum Daily Flow with Fire Flow

In this scenario, the MDF demand was analyzed in conjunction with fire flow, assuming one fire hydrant is in use at any given moment. The system is designed to maintain a minimum pressure of 20 psi in this scenario.

II. Peak Hourly Flow

In this scenario, the PHF demand was analyzed. The system is designed to maintain a minimum pressure of 30 psi in this scenario.

D. Conclusion

The results of the WaterCAD analysis indicate that the potable water system as designed is capable of providing the minimum pressure of the MDF + FF and PHF demand.

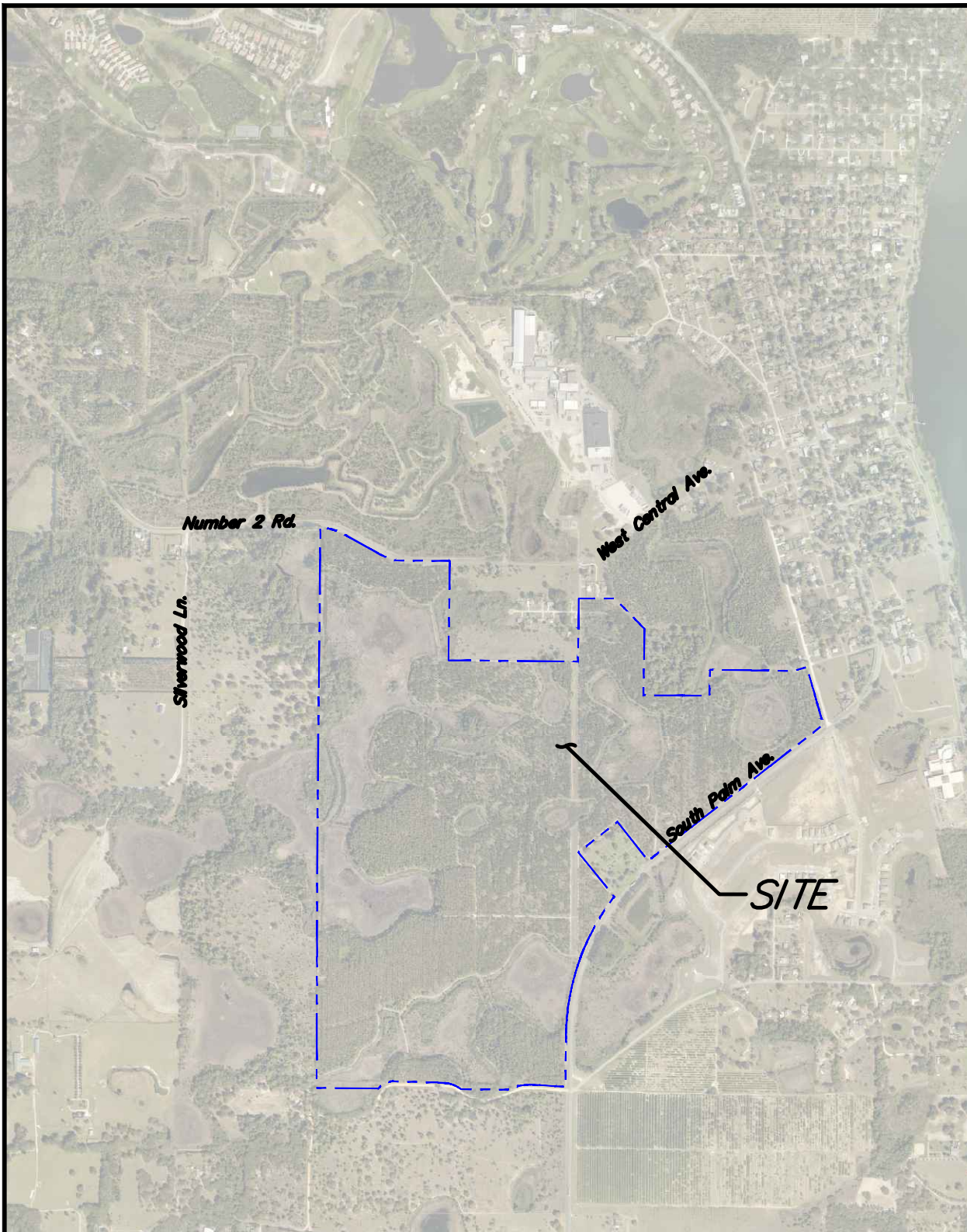
Please see Tab 4 WaterCAD Reports for Potable Water System

Tab 2: Figures



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SOURCE: LABINS



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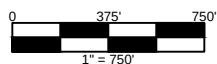
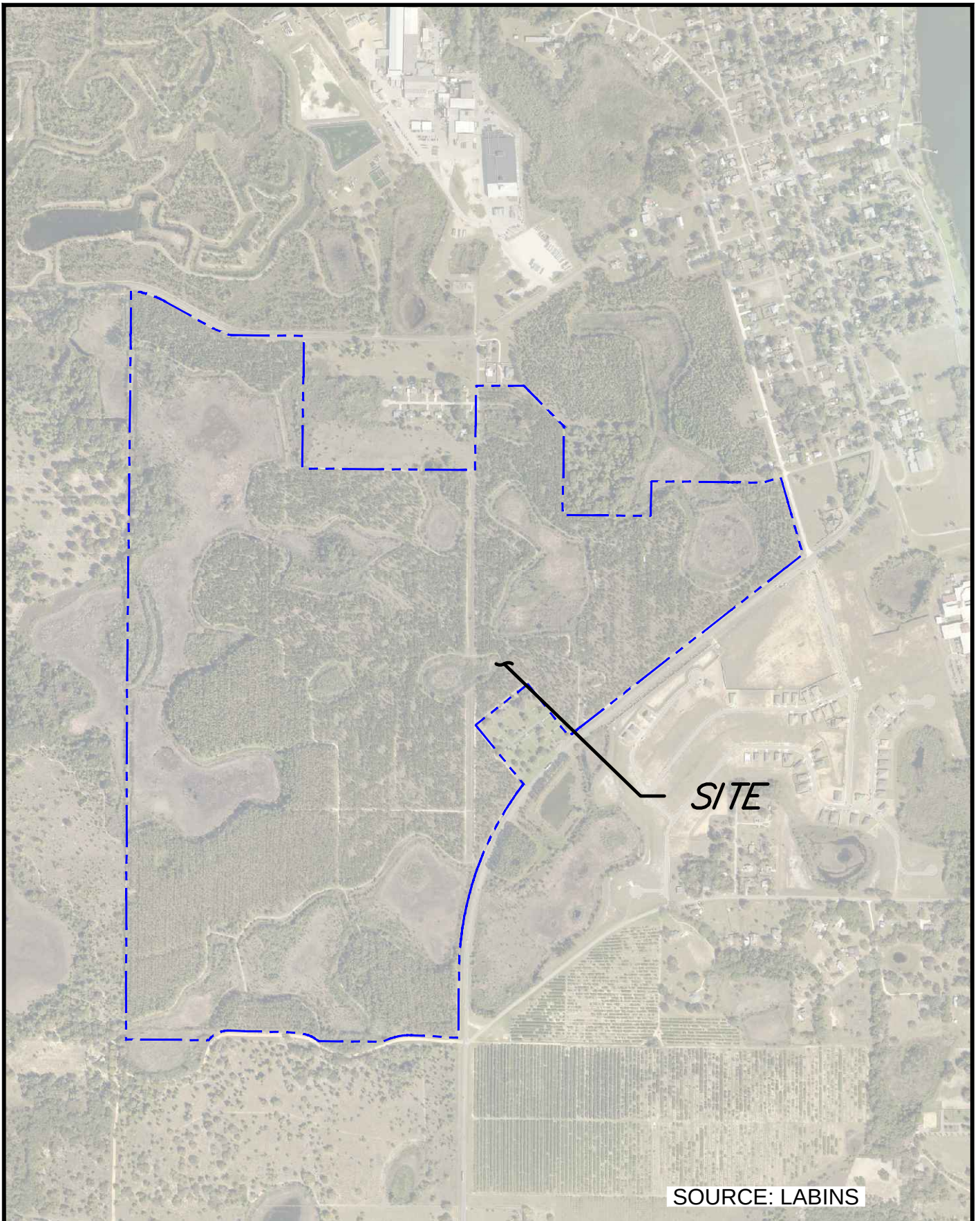


FIGURE 1 SITE LOCATION MAP

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March 2022



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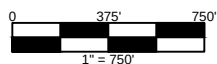


FIGURE 2
AREIAL MAP

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Tab 3: Design Tables



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21-04-008

Designed By:

W. Koning

Date:

6/3/2022

Demand Summary Table

Project No:

