PRELIMINARY WATER REPORT

for

Magnolia on Osborn

Scottsdale, Arizona

Prepared For:

Magnolia PROPERTY COMPANY

Prepared by:

SEG

Sustainability Engineering Group
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Scottsdale, AZ 85260
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Project Number: 220205
Submittal Date: November 10, 2022

Case No.: TBD **Plan Check No.: TBD**

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1. INTRODUCTION

1.1. SUMMARY OF PROPOSED DEVELOPMENT

Magnolia on Osborn is a proposed 92-unit four-story multifamily development, with 5,800 sq.ft. of retail space located near the northeast corner of 70th Street and Osborn Road in Scottsdale, Arizona.

The purpose of this report is to provide an updated water system analysis supporting the proposed residential development. Domestic, irrigation and fire line service will be provided off the existing 8" water line along Osborn Road.

1.2. LEGAL DESCRIPTION

The following parcels of subdivided land are located in the NE ¼ of Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian in Scottsdale, Arizona. Refer to **EXHIBIT 1** for a vicinity map.

- APN 130-13-064; 31,490 sq.ft. (0.73 ac) NET
- APN 130-13-062; 31,430 sq.ft. (0.72 ac) NET

The APNs are platted as Lots 16 and 18 in Orange Acres, as recorded in Book 31, Page 14 of Maricopa County Records. The total land area is 1.45 acres, more or less.

2. DESIGN DOCUMENTATION

2.1. DESIGN COMPLIANCE

The proposed water connections are designed to meet design criteria of the City of Scottsdale Water Resources Department ("the city"), the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

2.2. PROCEDURES, POLICIES AND METHODOLOGIES

The general methodology used to evaluate public water infrastructure consists of modeling a local network of water distribution mains to meet the city's pressure, velocity, and water demand requirements during daily demand and fire events. Connection to the water system is modeled as a reservoir and pump. The pump will simulate pressure drop and available flow from the existing water system as depicted by the fire flow test.

2.3. SOFTWARE ACKNOWLEDGEMENT:

Bentley WaterCAD® Version 8i is the computer modeling tool used in this water study.

3. EXISTING CONDITIONS

3.1. EXISTING ZONING, LAND USE & ADJACENT PARCELS

The two existing parcels are presently zoned C-3.

70th Street Lofts northwest of the site is zoned D/DMU-2, a parcel southwest of the site is zoned C-3 and both parcels to the east are zone C-3.

5.2. EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The west parcel is a parking lot. The east parcel is an office building with surface parking and an enclosed storage yard. Site topography slopes from the northwest to the southeast with approximately three feet of fall. Refer to **EXHIBIT 2** for an aerial of the overall project existing conditions.

5.3. EXISTING WATER INFRASTRUCTURE:

See **EXHIBIT 3** - City of Scottsdale (QS 16-44)

- An 8" ACP water main is located along the south side of Osborn Road approximately 27' south of the road centerline. A fire hydrant exists mid-site.
- An 8" ACP water main is located approximately 25' north of East 6th Street centerline and provides existing metered service to the site. Another fire hydrant exists mid-site on the north side of the street.
- A 12" DIP water main exists along East 6th Street approximately 10' north of the street centerline.
- A fire hydrant exists at the southeast corner of N. 70th Street and E. 6th Street.
- A fire hydrant exist on the north side of E. Osborn Rd. at the midpoint of the south boundary of the project site.

5.4. CERTIFIED FLOW TEST RESULTS OF EXISTING WATER SYSTEM:

Arizona Flow Testing LLC has performed certified tests on both the 8" and 12" systems. The 12" system tested on February 11, 2022, at 8:30 a.m. recorded a static pressure of 84 psi and residual pressure of 80 psi at 2,946 gpm. The extrapolated flow at 20 psi is 13,165 gpm. The test adjusted to 72 psi static pressure results in a residual pressure of 68 psi. The adjusted flow at 20 psi is 11,769 gpm.

The 8" system tested on October 5, 2021, at 7:00 a.m. recorded a static pressure of 90 psi and residual pressure of 82 psi at 1,842 gpm. The extrapolated flow at 20 psi is 5,942 gpm. The test adjusted to 72 psi static pressure results in a residual pressure of 64 psi. The adjusted flow at 20 psi is 5,061 gpm.

The City of Scottsdale requires the adjusted pressure parameters to be used in the hydraulic analysis. **APPENDIX I** includes the flow test documentation.

6. PROPOSED CONDITIONS

6.1. SITE PLAN:

All existing onsite structures and service lines will be removed. Existing water meter sizes and serial numbers will be inventoried for fee credit.

Refer to **Appendix II** for the Preliminary Utility Plan.

