FINAL WATER BASIS OF DESIGN REPORT

FINAL Basis of Design Report

☑ APPROVED

☐ APPROVED AS NOTED

☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE

SCOTTSDALE WATER

9379 E San Salvador Dr.
Scottsdale, AZ 85258

Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance.
For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY apritchard **DATE** 10/14/2022

ROSEWOOD 10

Northeast of Ranch Gate Road and 130th Street
Scottsdale, Arizona

Prepared for:

Rosewood Homes
8601 N. Scottsdale Road, Suite 320
Scottsdale, Arizona 85253

Prepared by:

Kimley-Horn and Associates
1001 West Southern Avenue, Suite 131
Mesa, Arizona 85210
191988002
September 2022

FINAL
WATER BASIS OF DESIGN REPORT

ROSEWOOD 10

SCOTTSDALE, ARIZONA

SEPTEMBER 2022

Prepared By:

Kimley»Horn

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INTRODUCTION

SITE LOCATION

This Final Water Basis of Design Report (WaterBOD) has been prepared for the proposed Rosewood 10 single family development located northeast of Ranch Gate Road and 130th Street in Scottsdale, Arizona (development). Rosewood 10 is part of the StoryRock Master Planned Community, a development consisting of 462-acres of single family residential construction. The development is bound to the North by Storyrock 1A – Section A, to the East by Storyrock 1A – Section B, the South by Ranch Gate Road, and to the West by 130th Street. The development is located within Section 1 of Township 4 North, Range 5 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Figure 1 for the Vicinity Map.

PROJECT SIZE AND TYPE

The development is a proposed 10-unit single family residential subdivision. The proposed buildings are one-story units. The development is approximately 9.02 acres. The site is currently zoned as R1-18 ESL PCD.

PURPOSE AND OBJECTIVES

This report presents the basis of design criteria that will be used for engineering design of the proposed development. Upon further analysis, the following shall be completed for the water service plan for the proposed site.

- Demonstrate compliance with the City's Design Standards & Polices Manual (DSPM).
- Confirm the preliminary water system layout for the proposed development.
- Determination of the water demand generated by the development.
- Modeling and Analysis of the proposed water system, including Fire service.