21-04-0008

Calculate Average Daily Flow - From Existing and Proposed

Junction. No. J-	Description	DU Units	Max Daily Factor	Max Day GPM	Peak Hour Factor	Peak Hour GPM
J-1	Single Family	0	1.0	0.00	2.00	0.00
J-2	Single Family	50	1.0	50.00	2.00	100.00
J-3	Single Family	36	1.0	36.00	2.00	72.00
J-4	Single Family	0	1.0	0.00	2.00	0.00
J-5	Single Family	0	1.0	0.00	2.00	0.00
J-6	Single Family	0	1.0	0.00	2.00	0.00
J-7	Single Family	0	1.0	0.00	2.00	0.00
J-8	Single Family	0	1.0	0.00	2.00	0.00
J-9	Single Family	0	1.0	0.00	2.00	0.00
J-10	Single Family	0	1.0	0.00	2.00	0.00
J-11	Single Family	0	1.0	0.00	2.00	0.00
J-12	Single Family	0	1.0	0.00	2.00	0.00
J-13	Single Family	0	1.0	0.00	2.00	0.00
J-14	Single Family	0	1.0	0.00	2.00	0.00
J-15	Single Family	47	1.0	47.00	2.00	94.00
J-16	Single Family	20	1.0	20.00	2.00	40.00
J-17	Single Family	20	1.0	20.00	2.00	40.00
J-18	Single Family	0	1.0	0.00	2.00	0.00
J-19	Single Family	4	1.0	4.00	2.00	8.00
J-20	Single Family	6	1.0	6.00	2.00	12.00
J-21	Single Family	7	1.0	7.00	2.00	14.00
J-22	Single Family	6	1.0	6.00	2.00	12.00
J-23	Single Family	14	1.0	14.00	2.00	28.00
J-24	Single Family	0	1.0	0.00	2.00	0.00
J-25	Single Family	4	1.0	4.00	2.00	8.00
J-26	Single Family	10	1.0	10.00	2.00	20.00
J-27	Single Family	6	1.0	6.00	2.00	12.00
J-28	Single Family	6	1.0	6.00	2.00	12.00
J-29	Single Family	0	1.0	0.00	2.00	0.00
J-30	Single Family	8	1.0	8.00	2.00	16.00
J-31	Single Family	8	1.0	8.00	2.00	16.00
J-32	Single Family	0	1.0	0.00	2.00	0.00
J-33	Single Family	10	1.0	10.00	2.00	20.00
J-34	Single Family	10	1.0	10.00	2.00	20.00
J-35	Single Family	0	1.0	0.00	2.00	0.00
J-36	Single Family	6	1.0	6.00	2.00	12.00
J-37	Single Family	0	1.0	0.00	2.00	0.00
J-38	Single Family	6	1.0	6.00	2.00	12.00
J-39	Single Family	3	1.0	3.00	2.00	6.00
J-40	Single Family	0	1.0	0.00	2.00	0.00
J-41	Single Family	28	1.0	28.00	2.00	56.00
J-42	Single Family	25	1.0	25.00	2.00	50.00
J-43	Single Family	0	1.0	0.00	2.00	0.00
J-44	Single Family	12	1.0	12.00	2.00	24.00
J-45	Single Family	0	1.0	0.00	2.00	0.00
J-46	Single Family	23	1.0	23.00	2.00	46.00
J-47	Single Family	0	1.0	0.00	2.00	0.00

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Designed By:

W. Koning

Date:

6/3/2022

Project No:

21-04-0008

Demand Summary Table

J-48	Single Family	0	1.0	0.00	2.00	0.00
J-49	Single Family	6	1.0	6.00	2.00	12.00
J-50	Single Family	0	1.0	0.00	2.00	0.00
J-51	Single Family	6	1.0	6.00	2.00	12.00
J-52	Single Family	0	1.0	0.00	2.00	0.00
J-53	Single Family	6	1.0	6.00	2.00	12.00
J-54	Single Family	0	1.0	0.00	2.00	0.00
J-55	Single Family	0	1.0	0.00	2.00	0.00
J-56	Single Family	0	1.0	0.00	2.00	0.00
J-57	Single Family	6	1.0	6.00	2.00	12.00
J-58	Single Family	0	1.0	0.00	2.00	0.00
J-59	Single Family	6	1.0	6.00	2.00	12.00
J-60	Single Family	0	1.0	0.00	2.00	0.00
J-61	Single Family	6	1.0	6.00	2.00	12.00
J-62	Single Family	0	1.0	0.00	2.00	0.00
J-63	Single Family	6	1.0	6.00	2.00	12.00
J-64	Single Family	0	1.0	0.00	2.00	0.00
J-65	Single Family	6	1.0	6.00	2.00	12.00
J-66	Single Family	0	1.0	0.00	2.00	0.00
J-67	Single Family	0	1.0	0.00	2.00	0.00
J-68	Single Family	24	1.0	24.00	2.00	48.00
J-69	Single Family	0	1.0	0.00	2.00	0.00
J-70	Single Family	8	1.0	8.00	2.00	16.00
J-71	Single Family	11	1.0	11.00	2.00	22.00
J-72	Single Family	27	1.0	27.00	2.00	54.00
J-73	Single Family	17	1.0	17.00	2.00	34.00
J-74	Single Family	0	1.0	0.00	2.00	0.00
J-75	Single Family	0	1.0	0.00	2.00	0.00
J-76	Single Family	0	1.0	0.00	2.00	0.00
J-77	Single Family	19	1.0	19.00	2.00	38.00
J-78	Single Family	5	1.0	5.00	2.00	10.00
J-79	Single Family	16	1.0	16.00	2.00	32.00
J-80	Single Family	0	1.0	0.00	2.00	0.00
J-81	Single Family	8	1.0	8.00	2.00	16.00
J-82	Single Family	0	1.0	0.00	2.00	0.00
J-83	Single Family	5	1.0	5.00	2.00	10.00
J-84	Single Family	0	1.0	0.00	2.00	0.00
J-85	Single Family	12	1.0	12.00	2.00	24.00
J-86	Single Family	0	1.0	0.00	2.00	0.00
J-87	Single Family	16	1.0	16.00	2.00	32.00
J-88	Single Family	0	1.0	0.00	2.00	0.00
J-89	Single Family	6	1.0	6.00	2.00	12.00
J-90	Single Family	9	1.0	9.00	2.00	18.00
J-91	Single Family	8	1.0	8.00	2.00	16.00
J-92	Single Family	6	1.0	6.00	2.00	12.00
J-93	Single Family	8	1.0	8.00	2.00	16.00
J-94	Single Family	0	1.0	0.00	2.00	0.00
J-95	Single Family	7	1.0	7.00	2.00	14.00
J-96	Single Family	0	1.0	0.00	2.00	0.00
J-97	Single Family	14	1.0	14.00	2.00	28.00
J-98	Single Family	16	1.0	16.00	2.00	32.00

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21-04-008

Designed By:

W. Koning

Date:

6/3/2022

Project No:

21-04-0008

Demand Summary Table

J-99	Single Family	10	1.0	10.00	2.00	20.00
J-100	Single Family	0	1.0	0.00	2.00	0.00
J-101	Single Family	27	1.0	27.00	2.00	54.00
J-102	Single Family	0	1.0	0.00	2.00	0.00
J-103	Single Family	0	1.0	0.00	2.00	0.00
J-104	Single Family	27	1.0	27.00	2.00	54.00
J-105	Single Family	0	1.0	0.00	2.00	0.00
J-106	Single Family	0	1.0	0.00	2.00	0.00
SUBTOTAL		729		729.0		1458.0

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Pump Curve Data

Fire Flow Test 1	Central Ave in front of Citrus Plant	
Static (Head Psi)	75	
Fire (Head Psi)	20	
Residual (Head Psi)	30	
Design Head (Psi)	40	
Flow (Gpm)	750	
Fire Flow (Gpm)	836	
Design Head (ft)	92.3	
Max Operating Head (ft)	46.2	
Fire Flow (Gpm)	655	
Approximate Flow (Gpm) at 20 PSI	836 (Calc.)	

Pump Curve Data	Discharge (Gpm)	Head (Ft)
Shutoff	0.0	173.1
Design	655	92.3
Flow at Test	750	69.2
Max Operating	836	46.2

Fire Flow Test 2	Corner of Mare	
Static (Head Psi)	75	
Fire (Head Psi)	20	
Residual (Head Psi)	20	
Design Head (Psi)	40	
Flow (Gpm)	750	
Fire Flow (Gpm)	750	
Design Head (ft)	92.3	
Max Operating Head (ft)	46.2	
Fire Flow (Gpm)	588	
Approximate Flow (Gpm) at 20 PSI	750 (Calc.)	

Pump Curve Data	Discharge (Gpm)	Head (Ft)
Shutoff	0.0	173.1
Design	588	92.3
Flow at Test	750	46.2
Max Operating	750	46.2

Fire Flow Test 3	South Florida and State Road 19	
Static (Head Psi)	70	
Fire (Head Psi)	20	
Residual (Head Psi)	60	
Design Head (Psi)	40	
Flow (Gpm)	1250	
Fire Flow (Gpm)	2981	
Design Head (ft)	92.3	
Max Operating Head (ft)	46.2	
Fire Flow (Gpm)	2262	
Approximate Flow (Gpm) at 20 PSI	2981 (Calc.)	

Pump Curve Data	Discharge (Gpm)	Head (Ft)
Shutoff	0.0	161.5
Design	2262	92.3
Flow at Test	1250	138.5
Max Operating	2981	46.2

Ryan Blaida

From: James Southall <jsouthall@howey.org>
Sent: Thursday, April 28, 2022 1:34 PM
To: Ryan Blaida
Cc: Don Griffey
Subject: Re: The Reserve at Howey

[EXTERNAL EMAIL]

Good Afternoon Ryan,

Per your request I had 3 hydrants retested,

Corner of Mare Hydrant
Static Pressure - 75
GPM - 750
Residual Pressure - 20

Central Ave in front of Citrus Plant
Static Pressure - 75
GPM - 750
Residual Pressure - 30

South Florida and State Road 19
Static Pressure - 70
GPM - 1250
Residual Pressure - 60

The static 20 psi on the Mare Hydrant could be low due to that being the dead end of that line at the Hydrant on the 6-inch main. From there it is reduced down to 2-inch line that feed the homes on Marilyn Ave.

If you have any other questions please feel free to reach out to me.