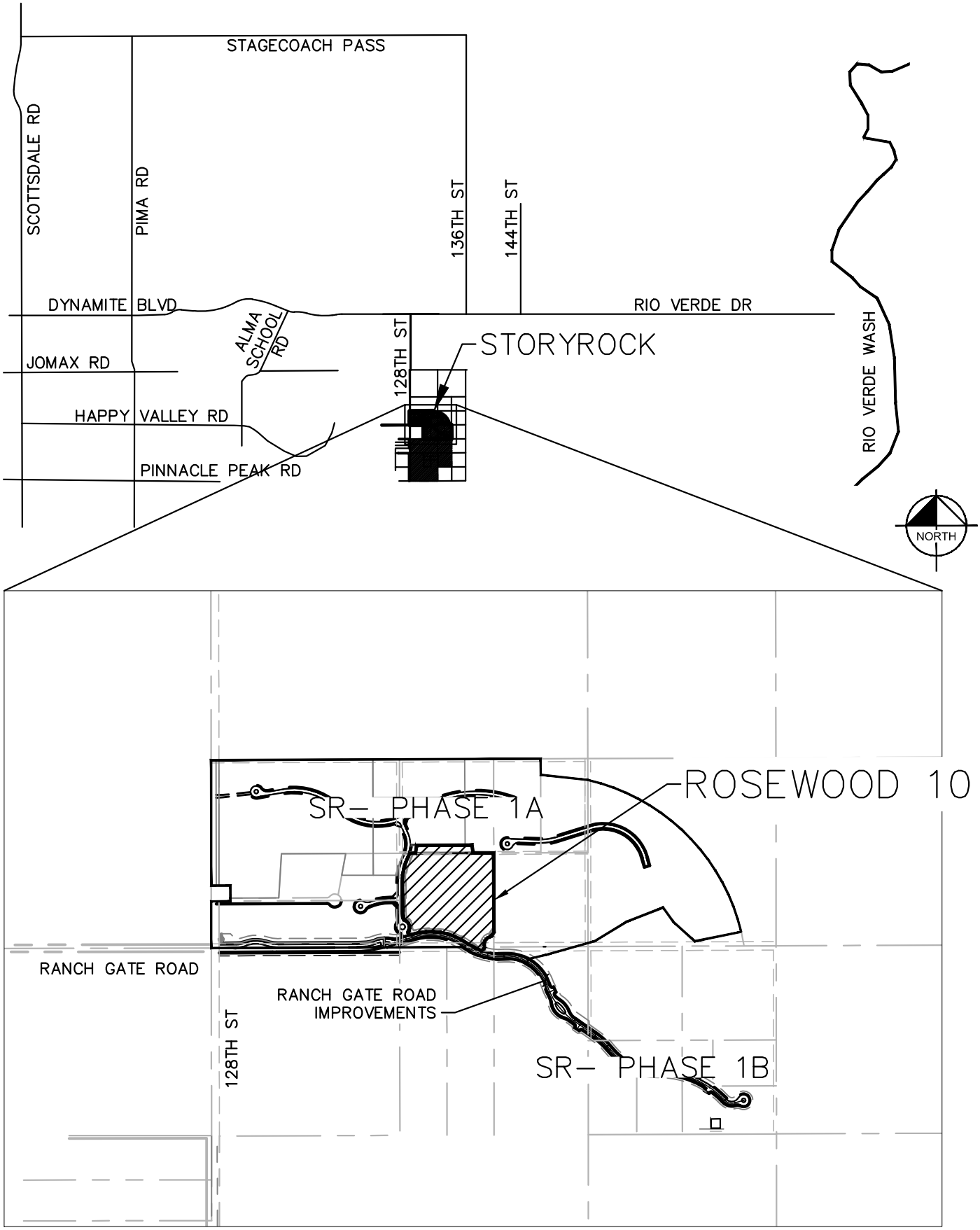


FIGURE 1
VICINITY MAP
ROSEWOOD 10

Kimley»Horn

DISTRIBUTION SYSTEM DESCRIPTION

EXISTING DISTRIBUTION SYSTEM

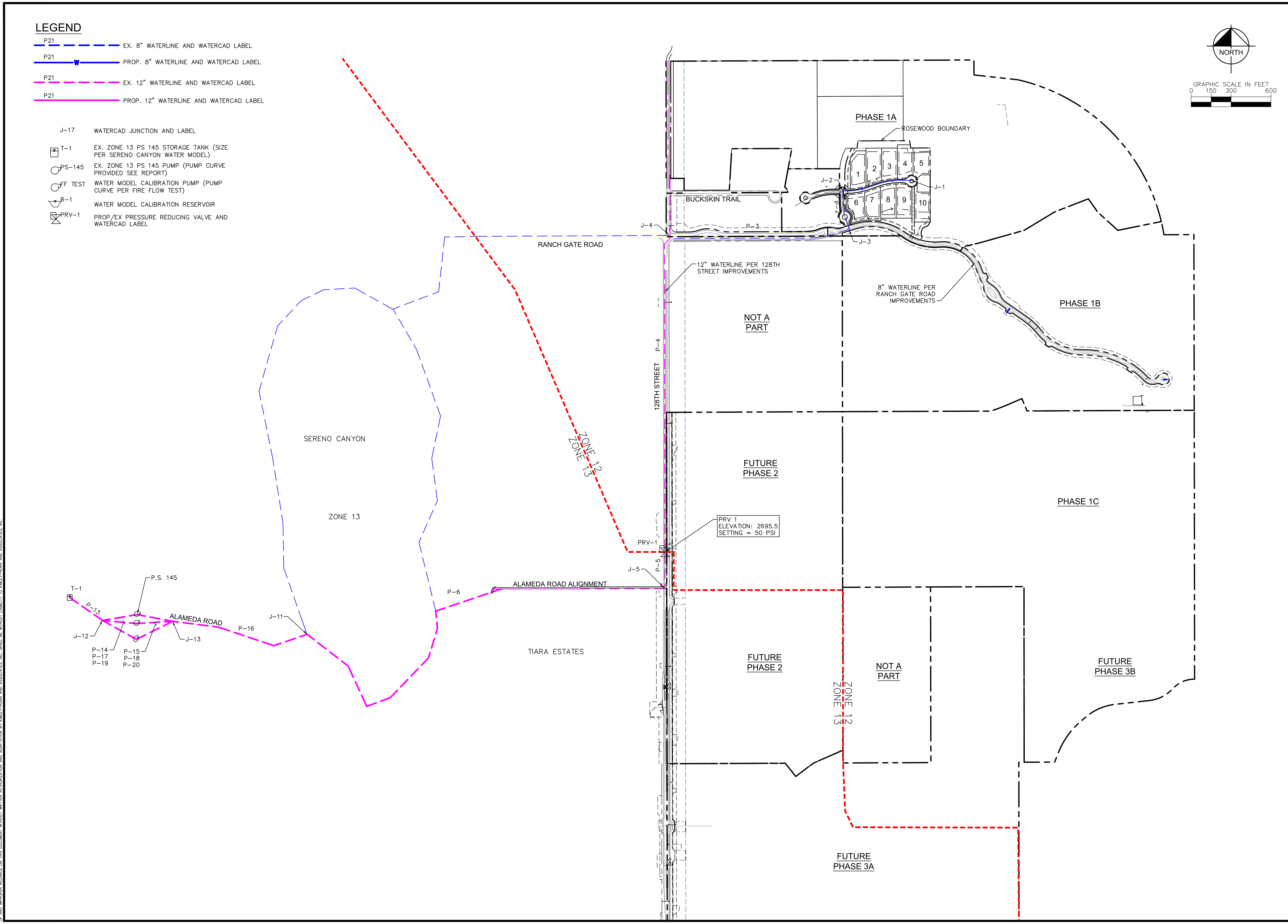
The existing site is undeveloped natural desert. The site slopes to the east and across the site. Existing grade elevations on the site range from approximately 2611-2580. A Conceptual Water Master Plan was approved October 2014 with the project Zoning Case (13-ZN-2014) and amended October 2016.

An existing zone 13 booster pump station (PS 145) is located at Alameda Road and the 122nd Street alignment, southwest of the site, in Sereno Canyon. The booster pump is proposed to serve the area. PS 145 is comprised of three 500 gpm pumps and a 1750 gpm fire flow booster pump, connected to a 12,000-gallon tank. One of the pumps is required to be kept as a redundant pump. Additionally, there is space for a 4th domestic pump.