Thank you
JJ Southall
Utility Supervisor
Howey in the Hills

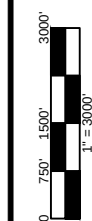
From: Ryan Blaida <rblaida@zwieng.com>
Sent: Monday, April 25, 2022 2:05 PM
To: James Southall <jsouthall@howey.org>
Cc: Don Griffey <dag@griffeyengineering.com>
Subject: RE: The Reserve at Howey

Tab 4: WaterCAD Reports for Potable Water System



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PIPE SCHEMATIC

MARCH 2022

21-04-0008


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Hillside Groves
CWI Job #: 21-04-0008

MDF + FF



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FlexTable: Hydrant Table

Label	Elevation (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Satisfies Fire Flow Constraints?
H-1	88.00	68	1,000	1,968	20	True
H-2	87.80	68	1,000	2,608	20	True
H-3	90.10	67	1,000	2,620	20	True
H-4	87.80	68	1,000	2,668	21	True
H-5	89.40	68	1,000	2,723	20	True
H-6	91.20	67	1,000	2,763	21	True
H-7	90.30	67	1,000	2,918	21	True
H-8	87.80	68	1,000	2,962	22	True
H-9	85.20	69	1,000	3,017	22	True
H-10	87.70	68	1,000	1,907	20	True
H-11	92.90	66	1,000	2,171	20	True
H-12	89.30	68	1,000	2,511	20	True
H-13	90.50	67	1,000	2,483	20	True
H-14	93.30	66	1,000	2,719	20	True
H-15	86.40	69	1,000	2,716	20	True
H-16	90.00	67	1,000	2,715	20	True
H-17	90.00	67	1,000	2,610	20	True
H-18	90.00	68	1,000	2,639	20	True
H-19	90.00	68	1,000	2,576	20	True
H-20	90.00	68	1,000	2,834	20	True
H-21	90.00	68	1,000	2,294	20	True
H-22	88.20	68	1,000	2,568	20	True
H-23	90.90	67	1,000	2,634	20	True
H-24	88.30	68	1,000	2,464	20	True
H-25	93.30	66	1,000	2,776	20	True
H-26	89.00	68	1,000	2,281	20	True
H-27	90.00	67	1,000	1,898	20	True
H-28	90.00	67	1,000	1,673	20	True
H-29	90.00	67	1,000	1,355	20	True
H-30	90.00	67	1,000	1,733	20	True
H-31	90.00	67	1,000	1,305	20	True
H-32	90.00	67	1,000	1,296	20	True

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-1	0	88.00	68	157.47
J-2	50	88.00	68	157.47
J-3	36	88.00	68	157.51
J-4	0	87.50	68	158.07
J-5	0	88.50	68	157.04
J-6	0	90.00	67	155.51
J-7	0	87.80	68	157.69
J-8	0	89.90	67	155.58
J-9	0	90.90	67	154.58
J-10	0	90.30	67	155.17
J-11	0	93.50	66	151.99
J-12	0	90.30	67	155.27
J-13	0	88.90	68	156.74
J-14	0	86.60	69	159.13
J-15	47	88.50	68	156.94
J-16	20	88.60	68	156.83
J-17	20	92.90	66	152.57
J-18	0	92.60	66	152.90
J-19	4	90.90	67	154.60
J-20	6	91.20	67	154.30
J-21	7	89.80	67	155.70
J-22	6	90.40	67	155.10
J-23	14	88.00	68	157.50
J-24	0	90.50	67	155.01
J-25	4	90.50	67	155.01
J-26	10	91.50	67	154.02
J-27	6	91.50	67	154.02
J-28	6	93.40	66	152.11
J-29	0	91.30	67	154.21
J-30	8	91.30	67	154.21
J-31	8	91.30	67	154.21
J-32	0	87.80	68	157.72
J-33	10	87.80	68	157.72

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-34	10	87.80	68	157.72
J-35	0	87.00	69	158.53
J-36	6	87.20	69	158.33
J-37	0	87.20	69	158.34
J-38	6	87.20	69	158.33
J-39	3	89.90	67	155.63
J-40	0	88.00	68	157.57
J-41	28	88.00	68	157.59
J-42	25	88.00	68	157.61
J-43	0	88.00	68	157.65
J-44	12	88.00	68	157.90
J-45	0	88.00	68	158.30
J-46	23	88.00	68	158.30
J-47	0	88.00	68	158.30
J-48	0	88.00	68	158.30
J-49	6	88.00	68	158.30
J-50	0	88.00	68	158.30
J-51	6	88.00	68	158.30
J-52	0	88.00	68	158.30
J-53	6	88.00	68	158.30
J-54	0	88.00	68	158.30
J-55	0	88.00	68	158.32
J-56	0	88.00	68	158.30
J-57	6	88.00	68	158.30
J-58	0	88.00	68	158.30
J-59	6	88.00	68	158.30
J-60	0	88.00	68	158.30
J-61	6	88.00	68	158.30
J-62	0	88.00	68	158.30
J-63	6	88.00	68	158.30
J-64	0	88.00	68	158.30
J-65	6	88.00	68	158.30
J-66	0	88.00	68	158.30

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-67	0	89.50	67	155.91
J-68	24	87.70	68	157.64
J-69	0	86.20	69	159.11
J-70	8	88.30	68	157.05
J-71	11	90.40	67	155.00
J-72	27	88.30	68	156.90
J-73	17	92.60	66	152.80
J-74	0	88.20	68	156.96
J-75	0	90.40	67	154.76
J-76	0	90.00	67	155.26
J-77	19	90.50	67	154.68
J-78	5	90.00	67	155.15
J-79	16	88.00	68	157.08
J-80	0	88.00	68	156.82
J-81	8	88.00	68	156.73
J-82	0	88.00	68	156.70
J-83	5	88.00	68	156.69
J-84	0	88.00	68	156.68
J-85	12	88.00	68	156.68
J-86	0	88.00	68	156.67
J-87	16	88.00	68	156.66
J-88	0	88.00	68	156.67
J-89	6	88.00	68	156.67
J-90	9	88.00	68	156.68
J-91	8	88.00	68	156.69
J-92	6	88.00	68	156.67
J-93	8	88.00	68	156.67
J-94	0	88.00	68	156.67
J-95	7	88.00	68	156.68
J-96	0	88.00	68	156.67
J-97	14	88.00	68	156.69
J-98	16	88.00	68	156.72
J-99	10	88.00	68	156.67

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-100	0	88.00	68	156.59
J-101	27	88.00	68	156.58
J-102	0	88.00	68	156.58
J-103	0	88.00	68	156.58
J-104	27	88.00	68	156.58
J-105	0	85.20	69	160.62
J-106	0	87.00	69	158.59

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-1	8.0	False	320	PVC	140.0	0.000	0	0.00	0.00
P-2	8.0	False	300	PVC	140.0	0.000	50	0.32	0.02
P-3	8.0	False	345	PVC	140.0	0.390	50	0.32	0.02
P-4	8.0	False	305	PVC	140.0	0.390	86	0.54	0.05
P-5	11.7	False	94	PVC	140.0	0.390	139	0.41	0.01
P-6	11.7	False	274	PVC	140.0	0.250	139	0.41	0.02
P-7	11.7	False	186	PVC	140.0	0.390	139	0.41	0.01
P-8	11.7	False	302	PVC	140.0	0.050	139	0.41	0.02
P-9	11.7	False	138	PVC	140.0	0.390	139	0.41	0.01
P-10	11.7	False	75	PVC	140.0	0.000	139	0.41	0.00
P-11	11.7	False	463	PVC	140.0	1.230	72	0.21	0.01
P-12	11.7	False	127	PVC	140.0	0.390	72	0.21	0.00
P-13	11.7	False	378	PVC	140.0	0.390	57	0.17	0.00
P-14	11.7	False	75	PVC	140.0	0.740	52	0.15	0.00
P-15	11.7	False	222	PVC	140.0	0.390	52	0.15	0.00
P-16	11.7	False	715	PVC	140.0	0.790	76	0.23	0.02
P-17	11.7	False	617	PVC	140.0	0.740	206	0.61	0.08
P-18	11.7	False	88	PVC	140.0	0.390	268	0.80	0.02
P-19	11.7	False	192	PVC	140.0	0.000	268	0.80	0.04
P-20	11.7	False	206	PVC	140.0	0.390	268	0.80	0.04
P-21	11.7	False	213	PVC	140.0	0.000	268	0.80	0.05
P-22	11.7	False	263	PVC	140.0	0.390	268	0.80	0.06
P-23	8.0	False	444	PVC	140.0	1.850	67	0.42	0.05
P-24	8.0	False	317	PVC	140.0	0.390	20	0.13	0.00
P-25	8.0	False	241	PVC	140.0	0.150	20	0.13	0.00
P-26	6.1	False	279	PVC	140.0	0.640	15	0.16	0.01
P-27	6.1	False	64	PVC	140.0	0.390	5	0.06	0.00
P-28	6.1	False	529	PVC	140.0	2.070	5	0.06	0.00
P-29	8.0	False	187	PVC	140.0	0.390	49	0.31	0.01
P-30	8.0	False	212	PVC	140.0	1.670	9	0.06	0.00
P-31	6.1	False	147	PVC	140.0	1.670	6	0.07	0.00
P-32	8.0	False	195	PVC	140.0	0.740	1	0.00	0.00
P-33	6.1	False	177	PVC	140.0	1.670	6	0.07	0.00

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-34	8.0	False	115	PVC	140.0	0.000	14	0.09	0.00
P-35	8.0	False	323	PVC	140.0	0.840	14	0.09	0.00
P-36	8.0	False	391	PVC	140.0	0.100	28	0.18	0.01
P-37	8.0	False	82	PVC	140.0	0.880	28	0.18	0.00
P-38	6.1	False	134	PVC	140.0	1.670	4	0.04	0.00
P-39	8.0	False	199	PVC	140.0	0.740	32	0.20	0.01
P-40	6.1	False	137	PVC	140.0	1.670	6	0.07	0.00
P-41	8.0	False	138	PVC	140.0	0.740	58	0.37	0.01
P-42	8.0	False	118	PVC	140.0	1.670	14	0.09	0.00
P-43	6.1	False	140	PVC	140.0	1.670	8	0.09	0.00
P-44	6.1	False	188	PVC	140.0	1.670	8	0.09	0.00
P-45	8.0	False	200	PVC	140.0	0.740	30	0.19	0.00
P-46	8.0	False	88	PVC	140.0	0.740	50	0.32	0.01
P-47	8.0	False	112	PVC	140.0	0.740	50	0.32	0.01
P-48	8.0	False	31	PVC	140.0	0.740	56	0.35	0.00
P-48a	8.0	False	380	PVC	140.0	1.670	62	0.39	0.03
P-49	6.1	False	143	PVC	140.0	1.670	10	0.11	0.00
P-50	6.1	False	137	PVC	140.0	1.670	10	0.11	0.00
P-51	6.1	False	149	PVC	140.0	1.670	6	0.07	0.00
P-52	6.1	False	187	PVC	140.0	1.670	6	0.07	0.00
P-53	8.0	False	105	PVC	140.0	0.740	50	0.32	0.01
P-54	8.0	False	176	PVC	140.0	0.740	50	0.32	0.01
P-55	8.0	False	212	PVC	140.0	1.670	48	0.30	0.01
P-56	8.0	False	119	PVC	140.0	0.000	101	0.64	0.03
P-57	8.0	False	60	PVC	140.0	0.390	101	0.64	0.01
P-58	8.0	False	337	PVC	140.0	0.390	47	0.30	0.02
P-59	8.0	False	435	PVC	140.0	1.040	75	0.48	0.06
P-60	8.0	False	249	PVC	140.0	1.670	79	0.50	0.03
P-61	8.0	False	528	PVC	140.0	0.690	54	0.34	0.04
P-62	8.0	False	213	PVC	140.0	0.000	154	0.97	0.10
P-63	8.0	False	283	PVC	140.0	0.590	154	0.97	0.14
P-64	8.0	False	655	PVC	140.0	2.120	166	1.05	0.36
P-65	8.0	False	96	PVC	140.0	1.670	16	0.10	0.00

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-66	8.0	False	326	PVC	140.0	0.690	16	0.10	0.00
P-67	8.0	False	667	PVC	140.0	0.990	7	0.04	0.00
P-68	8.0	False	97	PVC	140.0	0.000	7	0.04	0.00
P-69	8.0	False	545	PVC	140.0	0.200	7	0.04	0.00
P-70	8.0	False	197	PVC	140.0	0.350	13	0.08	0.00
P-71	8.0	False	86	PVC	140.0	0.000	19	0.12	0.00
P-72	8.0	False	103	PVC	140.0	0.740	19	0.12	0.00
P-73	8.0	False	124	PVC	140.0	0.350	25	0.16	0.00
P-74	8.0	False	235	PVC	140.0	0.390	55	0.35	0.02
P-75	8.0	False	131	PVC	140.0	1.670	30	0.19	0.00
P-76	8.0	False	162	PVC	140.0	0.350	24	0.15	0.00
P-77	8.0	False	60	PVC	140.0	0.350	18	0.11	0.00
P-78	8.0	False	49	PVC	140.0	0.740	12	0.08	0.00
P-79	8.0	False	88	PVC	140.0	0.000	12	0.08	0.00
P-80	8.0	False	72	PVC	140.0	0.350	6	0.04	0.00
P-81	8.0	False	87	PVC	140.0	0.350	0	0.00	0.00
P-82	8.0	False	129	PVC	140.0	1.670	128	0.81	0.04
P-83	8.0	False	310	PVC	140.0	1.130	86	0.55	0.05
P-84	8.0	False	83	PVC	140.0	0.000	86	0.55	0.01
P-85	8.0	False	316	PVC	140.0	0.350	62	0.39	0.03
P-86	6.1	False	313	PVC	140.0	0.050	35	0.39	0.04
P-87	6.1	False	253	PVC	140.0	1.720	43	0.48	0.05
P-88	8.0	False	195	PVC	140.0	1.720	42	0.26	0.01
P-89	8.0	False	112	PVC	140.0	0.350	-13	0.08	0.00
P-90	8.0	False	402	PVC	140.0	0.830	-13	0.08	0.00
P-91	8.0	False	76	PVC	140.0	0.000	178	1.13	0.05
P-92	8.0	False	57	PVC	140.0	0.000	178	1.13	0.04
P-93	8.0	False	252	PVC	140.0	2.060	148	0.94	0.11
P-94	8.0	False	393	PVC	140.0	0.990	95	0.60	0.08
P-95	8.0	False	179	PVC	140.0	0.390	76	0.48	0.02
P-96	6.1	False	164	PVC	140.0	1.670	53	0.58	0.04
P-97	6.1	False	160	PVC	140.0	0.780	53	0.58	0.04
P-98	6.1	False	270	PVC	140.0	1.670	19	0.21	0.01

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-99	8.0	False	169	PVC	140.0	1.330	98	0.62	0.04
P-100	8.0	False	298	PVC	140.0	0.000	98	0.62	0.06
P-101	8.0	False	405	PVC	140.0	0.200	71	0.45	0.05
P-102	8.0	False	307	PVC	140.0	0.390	105	0.66	0.07
P-103	8.0	False	378	PVC	140.0	0.840	179	1.13	0.24
P-104	8.0	False	41	PVC	140.0	0.740	122	0.77	0.01
P-105	8.0	False	241	PVC	140.0	0.000	122	0.77	0.08
P-106	8.0	False	165	PVC	140.0	0.590	77	0.49	0.02
P-107	8.0	False	110	PVC	140.0	0.740	52	0.33	0.01
P-108	8.0	False	211	PVC	140.0	0.940	39	0.24	0.01
P-109	8.0	False	114	PVC	140.0	0.940	30	0.19	0.00
P-110	8.0	False	219	PVC	140.0	0.490	30	0.19	0.01
P-111	8.0	False	318	PVC	140.0	0.390	18	0.11	0.00
P-112	6.1	False	247	PVC	140.0	0.740	16	0.18	0.01
P-113	6.1	False	115	PVC	140.0	0.740	16	0.18	0.00
P-114	6.1	False	251	PVC	140.0	1.670	9	0.10	0.00
P-115	6.1	False	129	PVC	140.0	1.670	6	0.07	0.00
P-116	6.1	False	202	PVC	140.0	1.670	8	0.09	0.00
P-117	6.1	False	141	PVC	140.0	1.670	6	0.07	0.00
P-118	6.1	False	241	PVC	140.0	1.670	26	0.28	0.02
P-119	6.1	False	230	PVC	140.0	0.390	19	0.20	0.01
P-120	6.1	False	272	PVC	140.0	1.870	36	0.40	0.03
P-121	6.1	False	238	PVC	140.0	0.000	22	0.24	0.01
P-122	6.1	False	295	PVC	140.0	1.670	57	0.63	0.09
P-123	6.1	False	320	PVC	140.0	0.000	41	0.45	0.05
P-124	8.0	False	290	PVC	140.0	0.940	23	0.14	0.00
P-125	8.0	False	344	PVC	140.0	1.930	90	0.57	0.06
P-126	8.0	False	1,133	PVC	140.0	1.340	54	0.34	0.08
P-127	8.0	False	245	PVC	140.0	0.840	33	0.21	0.01
P-128	8.0	False	71	PVC	140.0	0.390	6	0.04	0.00
P-129	8.0	False	410	PVC	140.0	0.590	6	0.04	0.00
P-130	8.0	False	339	PVC	140.0	0.390	6	0.04	0.00
P-131	8.0	False	100	PVC	140.0	0.390	21	0.14	0.00

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-132	8.0	False	495	PVC	140.0	1.770	21	0.14	0.01
P-133	8.0	False	154	PVC	140.0	0.390	0	0.00	0.00
P-134	11.7	False	137	PVC	140.0	0.390	225	0.67	0.02
P-135	6.1	False	141	PVC	140.0	1.670	2	0.02	0.00
P-136	8.0	False	204	PVC	140.0	0.740	4	0.03	0.00
P-137	8.0	False	59	PVC	140.0	0.390	0	0.00	0.00
P-138	8.0	False	145	PVC	140.0	0.740	0	0.00	0.00
P-139	8.0	False	113	PVC	140.0	0.740	18	0.12	0.00
P-140	6.1	False	132	PVC	140.0	1.670	6	0.07	0.00
P-141	6.1	False	123	PVC	140.0	1.670	6	0.07	0.00
P-142	6.1	False	128	PVC	140.0	1.670	6	0.07	0.00
P-143	6.1	False	143	PVC	140.0	1.670	6	0.07	0.00
P-144	6.1	False	98	PVC	140.0	1.670	6	0.07	0.00
P-145	6.1	False	124	PVC	140.0	1.670	6	0.07	0.00
P-146	6.1	False	114	PVC	140.0	1.670	6	0.07	0.00
P-147	11.7	True	2,270	PVC	140.0	1.670	268	0.79	0.49
P-148	11.7	True	2,239	PVC	140.0	1.280	225	0.67	0.35
P-149	999.0	True	1	PVC	140.0	0.000	225	0.00	0.00
P-150	6.1	True	636	PVC	140.0	1.190	182	1.98	1.57
P-151	999.0	True	1	PVC	140.0	0.000	182	0.00	0.00
P-152	999.0	True	1	PVC	140.0	0.000	323	0.00	0.00
P-153	11.7	True	897	PVC	140.0	1.280	323	0.96	0.27
P-154	11.7	False	107	PVC	140.0	0.000	268	0.80	0.02
P-155	6.0	False	32	PVC	140.0	0.840	34	0.39	0.00
P-156	6.0	False	102	PVC	140.0	1.670	6	0.07	0.00

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	84.00	225	84.00
R-2	84.00	182	84.00
R-3	87.00	323	87.00