An existing 8-inch DIP waterline is located in 130th Street west of the site. This line connects to an existing 8-inch DIP waterline at Ranch Gate Road and continues west to connect to an existing 12-inch DIP waterline at 128th Street. The line in 128th Street extends south and connects to an existing 12-inch DIP waterline in Alameda Road and the booster pump station. Refer to the Figure 2: Water Layout for the proposed layout.

PROPOSED DISTRIBUTION SYSTEM

The proposed development consists of 10 single family residential units. This Development will be served by an 8-inch DIP water line within 40' roadway tract and water sewer facilities easement that will provide potable water and fire protection. Phase 1A, including Rosewood 10, will operate entirely in pressure zone 12.



LEGEND
P21
EX. 8" WATERLINE AND WATERCAD LABEL
PROP. 8" WATERLINE AND WATERCAD LABEL
EX. 12" WATERLINE AND WATERCAD LABEL
PROP. 12" WATERLINE AND WATERCAD LABEL
J-17 WATERCAD JUNCTION AND LABEL
T-1 EX. ZONE 13 PS 145 STORAGE TANK (SIZE PER SERENO CANYON WATER MODEL)
PS-145 EX. ZONE 13 PS 145 PUMP (PUMP CURVE PROVIDED SEE REPORT)
FF TEST WATER MODEL CALIBRATION PUMP (PUMP CURVE PER FIRE FLOW TEST)
R-1 WATER MODEL CALIBRATION RESERVOIR
PRV-1 PROP/EX PRESSURE REDUCING VALVE AND WATERCAD LABEL
NORTH
GRAPHIC SCALE IN FEET
0 150 300 600
PHASE 1A
ROSEWOOD BOUNDARY
BUCKSKIN TRAIL
J-1
J-2
J-3
J-4
P-3
RANCH GATE ROAD
12" WATERLINE PER 128TH STREET IMPROVEMENTS
8" WATERLINE PER RANCH GATE ROAD IMPROVEMENTS
NOT A PART
PHASE 1B
128TH STREET
P-4
SERENO CANYON
ZONE 13
ZONE 12
ZONE 13
FUTURE PHASE 2
PHASE 1C
PRV 1
ELEVATION: 2695.5
SETTING = 50 PSI
PRV-1
J-5
P-5
P-6
ALAMEDA ROAD ALIGNMENT
T-1
P.S. 145
P-13
J-12
ALAMEDA ROAD
J-13
P-16
J-11
P-14
P-17
P-19
P-15
P-18
P-20
TIARA ESTATES
FUTURE PHASE 2
NOT A PART
ZONE 12
ZONE 13
FUTURE PHASE 3B
FUTURE PHASE 3A

NO. | REVISION | BY | DATE | APPR.

Kimley»Horn

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7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

SCALE (H): 1"=300'
SCALE (V): NONE
DESIGNED BY: ZJH
DRAWN BY: ZJH
CHECKED BY: JMB
DATE: MAY 2022

STORYROCK 1A – ROSEWOOD 10
WATER BASIS OF DESIGN
FIGURE 2 - WATER SYSTEM LAYOUT
SCOTTSDALE, ARIZONA

PROJECT NO.
191069020

DRAWING NAME
FIG 2

1 OF 1

BASIS OF DESIGN

DESIGN CRITERIA

The design criteria for the development is based on the City of Scottsdale Design Standards and Policies Manual (DS&PM). Average daily demands for the proposed use and peaking factors were used to determine the proposed peak flows generated on site. See Table 1 below for a summary of the design criteria used.

Table 1. Water Design Criteria

WATER DESIGN CRITERIA		
Water Demands		
Land Use	Average Daily Flow (gpm)	
Prop. Development (<2 DU/ac Residential)	0.69	per unit
Water Design Criteria		
Peaking Factors		
Maximum Day	2.0	
Peak Hour	3.5	
Fire Flow		
Single Family Residential* (Max Building Size: 6,2000 sq-ft)	1,000	GPM
Pressure Requirements		
Residual @ Highest Finished Floor Elevation	50-120	PSI
Fire Flow @ Hydrant Tee or Riser	30	PSI

The proposed development generates a peak demand of approximately 24.5 gpm. See Table 2 below for a summary of the existing and proposed flows generated on site.

Table 2. Water Demand Calculations

Water Demand Calculations					
Use	Units/ Rooms (#)	Unit Demand (gpm)	Average Daily Demand (gpm)	Max Day Demand (gpd)	Peak Hour Demand (gpm)
Rosewood 10	10	0.69	7	14	24.5

WATER SYSTEM ANALYSIS

The WaterCAD v8i water system modeling software distributed by Haestad Methods, Inc. was used to model the proposed water network. A fire hydrant flow test was performed to determine the residual and static pressures of the existing network. The test was performed at the Northeast corner of

Alameda Rd and 128th St. Refer to Appendix A – Fire Hydrant Flow Test Results. Pump information was provided for the existing Sereno Canyon booster pump station. This allows a schematic representation of the pump station, complete with the reservoir tank and the 4 existing pumps, to be included within the model. Refer to Appendix B for the PS-145 pump curves.

The proposed water distribution system is modeled under four design scenarios. Average Day, Max Day, Peak Hour, and Max Day plus Fire Flow. Domestic demands based on the calculated demands from Table 2 were placed on the corresponding WaterCAD design Nodes. See Table 3 below for WaterCAD Junction Demands.