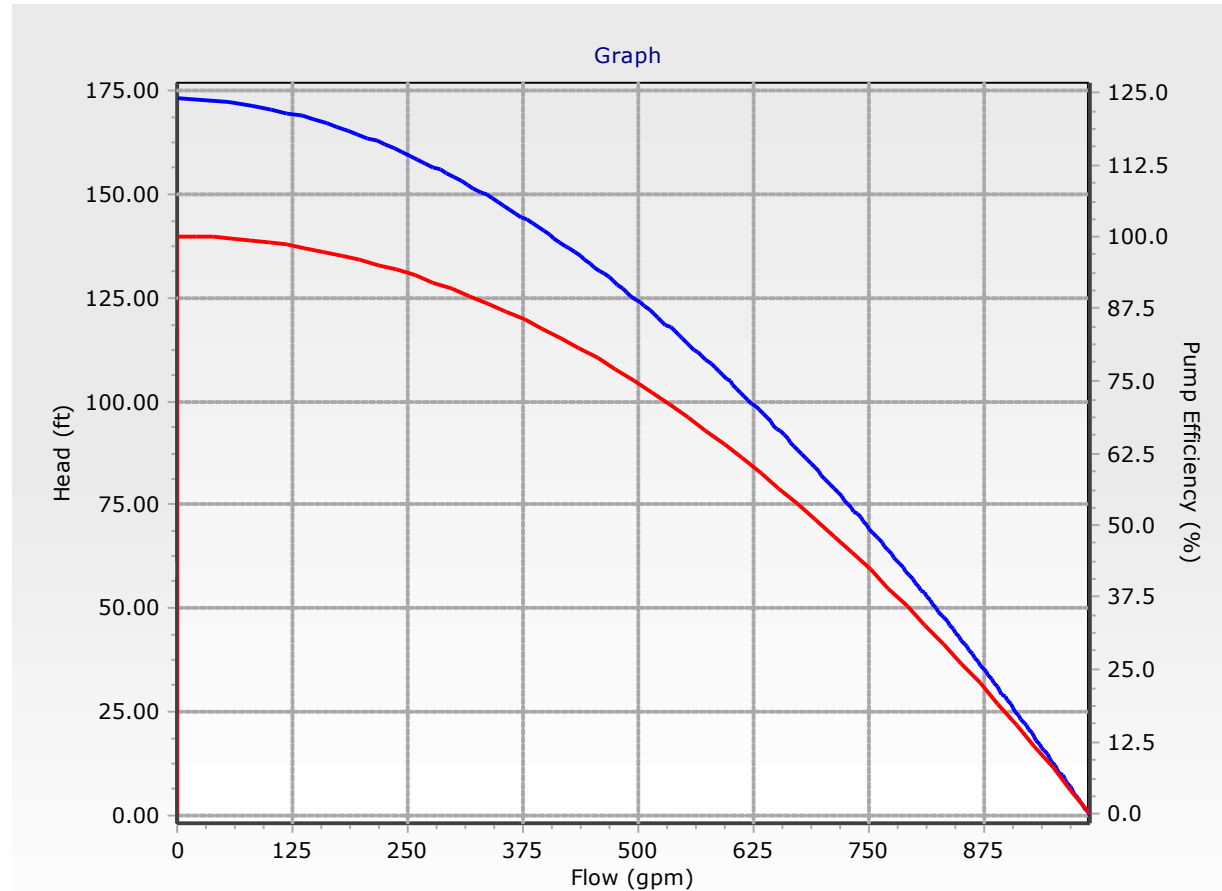
FlexTable: Pump Table

Label	Pump Definition	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	Pump Definition - 1	84.00	84.00	245.95	225	161.95
PMP-2	Pump Definition - 2	84.00	84.00	247.95	182	163.95
PMP-3	Pump Definition - 3	87.00	87.00	246.61	323	159.61

Pump Definition Detailed Report: Pump Definition - 1

Element Details			
ID	375	Notes	
Label	Pump Definition - 1		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	836 gpm
Shutoff Head	173.10 ft	Maximum Operating Head	46.20 ft
Design Flow	655 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft ²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

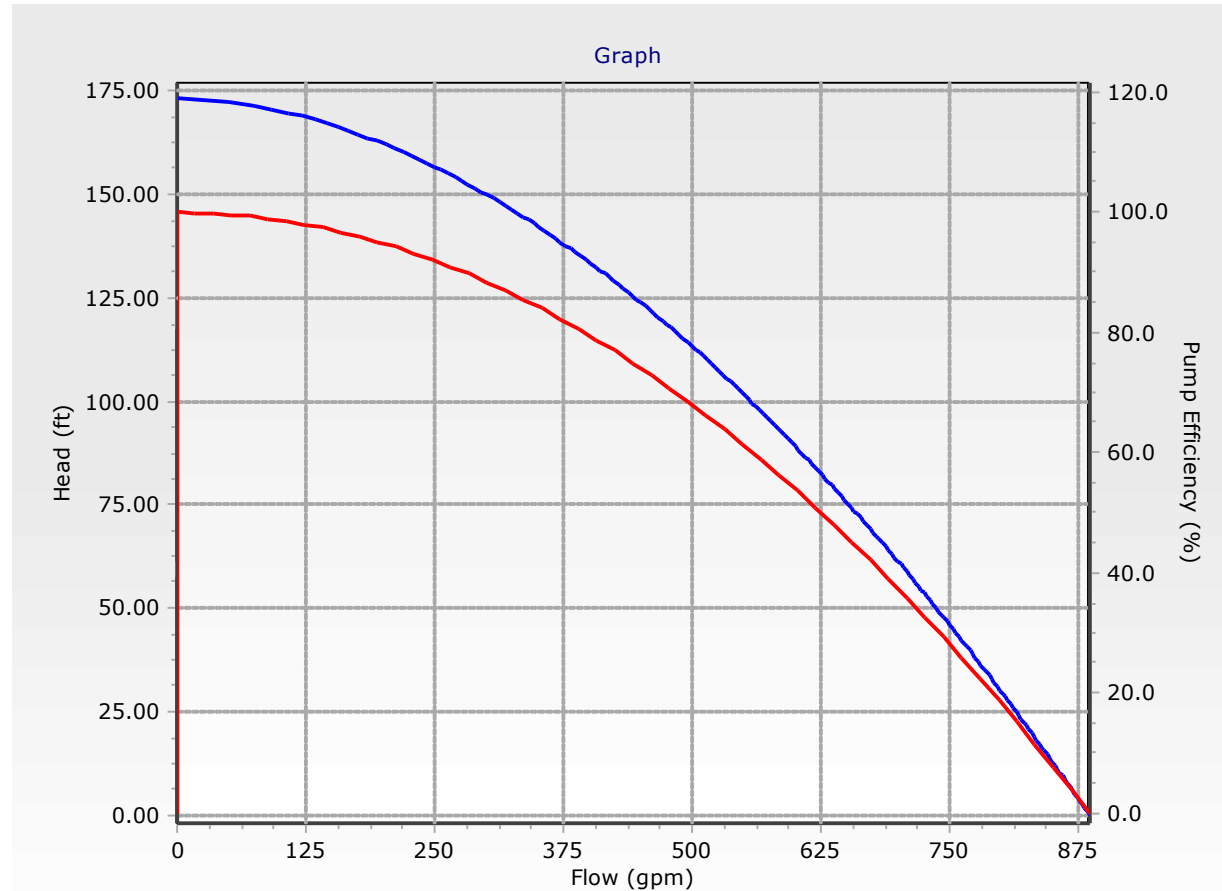
Pump Definition Detailed Report: Pump Definition - 1



Pump Definition Detailed Report: Pump Definition - 2

Element Details			
ID	381	Notes	
Label	Pump Definition - 2		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	750 gpm
Shutoff Head	173.10 ft	Maximum Operating Head	46.20 ft
Design Flow	588 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

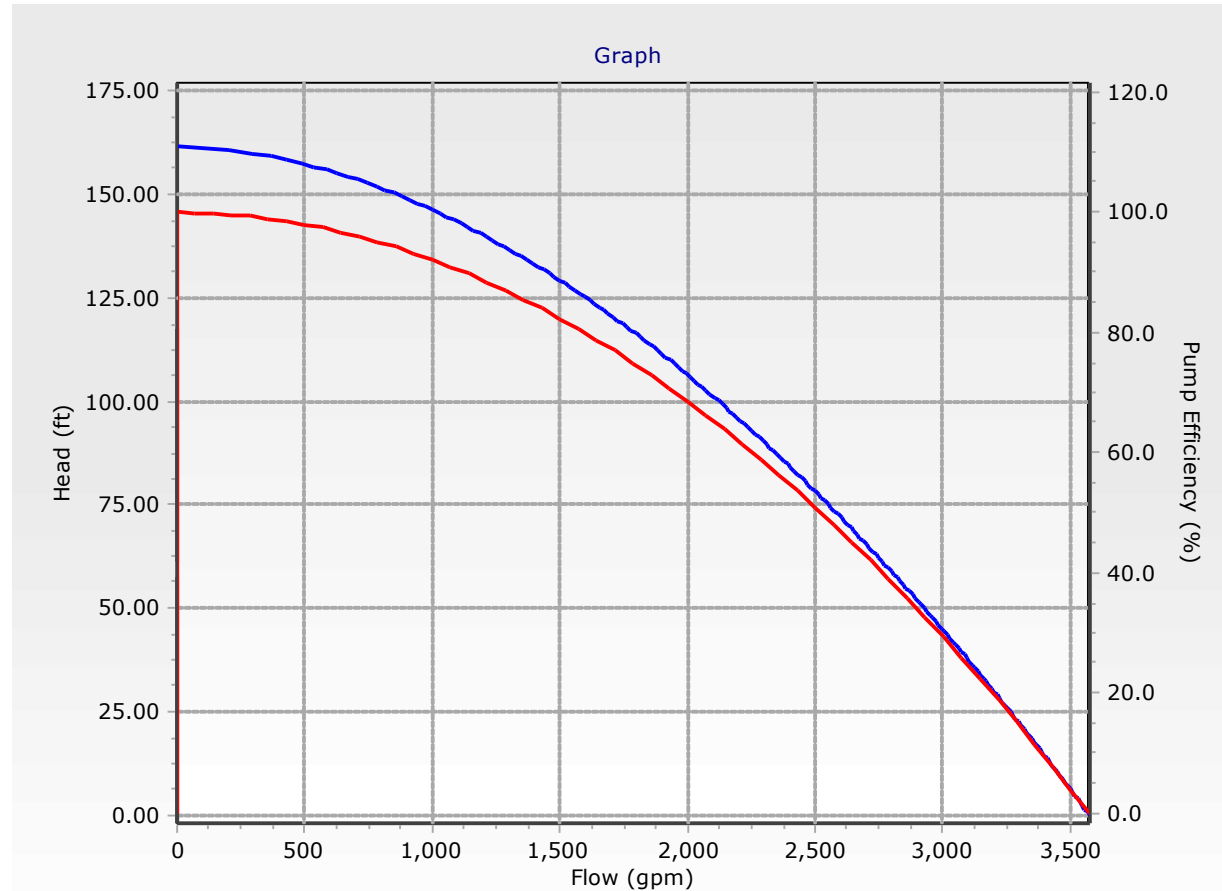
Pump Definition Detailed Report: Pump Definition - 2