Table 3. WaterCAD Node Summary

WaterCAD Node	Existing/Proposed Ground Elevation	WaterCAD Elevation	Units	Average Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)	Fire Flow Demand (gpm)
J-1	2,601	2,601	6	4	8	14	1,000
J-2	2,607	2,607	4	3	6	11	1,000
J-3	2,603	2,603	0	0	0	0	1,000
J-4	2,646	2,646	0	0	0	0	1,000
J-5	2,700	2,700	0	0	0	0	1,000
J-11	2,725	2,725	0	0	0	0	1,000
J-12	2,600	2,600	0	0	0	0	1,000
J-13	2,725	2,725	0	0	0	0	1,000
			10	7	14	25	

Demands are placed at the highest finished floor of the proposed building. For the Average Day, Max Day and Peak hour, the minimum residual pressure in the system should be maintained between above 50 PSI at the highest finished floor and below 120 PSI in the system. For the Fire Flow scenario, the required fire flow is applied to all nodes independently. In the Fire Flow scenario, the minimum residual pressure in the network should be maintained above 30 PSI at the hydrant tee and 15 psi at the highest finished floor.

RESULTS

Based on the results of the hydraulic modeling, the proposed water distribution system can provide the required domestic and fire flow water demands to the project while maintaining required operating pressures. The 8-inch distribution system with a 12-inch lone located in 128th street provides adequate flow for both domestic demand scenarios. One pump within booster station PS 145 needs to be active for Rosewood 10 to satisfy fire flow water demands as a standalone development. The proposed pressure zone maintains system pressure on-site in an adequate range of 50-120 psi.

On-site water pressure in the three modeled scenarios are approximately 90 PSI at the highest finished floor and 92 PSI at the lowest finished floor of the proposed development. The available Fire Flow in the

Max Day is above 1,000 gpm at a residual pressure of 30 PSI at hydrants and 31 PSI at the highest finished floor. See Appendix C – WaterCAD Output for complete results of the hydraulic models.

Appendix A – Fire Hydrant Flow Test Results

Flow Test Summary

Project Name:	EJFT 22061 - Shadow Ridge North
Project Address:	Rancho Gate Rd & N 128th St, Scottsdale, AZ 85255
Date of Flow Test:	2022-02-15
Time of Flow Test:	7:40 AM
Data Reliable Until:	2022-08-15
Conducted By:	Eder Cueva & Steven Saethre (EJ Flow Tests) 602.999.7637
Witnessed By:	Jason W. & Chris M. (City of Scottsdale) 480.276.6658
City Forces Contacted:	City of Scottsdale (480.276.6658)

Note Four pumps were active during the flow test.

Raw Flow Test Data

Static Pressure:	64.0 PSI
Residual Pressure:	52.0 PSI
Flowing GPM:	1,424
GPM @ 20 PSI:	2,873

Data with a 10 % Safety Factor

Static Pressure:	57.6 PSI
Residual Pressure:	45.6 PSI
Flowing GPM:	1,424
GPM @ 20 PSI:	2,639

Hydrant F_1

Pitot Pressure (1):	18	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	2.5	inches
Pitot Pressure (2):	18	PSI
Coefficient of Discharge (2):	0.9	
Hydrant Orifice Diameter (2):	2.5	inches

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
1261 ft (measured linearly)

Static-Residual Elevation
2662 ft (above sea level)

Flow Hydrant (F_1) Elevation
2695 ft (above sea level)

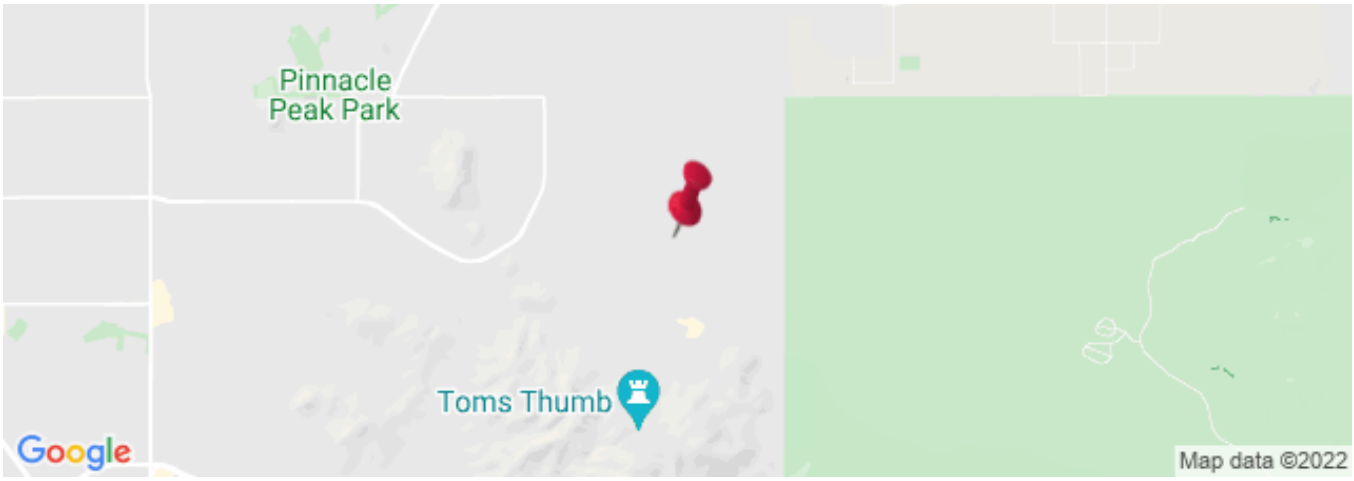
Elevation & distance values are approximate

Flow Test Summary

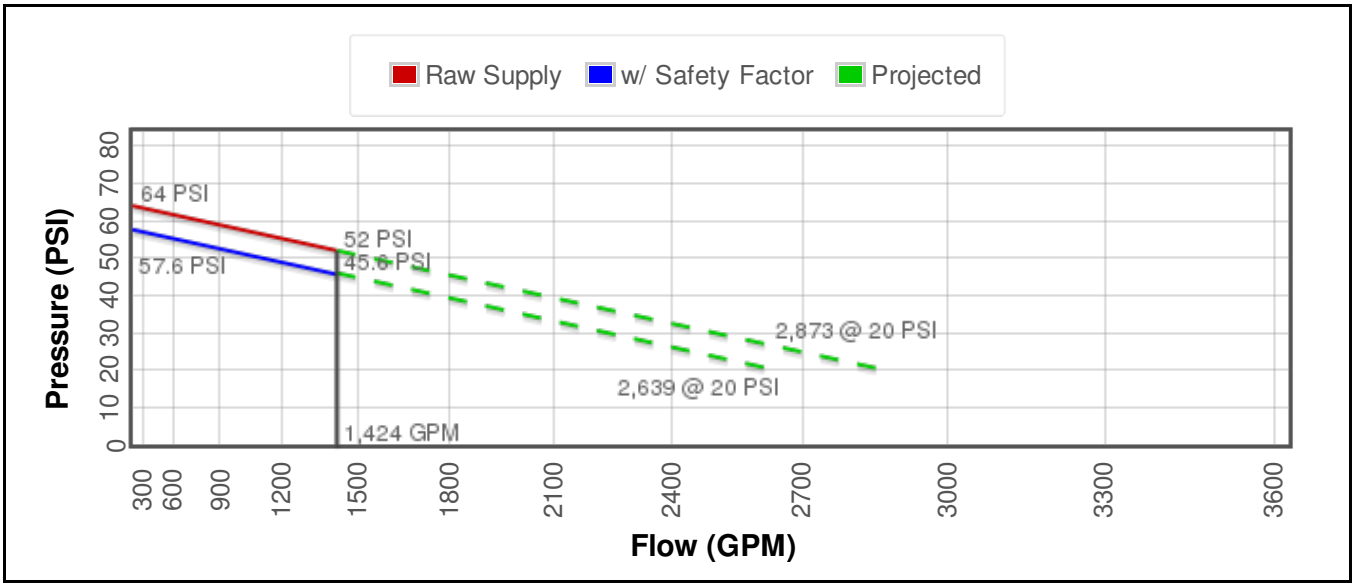
Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site



Water Supply Curve $N^{1.85}$ Graph



Appendix B – Pump Tables

S-145 P 1-3

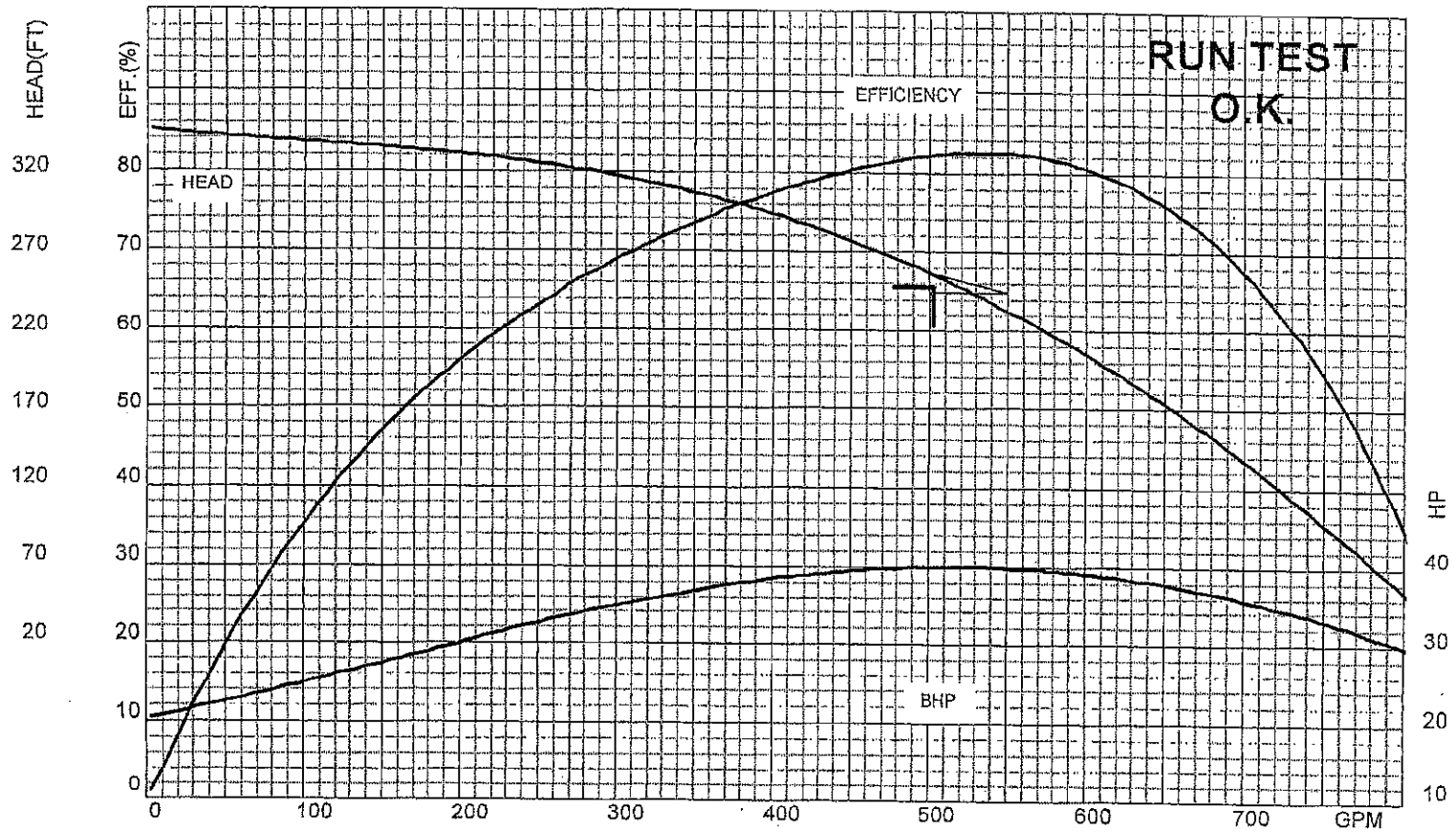
HYDRAULIC PERFORMANCE WARRANTY
GUARANTEED AT DESIGNED POINT ONLY AND IS CONTINGENT ON:
1.PROPER NPSH OR SUBMERGENCE AVAILABLE.
2.PROPER AND ADEQUATE FLOW TO PUMP SUCTION.
3.FLUID FREE OF GAS, AIR, AND ABRASIVE MATTER.
4.IMPELLER WITH PROPER LATERAL ADJUSTMENT (VERTICAL PUMP ONLY).