Pump Definition Detailed Report: Pump Definition - 3

Element Details			
ID	386	Notes	
Label	Pump Definition - 3		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	2,981 gpm
Shutoff Head	161.50 ft	Maximum Operating Head	46.20 ft
Design Flow	2,262 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: Pump Definition - 3



Hillside Groves
CWI Job #: 21-04-0008

PHF



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FlexTable: Hydrant Table

Label	Elevation (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Satisfies Fire Flow Constraints?
H-1	88.00	62	0	1,307	30	True
H-2	87.80	62	0	1,665	30	True
H-3	90.10	61	0	1,657	30	True
H-4	87.80	62	0	1,679	31	True
H-5	89.40	61	0	1,672	31	True
H-6	91.20	61	0	1,691	31	True
H-7	90.30	61	0	1,780	31	True
H-8	87.80	63	0	1,809	32	True
H-9	85.20	64	0	1,847	34	True
H-10	87.70	62	0	1,270	30	True
H-11	92.90	60	0	1,401	30	True
H-12	89.30	62	0	1,620	30	True
H-13	90.50	61	0	1,598	30	True
H-14	93.30	60	0	1,691	30	True
H-15	86.40	63	0	1,744	30	True
H-16	90.00	61	0	1,733	30	True
H-17	90.00	62	0	1,711	30	True
H-18	90.00	63	0	1,792	30	True
H-19	90.00	63	0	1,764	30	True
H-20	90.00	63	0	1,915	30	True
H-21	90.00	63	0	1,603	30	True
H-22	88.20	62	0	1,613	30	True
H-23	90.90	61	0	1,642	30	True
H-24	88.30	62	0	1,539	30	True
H-25	93.30	60	0	1,693	30	True
H-26	89.00	61	0	1,450	30	True
H-27	90.00	60	0	1,165	30	True
H-28	90.00	60	0	1,043	30	True
H-29	90.00	60	0	877	30	True
H-30	90.00	60	0	1,072	30	True
H-31	90.00	60	0	833	30	True
H-32	90.00	60	0	828	30	True

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-1	0	88.00	62	143.17
J-2	100	88.00	62	143.17
J-3	72	88.00	62	143.31
J-4	0	87.50	62	144.00
J-5	0	88.50	62	142.96
J-6	0	90.00	61	141.41
J-7	0	87.80	62	143.59
J-8	0	89.90	61	141.49
J-9	0	90.90	61	140.49
J-10	0	90.30	61	141.09
J-11	0	93.50	60	138.02
J-12	0	90.30	61	141.65
J-13	0	88.90	62	143.37
J-14	0	86.60	63	146.13
J-15	94	88.50	62	142.70
J-16	40	88.60	62	142.58
J-17	40	92.90	60	138.47
J-18	0	92.60	60	138.98
J-19	8	90.90	61	140.68
J-20	12	91.20	61	140.38
J-21	14	89.80	61	141.78
J-22	12	90.40	61	141.18
J-23	28	88.00	62	143.60
J-24	0	90.50	61	141.14
J-25	8	90.50	61	141.14
J-26	20	91.50	61	140.16
J-27	12	91.50	61	140.16
J-28	12	93.40	60	138.25
J-29	0	91.30	61	140.35
J-30	16	91.30	61	140.35
J-31	16	91.30	61	140.35
J-32	0	87.80	62	143.88
J-33	20	87.80	62	143.88

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-34	20	87.80	62	143.88
J-35	0	87.00	63	144.76
J-36	12	87.20	63	144.55
J-37	0	87.20	63	144.57
J-38	12	87.20	63	144.57
J-39	6	89.90	61	141.82
J-40	0	88.00	62	143.89
J-41	56	88.00	62	143.97
J-42	50	88.00	62	144.04
J-43	0	88.00	62	144.20
J-44	24	88.00	63	145.16
J-45	0	88.00	63	146.70
J-46	46	88.00	63	146.76
J-47	0	88.00	64	147.00
J-48	0	88.00	64	147.16
J-49	12	88.00	64	147.16
J-50	0	88.00	64	147.23
J-51	12	88.00	64	147.23
J-52	0	88.00	64	147.32
J-53	12	88.00	64	147.32
J-54	0	88.00	64	147.39
J-55	0	88.00	64	147.61
J-56	0	88.00	64	147.37
J-57	12	88.00	64	147.37
J-58	0	88.00	64	147.36
J-59	12	88.00	64	147.36
J-60	0	88.00	64	147.36
J-61	12	88.00	64	147.36
J-62	0	88.00	64	147.36
J-63	12	88.00	64	147.36
J-64	0	88.00	64	147.36
J-65	12	88.00	64	147.36
J-66	0	88.00	64	147.36

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-67	0	89.50	61	141.69
J-68	48	87.70	62	143.23
J-69	0	86.20	63	144.63
J-70	16	88.30	62	142.67
J-71	22	90.40	61	140.76
J-72	54	88.30	62	142.15
J-73	34	92.60	60	138.59
J-74	0	88.20	61	142.08
J-75	0	90.40	61	139.90
J-76	0	90.00	61	140.66
J-77	38	90.50	61	139.85
J-78	10	90.00	61	140.26
J-79	32	88.00	61	142.00
J-80	0	88.00	61	141.06
J-81	16	88.00	61	140.71
J-82	0	88.00	61	140.62
J-83	10	88.00	61	140.59
J-84	0	88.00	61	140.56
J-85	24	88.00	61	140.53
J-86	0	88.00	61	140.52
J-87	32	88.00	61	140.48
J-88	0	88.00	61	140.52
J-89	12	88.00	61	140.51
J-90	18	88.00	61	140.55
J-91	16	88.00	61	140.58
J-92	12	88.00	61	140.51
J-93	16	88.00	61	140.52
J-94	0	88.00	61	140.52
J-95	14	88.00	61	140.55
J-96	0	88.00	61	140.52
J-97	28	88.00	61	140.57
J-98	32	88.00	61	140.70
J-99	20	88.00	61	140.51

FlexTable: Junction Table

Label	Demand (gpm)	Elevation (ft)	Pressure (psi)	Pressure Head (ft)
J-100	0	88.00	61	140.21
J-101	54	88.00	61	140.18
J-102	0	88.00	61	140.18
J-103	0	88.00	61	140.18
J-104	54	88.00	61	140.18
J-105	0	85.20	64	147.95
J-106	0	87.00	63	144.56

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-1	8.0	False	320	PVC	140.0	0.000	0	0.00	0.00
P-2	8.0	False	300	PVC	140.0	0.000	100	0.63	0.07
P-3	8.0	False	345	PVC	140.0	0.390	100	0.63	0.08
P-4	8.0	False	305	PVC	140.0	0.390	172	1.09	0.18
P-5	11.7	False	94	PVC	140.0	0.390	174	0.52	0.01
P-6	11.7	False	274	PVC	140.0	0.250	174	0.52	0.03
P-7	11.7	False	186	PVC	140.0	0.390	174	0.52	0.02
P-8	11.7	False	302	PVC	140.0	0.050	174	0.52	0.03
P-9	11.7	False	138	PVC	140.0	0.390	174	0.52	0.01
P-10	11.7	False	75	PVC	140.0	0.000	174	0.52	0.01
P-11	11.7	False	463	PVC	140.0	1.230	40	0.12	0.00
P-12	11.7	False	127	PVC	140.0	0.390	40	0.12	0.00
P-13	11.7	False	378	PVC	140.0	0.390	15	0.05	0.00
P-14	11.7	False	75	PVC	140.0	0.740	0	0.00	0.00
P-15	11.7	False	222	PVC	140.0	0.390	0	0.00	0.00
P-16	11.7	False	715	PVC	140.0	0.790	239	0.71	0.13
P-17	11.7	False	617	PVC	140.0	0.740	488	1.46	0.41
P-18	11.7	False	88	PVC	140.0	0.390	629	1.88	0.09
P-19	11.7	False	192	PVC	140.0	0.000	629	1.88	0.20
P-20	11.7	False	206	PVC	140.0	0.390	629	1.88	0.22
P-21	11.7	False	213	PVC	140.0	0.000	629	1.88	0.23
P-22	11.7	False	263	PVC	140.0	0.390	629	1.88	0.28
P-23	8.0	False	444	PVC	140.0	1.850	134	0.85	0.17
P-24	8.0	False	317	PVC	140.0	0.390	40	0.25	0.01
P-25	8.0	False	241	PVC	140.0	0.150	40	0.25	0.01
P-26	6.1	False	279	PVC	140.0	0.640	24	0.27	0.02
P-27	6.1	False	64	PVC	140.0	0.390	16	0.17	0.00
P-28	6.1	False	529	PVC	140.0	2.070	16	0.17	0.01
P-29	8.0	False	187	PVC	140.0	0.390	125	0.79	0.06
P-30	8.0	False	212	PVC	140.0	1.670	13	0.08	0.00
P-31	6.1	False	147	PVC	140.0	1.670	12	0.13	0.00
P-32	8.0	False	195	PVC	140.0	0.740	7	0.05	0.00
P-33	6.1	False	177	PVC	140.0	1.670	12	0.13	0.00