PEERLESS PUMPS

TEST SITE: Lubbock TX
BY: TH
DATE: 9/15/2008
CUSTOMER: P.E.C. PUMP

PUMP:	10MA
IMP. NO.:	T84363
SHOP ORDER:	747272B-2
STAGES:	8
IMP. DIA1:	1 @ 6.75 X 6.75
IMP. DIA2:	2-8 @ 6.88 X 6.88
IMP. DIA3:	0

Rated GPM:	500.00
Rated Hd(ft):	245.00
Rated RPM:	1782
Rated HP	38.97
Rated Eff %	81.40
Spec. Gravity:	1.000



CERTIFIED BOWL PERFORMANCE TEST CURVE

S-145

P-5

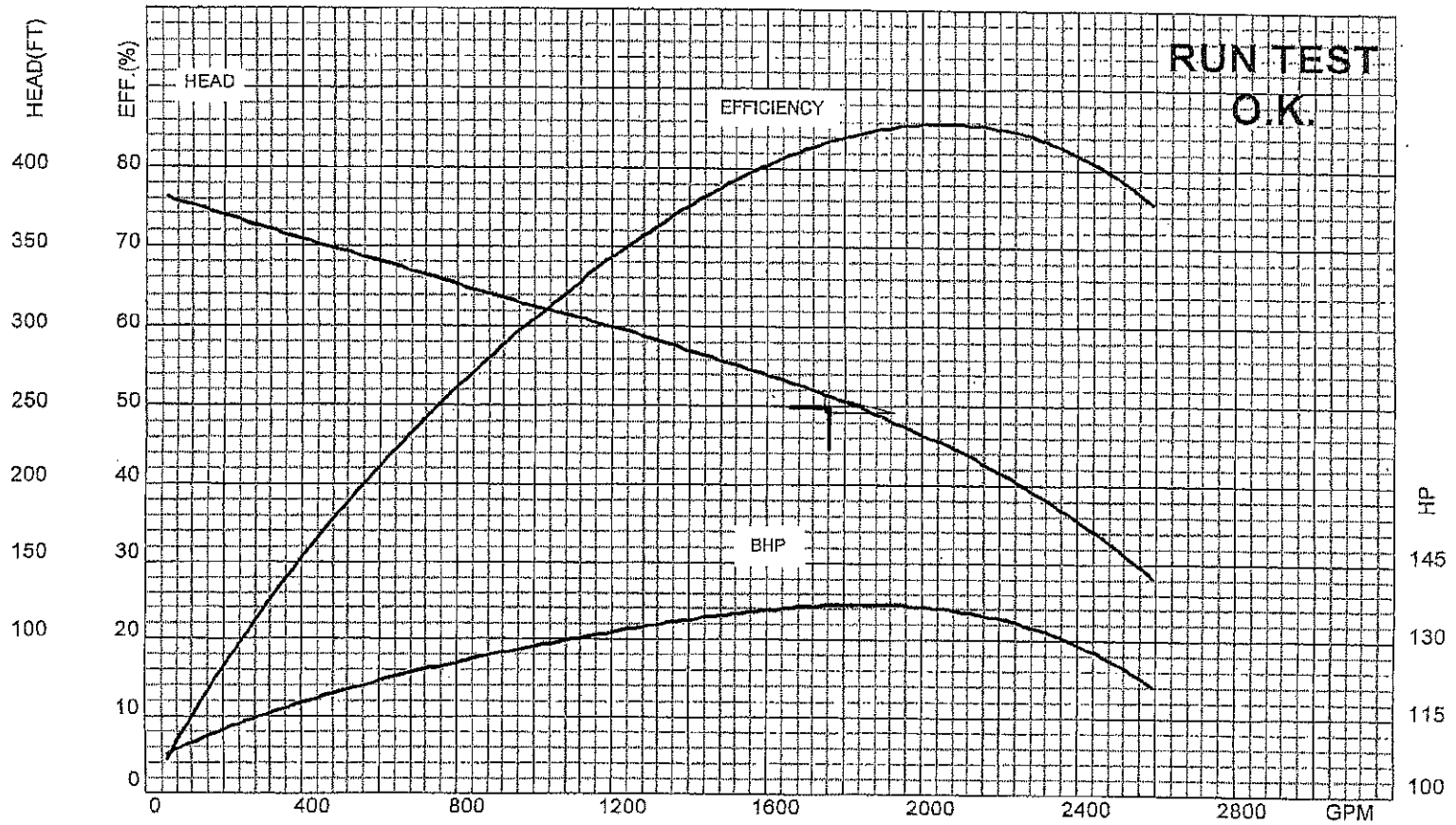
HYDRAULIC PERFORMANCE WARRANTY
GUARANTEED AT DESIGNED POINT ONLY AND IS CONTINGENT ON:
1.PROPER NPSH OR SUBMERGENCE AVAILABLE.
2.PROPER AND ADEQUATE FLOW TO PUMP SUCTION.
3.FLUID FREE OF GAS, AIR, AND ABRASIVE MATTER.
4.IMPELLER WITH PROPER LATERAL ADJUSTMENT (VERTICAL PUMP ONLY).

PEERLESS PUMPS

TEST SITE: Lubbock TX
BY: TH
DATE: 9/18/2008
CUSTOMER: P.E.C. PUMP

PUMP:	M14HXB
IMP. NO.:	V4399
SHOP ORDER:	747310A-1
STAGES:	4
IMP. DIA1:	1-3 @ 9.16 X 10.44
IMP. DIA2:	4 @8.66 X 9.94
IMP. DIA3:	0

Rated GPM:	1750.00
Rated Hd(ft):	245.00
Rated RPM:	1782
Rated HP	134.90
Rated Eff.%	82.30
Spec. Gravity:	1.000



CERTIFIED BOWL PERFORMANCE TEST CURVE

Appendix C – WaterCAD Output

- *Average Day*
- *Max Day*
- *Peak Hour*
- *Max Day + Fire Flow*

FlexTable: Pipe Table

Active Scenario: Average Day

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-3	1,352	J-4	J-3	8.0	130.0	7	0.04	0.000
P-2	289	J-3	J-2	8.0	130.0	7	0.04	0.000
P-1	521	J-2	J-1	8.0	130.0	4	0.03	0.000
P-6	3,819	J-5	J-11	12.0	130.0	-7	0.02	0.000
P-13	5	R-1	J-12	24.0	130.0	7	0.00	0.000
P-14	1	J-12	PMP-1	12.0	130.0	7	0.02	0.000
P-15	1	PMP-1	J-13	12.0	130.0	7	0.02	0.000
P-16	80	J-13	J-11	12.0	130.0	7	0.02	0.000
P-17	1	J-12	PMP-5	12.0	130.0	(N/A)	(N/A)	(N/A)
P-18	1	PMP-5	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)
P-19	1	J-12	PMP-2	12.0	130.0	(N/A)	(N/A)	(N/A)
P-20	1	PMP-2	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)
P-5	49	J-5	PRV-1	12.0	130.0	7	0.02	0.000
P-4	2,583	PRV-1	J-4	12.0	130.0	7	0.02	0.000

FlexTable: Junction Table

Active Scenario: Average Day

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Zone
J-1	2,601.00	4	2,811.10	91	Zone - 12
J-2	2,607.00	3	2,811.10	88	Zone - 12
J-3	2,603.00	0	2,811.10	90	Zone - 12
J-4	2,646.00	0	2,811.11	71	Zone - 12
J-5	2,700.00	0	2,966.00	115	Zone - 13
J-11	2,725.00	0	2,966.00	104	Zone - 13
J-12	2,600.00	0	2,720.00	52	Zone - 13
J-13	2,725.00	0	2,966.00	104	Zone - 13

FlexTable: Pump Table

Active Scenario: Average Day

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Design) (gpm)	Flow (Total) (gpm)	Head (Design) (ft)	Pump Head (ft)
PMP-1	2,717.00	2,720.00	2,966.00	500	7	245.00	246.00
PMP-5	2,717.00	(N/A)	(N/A)	1,750	(N/A)	245.00	(N/A)
PMP-2	2,717.00	(N/A)	(N/A)	500	(N/A)	245.00	(N/A)

FlexTable: PRV Table

Active Scenario: Average Day

Label	Elevation (ft)	Diameter (Valve) (in)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
PRV-1	2,695.50	6.0	2,811.02	50	7	2,966.00	2,811.11	154.89