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-34	8.0	False	115	PVC	140.0	0.000	33	0.21	0.00
P-35	8.0	False	323	PVC	140.0	0.840	33	0.21	0.01
P-36	8.0	False	391	PVC	140.0	0.100	61	0.39	0.03
P-37	8.0	False	82	PVC	140.0	0.880	61	0.39	0.01
P-38	6.1	False	134	PVC	140.0	1.670	8	0.09	0.00
P-39	8.0	False	199	PVC	140.0	0.740	69	0.44	0.02
P-40	6.1	False	137	PVC	140.0	1.670	12	0.13	0.00
P-41	8.0	False	138	PVC	140.0	0.740	137	0.87	0.05
P-42	8.0	False	118	PVC	140.0	1.670	45	0.28	0.01
P-43	6.1	False	140	PVC	140.0	1.670	16	0.18	0.00
P-44	6.1	False	188	PVC	140.0	1.670	16	0.18	0.01
P-45	8.0	False	200	PVC	140.0	0.740	77	0.49	0.03
P-46	8.0	False	88	PVC	140.0	0.740	117	0.74	0.03
P-47	8.0	False	112	PVC	140.0	0.740	117	0.74	0.03
P-48	8.0	False	31	PVC	140.0	0.740	129	0.82	0.01
P-48a	8.0	False	380	PVC	140.0	1.670	141	0.89	0.16
P-49	6.1	False	143	PVC	140.0	1.670	20	0.22	0.01
P-50	6.1	False	137	PVC	140.0	1.670	20	0.22	0.01
P-51	6.1	False	149	PVC	140.0	1.670	12	0.13	0.00
P-52	6.1	False	187	PVC	140.0	1.670	12	0.13	0.00
P-53	8.0	False	105	PVC	140.0	0.740	104	0.66	0.02
P-54	8.0	False	176	PVC	140.0	0.740	104	0.66	0.04
P-55	8.0	False	212	PVC	140.0	1.670	101	0.64	0.05
P-56	8.0	False	119	PVC	140.0	0.000	212	1.34	0.10
P-57	8.0	False	60	PVC	140.0	0.390	212	1.34	0.05
P-58	8.0	False	337	PVC	140.0	0.390	100	0.63	0.07
P-59	8.0	False	435	PVC	140.0	1.040	156	0.98	0.22
P-60	8.0	False	249	PVC	140.0	1.670	162	1.02	0.13
P-61	8.0	False	528	PVC	140.0	0.690	112	0.71	0.14
P-62	8.0	False	213	PVC	140.0	0.000	318	2.01	0.40
P-63	8.0	False	283	PVC	140.0	0.590	318	2.01	0.53
P-64	8.0	False	655	PVC	140.0	2.120	342	2.16	1.39
P-65	8.0	False	96	PVC	140.0	1.670	-72	0.46	0.01

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-66	8.0	False	326	PVC	140.0	0.690	-72	0.46	0.04
P-67	8.0	False	667	PVC	140.0	0.990	118	0.75	0.20
P-68	8.0	False	97	PVC	140.0	0.000	118	0.75	0.03
P-69	8.0	False	545	PVC	140.0	0.200	118	0.75	0.16
P-70	8.0	False	197	PVC	140.0	0.350	130	0.82	0.07
P-71	8.0	False	86	PVC	140.0	0.000	142	0.90	0.04
P-72	8.0	False	103	PVC	140.0	0.740	142	0.90	0.04
P-73	8.0	False	124	PVC	140.0	0.350	154	0.97	0.06
P-74	8.0	False	235	PVC	140.0	0.390	214	1.35	0.21
P-75	8.0	False	131	PVC	140.0	1.670	60	0.38	0.01
P-76	8.0	False	162	PVC	140.0	0.350	48	0.30	0.01
P-77	8.0	False	60	PVC	140.0	0.350	36	0.23	0.00
P-78	8.0	False	49	PVC	140.0	0.740	24	0.15	0.00
P-79	8.0	False	88	PVC	140.0	0.000	24	0.15	0.00
P-80	8.0	False	72	PVC	140.0	0.350	12	0.08	0.00
P-81	8.0	False	87	PVC	140.0	0.350	0	0.00	0.00
P-82	8.0	False	129	PVC	140.0	1.670	239	1.51	0.14
P-83	8.0	False	310	PVC	140.0	1.130	171	1.08	0.18
P-84	8.0	False	83	PVC	140.0	0.000	171	1.08	0.05
P-85	8.0	False	316	PVC	140.0	0.350	123	0.78	0.10
P-86	6.1	False	313	PVC	140.0	0.050	72	0.79	0.14
P-87	6.1	False	253	PVC	140.0	1.720	88	0.96	0.17
P-88	8.0	False	195	PVC	140.0	1.720	67	0.43	0.02
P-89	8.0	False	112	PVC	140.0	0.350	-42	0.27	0.00
P-90	8.0	False	402	PVC	140.0	0.830	-42	0.27	0.02
P-91	8.0	False	76	PVC	140.0	0.000	373	2.36	0.19
P-92	8.0	False	57	PVC	140.0	0.000	373	2.36	0.14
P-93	8.0	False	252	PVC	140.0	2.060	297	1.88	0.41
P-94	8.0	False	393	PVC	140.0	0.990	191	1.20	0.28
P-95	8.0	False	179	PVC	140.0	0.390	153	0.96	0.09
P-96	6.1	False	164	PVC	140.0	1.670	107	1.17	0.15
P-97	6.1	False	160	PVC	140.0	0.780	107	1.17	0.15
P-98	6.1	False	270	PVC	140.0	1.670	37	0.40	0.04

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-99	8.0	False	169	PVC	140.0	1.330	195	1.23	0.13
P-100	8.0	False	298	PVC	140.0	0.000	195	1.23	0.22
P-101	8.0	False	405	PVC	140.0	0.200	141	0.89	0.17
P-102	8.0	False	307	PVC	140.0	0.390	210	1.33	0.27
P-103	8.0	False	378	PVC	140.0	0.840	358	2.26	0.88
P-104	8.0	False	41	PVC	140.0	0.740	243	1.54	0.05
P-105	8.0	False	241	PVC	140.0	0.000	243	1.54	0.27
P-106	8.0	False	165	PVC	140.0	0.590	155	0.98	0.08
P-107	8.0	False	110	PVC	140.0	0.740	103	0.65	0.03
P-108	8.0	False	211	PVC	140.0	0.940	77	0.49	0.03
P-109	8.0	False	114	PVC	140.0	0.940	59	0.38	0.01
P-110	8.0	False	219	PVC	140.0	0.490	59	0.38	0.02
P-111	8.0	False	318	PVC	140.0	0.390	35	0.22	0.01
P-112	6.1	False	247	PVC	140.0	0.740	32	0.35	0.03
P-113	6.1	False	115	PVC	140.0	0.740	32	0.35	0.01
P-114	6.1	False	251	PVC	140.0	1.670	18	0.20	0.01
P-115	6.1	False	129	PVC	140.0	1.670	12	0.13	0.00
P-116	6.1	False	202	PVC	140.0	1.670	16	0.18	0.01
P-117	6.1	False	141	PVC	140.0	1.670	12	0.13	0.00
P-118	6.1	False	241	PVC	140.0	1.670	51	0.56	0.06
P-119	6.1	False	230	PVC	140.0	0.390	37	0.41	0.03
P-120	6.1	False	272	PVC	140.0	1.870	72	0.80	0.13
P-121	6.1	False	238	PVC	140.0	0.000	44	0.49	0.04
P-122	6.1	False	295	PVC	140.0	1.670	115	1.26	0.32
P-123	6.1	False	320	PVC	140.0	0.000	83	0.91	0.19
P-124	8.0	False	290	PVC	140.0	0.940	45	0.29	0.01
P-125	8.0	False	344	PVC	140.0	1.930	180	1.13	0.22
P-126	8.0	False	1,133	PVC	140.0	1.340	108	0.68	0.29
P-127	8.0	False	245	PVC	140.0	0.840	65	0.41	0.02
P-128	8.0	False	71	PVC	140.0	0.390	11	0.07	0.00
P-129	8.0	False	410	PVC	140.0	0.590	11	0.07	0.00
P-130	8.0	False	339	PVC	140.0	0.390	11	0.07	0.00
P-131	8.0	False	100	PVC	140.0	0.390	43	0.27	0.00

FlexTable: Pipe Table

Label	Diameter (in)	Has User Defined Length?	Length (ft)	Material	Hazen-Williams C	Minor Loss Coefficient (Unified)	Flow (gpm)	Velocity (ft/s)	Headloss (Friction) (ft)
P-132	8.0	False	495	PVC	140.0	1.770	43	0.27	0.02
P-133	8.0	False	154	PVC	140.0	0.390	0	0.00	0.00
P-134	11.7	False	137	PVC	140.0	0.390	346	1.03	0.05
P-135	6.1	False	141	PVC	140.0	1.670	3	0.04	0.00
P-136	8.0	False	204	PVC	140.0	0.740	9	0.05	0.00
P-137	8.0	False	59	PVC	140.0	0.390	1	0.00	0.00
P-138	8.0	False	145	PVC	140.0	0.740	1	0.00	0.00
P-139	8.0	False	113	PVC	140.0	0.740	37	0.23	0.00
P-140	6.1	False	132	PVC	140.0	1.670	12	0.13	0.00
P-141	6.1	False	123	PVC	140.0	1.670	12	0.13	0.00
P-142	6.1	False	128	PVC	140.0	1.670	12	0.13	0.00
P-143	6.1	False	143	PVC	140.0	1.670	12	0.13	0.00
P-144	6.1	False	98	PVC	140.0	1.670	12	0.13	0.00
P-145	6.1	False	124	PVC	140.0	1.670	12	0.13	0.00
P-146	6.1	False	114	PVC	140.0	1.670	12	0.13	0.00
P-147	11.7	True	2,270	PVC	140.0	1.670	629	1.87	2.37
P-148	11.7	True	2,239	PVC	140.0	1.280	346	1.03	0.77
P-149	999.0	True	1	PVC	140.0	0.000	346	0.00	0.00
P-150	6.1	True	636	PVC	140.0	1.190	269	2.93	3.26
P-151	999.0	True	1	PVC	140.0	0.000	269	0.00	0.00
P-152	999.0	True	1	PVC	140.0	0.000	843	0.00	0.00
P-153	11.7	True	897	PVC	140.0	1.280	843	2.50	1.61
P-154	11.7	False	107	PVC	140.0	0.000	629	1.88	0.11
P-155	6.0	False	32	PVC	140.0	0.840	70	0.79	0.02
P-156	6.0	False	102	PVC	140.0	1.670	12	0.14	0.00

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	84.00	346	84.00
R-2	84.00	269	84.00
R-3	87.00	843	87.00

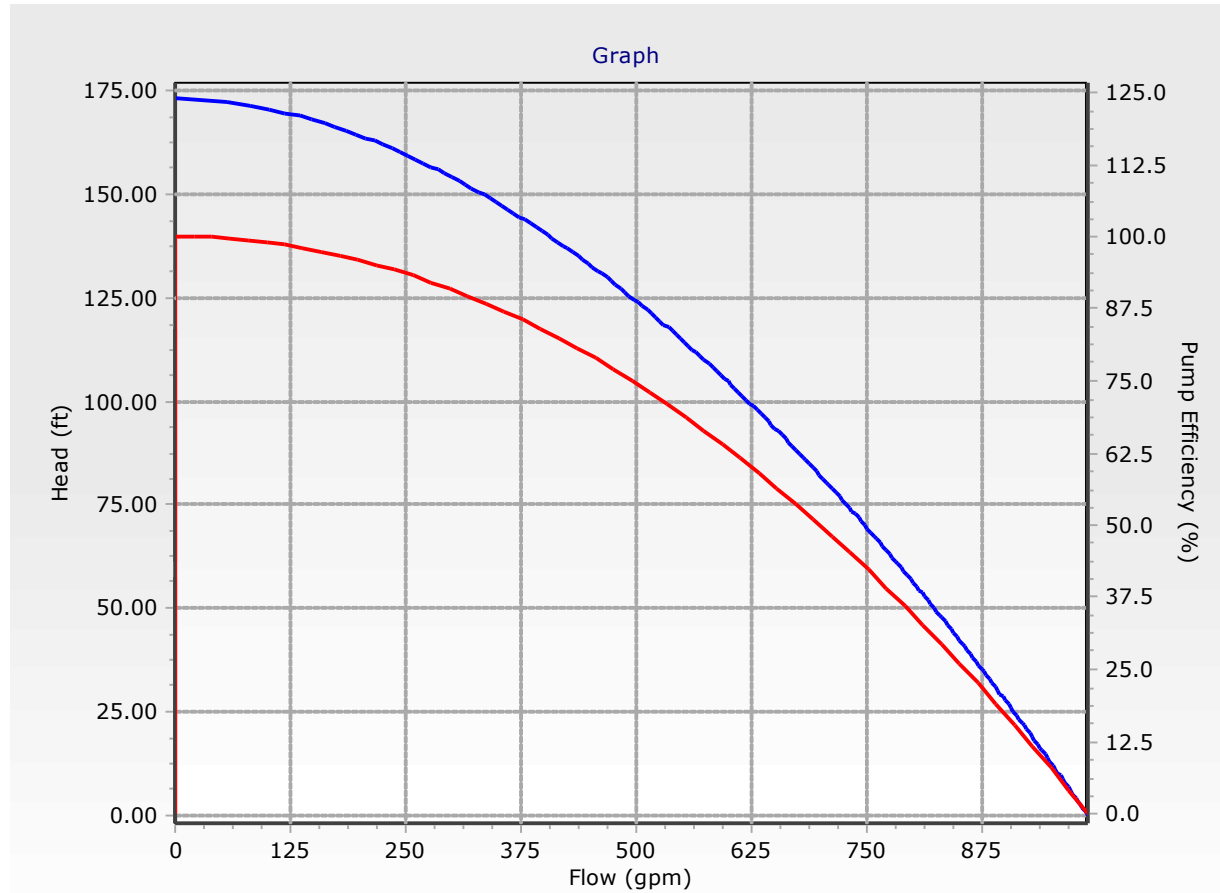
FlexTable: Pump Table

Label	Pump Definition	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	Pump Definition - 1	84.00	84.00	232.35	346	148.35
PMP-2	Pump Definition - 2	84.00	84.00	238.12	269	154.12
PMP-3	Pump Definition - 3	87.00	87.00	237.35	843	150.35

Pump Definition Detailed Report: Pump Definition - 1

Element Details			
ID	375	Notes	
Label	Pump Definition - 1		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	836 gpm
Shutoff Head	173.10 ft	Maximum Operating Head	46.20 ft
Design Flow	655 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft ²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

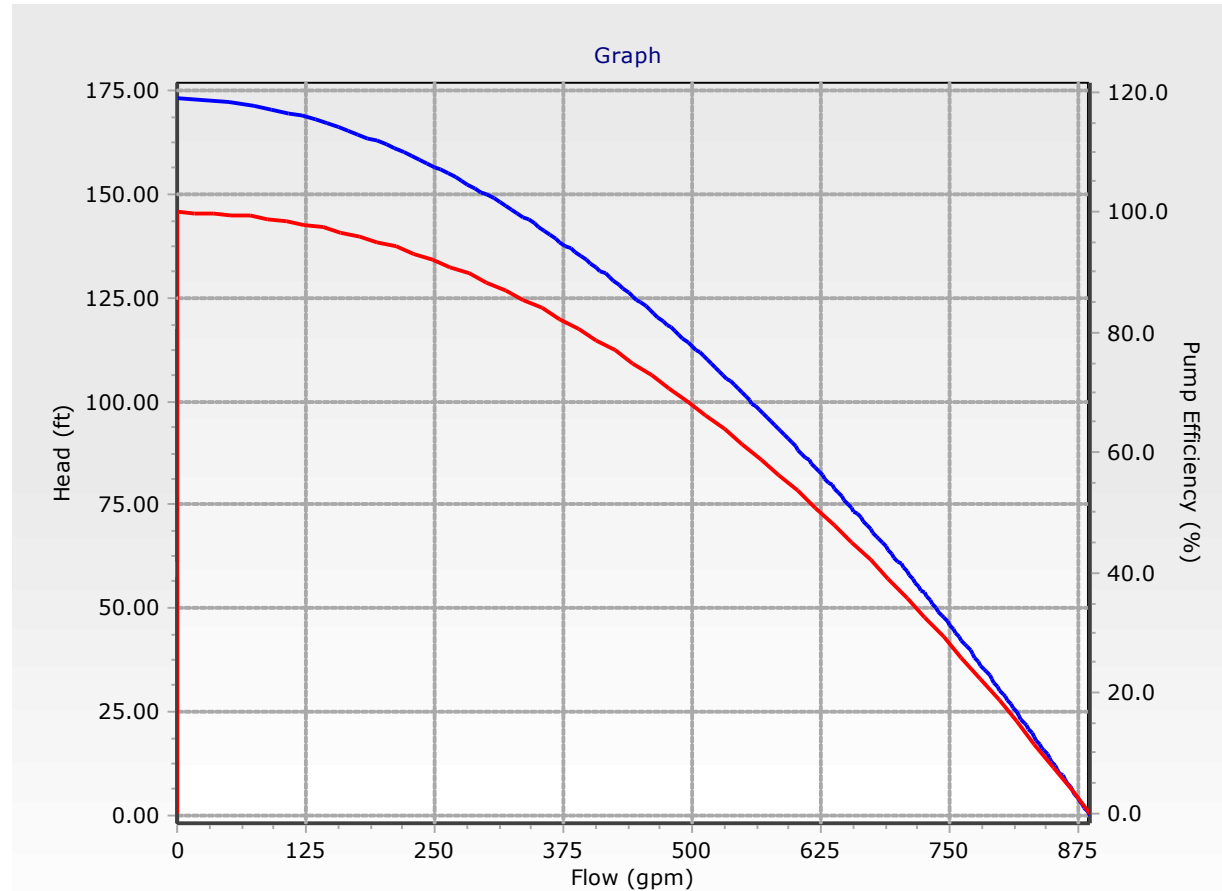
Pump Definition Detailed Report: Pump Definition - 1



Pump Definition Detailed Report: Pump Definition - 2

Element Details			
ID	381	Notes	
Label	Pump Definition - 2		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	750 gpm
Shutoff Head	173.10 ft	Maximum Operating Head	46.20 ft
Design Flow	588 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: Pump Definition - 2



Pump Definition Detailed Report: Pump Definition - 3

Element Details			
ID	386	Notes	
Label	Pump Definition - 3		
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	92.30 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	2,981 gpm
Shutoff Head	161.50 ft	Maximum Operating Head	46.20 ft
Design Flow	2,262 gpm		
Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		
Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: Pump Definition - 3