FlexTable: Pipe Table

Active Scenario: Max Day

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	521	J-2	J-1	8.0	130.0	8	0.05	0.000
P-2	289	J-3	J-2	8.0	130.0	14	0.09	0.000
P-3	1,352	J-4	J-3	8.0	130.0	14	0.09	0.000
P-4	2,583	PRV-1	J-4	12.0	130.0	14	0.04	0.000
P-5	49	J-5	PRV-1	12.0	130.0	14	0.04	0.000
P-6	3,819	J-5	J-11	12.0	130.0	-14	0.04	0.000
P-13	5	R-1	J-12	24.0	130.0	14	0.01	0.000
P-14	1	J-12	PMP-1	12.0	130.0	14	0.04	0.000
P-15	1	PMP-1	J-13	12.0	130.0	14	0.04	0.000
P-16	80	J-13	J-11	12.0	130.0	14	0.04	0.000
P-17	1	J-12	PMP-5	12.0	130.0	(N/A)	(N/A)	(N/A)
P-18	1	PMP-5	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)
P-19	1	J-12	PMP-2	12.0	130.0	(N/A)	(N/A)	(N/A)
P-20	1	PMP-2	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)

FlexTable: Junction Table

Active Scenario: Max Day

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Zone
J-1	2,601.00	8	2,811.09	91	Zone - 12
J-2	2,607.00	6	2,811.09	88	Zone - 12
J-3	2,603.00	0	2,811.10	90	Zone - 12
J-4	2,646.00	0	2,811.11	71	Zone - 12
J-5	2,700.00	0	2,966.00	115	Zone - 13
J-11	2,725.00	0	2,966.00	104	Zone - 13
J-12	2,600.00	0	2,720.00	52	Zone - 13
J-13	2,725.00	0	2,966.00	104	Zone - 13

FlexTable: Pump Table

Active Scenario: Max Day

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Design) (gpm)	Flow (Total) (gpm)	Head (Design) (ft)	Pump Head (ft)
PMP-1	2,717.00	2,720.00	2,966.00	500	14	245.00	246.00
PMP-5	2,717.00	(N/A)	(N/A)	1,750	(N/A)	245.00	(N/A)
PMP-2	2,717.00	(N/A)	(N/A)	500	(N/A)	245.00	(N/A)

FlexTable: PRV Table

Active Scenario: Max Day

Label	Elevation (ft)	Diameter (Valve) (in)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
PRV-1	2,695.50	6.0	2,811.02	50	14	2,966.00	2,811.11	154.89

FlexTable: Pipe Table

Active Scenario: Peak Hour

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	521	J-2	J-1	8.0	130.0	14	0.09	0.000
P-2	289	J-3	J-2	8.0	130.0	25	0.16	0.000
P-3	1,352	J-4	J-3	8.0	130.0	25	0.16	0.000
P-4	2,583	PRV-1	J-4	12.0	130.0	25	0.07	0.000
P-5	49	J-5	PRV-1	12.0	130.0	25	0.07	0.000
P-6	3,819	J-5	J-11	12.0	130.0	-25	0.07	0.000
P-13	5	R-1	J-12	24.0	130.0	25	0.02	0.000
P-14	1	J-12	PMP-1	12.0	130.0	25	0.07	0.000
P-15	1	PMP-1	J-13	12.0	130.0	25	0.07	0.000
P-16	80	J-13	J-11	12.0	130.0	25	0.07	0.000
P-17	1	J-12	PMP-5	12.0	130.0	(N/A)	(N/A)	(N/A)
P-18	1	PMP-5	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)
P-19	1	J-12	PMP-2	12.0	130.0	(N/A)	(N/A)	(N/A)
P-20	1	PMP-2	J-13	12.0	130.0	(N/A)	(N/A)	(N/A)

FlexTable: Junction Table

Active Scenario: Peak Hour

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Zone
J-1	2,601.00	14	2,811.07	91	Zone - 12
J-2	2,607.00	11	2,811.07	88	Zone - 12
J-3	2,603.00	0	2,811.08	90	Zone - 12
J-4	2,646.00	0	2,811.10	71	Zone - 12
J-5	2,700.00	0	2,965.99	115	Zone - 13
J-11	2,725.00	0	2,966.00	104	Zone - 13
J-12	2,600.00	0	2,720.00	52	Zone - 13
J-13	2,725.00	0	2,966.00	104	Zone - 13

FlexTable: Pump Table

Active Scenario: Peak Hour

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Design) (gpm)	Flow (Total) (gpm)	Head (Design) (ft)	Pump Head (ft)
PMP-1	2,717.00	2,720.00	2,966.00	500	25	245.00	246.00
PMP-5	2,717.00	(N/A)	(N/A)	1,750	(N/A)	245.00	(N/A)
PMP-2	2,717.00	(N/A)	(N/A)	500	(N/A)	245.00	(N/A)

FlexTable: PRV Table

Active Scenario: Peak Hour

Label	Elevation (ft)	Diameter (Valve) (in)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
PRV-1	2,695.50	6.0	2,811.02	50	25	2,965.99	2,811.11	154.88

Fire Flow Node FlexTable: Fire Flow Report

Active Scenario: Max Day

Label	Elevation (ft)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Zone
J-1	2,601.00	1,500	1,816	30	40	J-2	Zone - 12
J-2	2,607.00	1,500	2,010	30	33	J-1	Zone - 12
J-3	2,603.00	1,500	2,188	32	30	J-2	Zone - 12
J-4	2,646.00	1,500	2,785	30	26	J-5	Zone - 12
J-5	2,700.00	1,500	2,738	30	46	J-11	Zone - 13
J-11	2,725.00	1,500	2,988	30	31	J-13	Zone - 13
J-12	2,600.00	1,500	3,000	52	71	J-4	Zone - 13
J-13	2,725.00	1,500	2,998	30	30	J-11	Zone - 13