6.2. PROPOSED WATER CONNECTION TO EXISTING SYSTEM:

Metered services for domestic and landscape water will be tapped off the 12" DIP water line in East 6th Street and be installed with backflow prevention. Fire line service will also be provided off the 12" DIP. The existing fire hydrants north and south of the site will remain and have sufficient flow to serve the proposed development. See **APPENDIX II** for a preliminary utility plan.

6.3. SECOND SOURCE:

The existing system has sufficient valves allowing for fire protection redundancy in the event of local service disruption.

6.4. WATER REQUIREMENTS:

The city's design standards govern the fire flow rates used for all buildings per Section 6-1.500 of the City of Scottsdale's Design Standards & Policies Manual ("DS&PM"), dated January 2018. The required available fire flow is 2,500 gpm for commercial and multi-family residential properties, per Section 6-1.501 of the DS&PM.

6.5. MAINTENANCE RESPONSIBILITIES:

Water meter and service line connections to the public main will be located within easements and/or right-of-way and be maintained by the city.

On-site domestic and landscape service lines and backflow preventers will be privately maintained by the owner as will be the fire line.

7. WATER SYSTEM COMPUTATIONS

7.1. WATER DEMANDS

Water demands are per Figure 6.1-2 in the City's DS+PM. The fire hydrant flow test was completed with the existing commercial site occupied. Therefore, the total new demand was reduced by the existing commercial use. The new demand for a proposed project located just north of the site is added to account for the increase in the water model.

Table 1: Onsite Water Demand Calculations						
	Bldg Area (sq.ft.)	Dwelling Units	ADD (gpm/unit)	Avg. Day Demand (gpm)	Max. Day Demand (gpm)	Peak Hour (gpm)
Residential	-	92	0.2700	24.8	49.7	86.9
Retail	5,800	-	0.0011	6.4	12.9	22.5
Ex. Office	6,195	-	-0.0008	-5.2	-10.3	-18.1
			Net Demands	26.1	52.2	91.4

Peaking Factors: Max Day = 2.0, Peak Hour = 3.5

7.2. SOFTWARE MODELING:

Bentley WaterCAD® Version 8i is the computer modeling tool used in this study.
Network analysis input parameters included the following:

- Pipe diameters (inches)
- Pipe lengths (feet)
- Pipes invert elevations (feet – MSL)
- A reservoir and a pump to model the fire flow test performed
- System demands (gpm)
- Fire flows (gpm)
- Model piping is ductile iron pipe using Hazen-Williams frictional losses (C = 130)

Output parameters included:

- Pressure (psi)
- Flow rates (gpm)
- Velocities (fps)

7.3. MINIMUM PRESSURE REQUIREMENTS:

The following system pressure requirements are in accordance with the City's design standards:
Average day, maximum day and peak hour flow demands:

- Minimum pressure = 50 psi
- Maximum pressure = 120 psi

Maximum day plus coincident fire flow demand:

- Minimum pressure = 30 psi
- Maximum pressure = 120 psi

Head loss in the public mains shall not exceed 10 feet per 1,000 feet length of pipe.

7.4. WATER SYSTEM ANALYSIS:

A summary of the modeling results is presented below in Table 2. Detailed WaterCAD® reports are presented in **APPENDIX III**.

A 3000 gpm plus max day demand analysis was run for the 12" system along 6th Street as this pipe will supply both domestic and fire service to the project. The 8" system along Osborn Road was analyzed for a 1500 gpm fire hydrant demand.

Table 2: WaterCAD® Analysis Results

Demand Scenario	Water Demand (GMP)	Pressure (PSI)				Velocity (ft/s)	Pipe ID
		Min.	Node	Max.	Node		
Peak Hour	91.4	70	J-9	73	J-3	0.3	P-3
Max. Day + Fire Flow (12" System)	2,552.2	66	J-2	69	J-1	8.7	P-3
Fire Flow (8" System)	1500	47	J-9	67	J-3	9.6	P-6

These results indicate that the proposed water system meets the City's criteria for daily water usage and fire flow events.

7.5. PRELIMINARY WATER SERVICE NEEDS:

Residential demand – 2" meter
Landscape demand – 1" meter
Fire service demand – 6" line

8. SUMMARY / CONCLUSIONS

8.1. SUMMARY:

The proposed water connections are designed to meet criteria of the City's Design Standards and Policies Manual, the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

The hydraulic output indicates that the surrounding existing public water system and fire hydrants are sufficient to provide domestic, irrigation and fire service to this project.

Pressure regulating valves preset to 80 psi will be required on all water service connections to the building. Backflow prevention will be provided on all metered service connections.

8.2. PROJECT SCHEDULE:

As a residential apartment development, the infrastructure and buildings are proposed to be constructed in a single phase.

9. REFERENCES

1. COS Water Q-S MAP 16-44
2. City of Scottsdale Design Standards & Policies Manual, 2018 (Chapter 6 – Water)

EXHIBITS

1. Vicinity Map

2. Aerial

3. Water Quarter Section Map

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260
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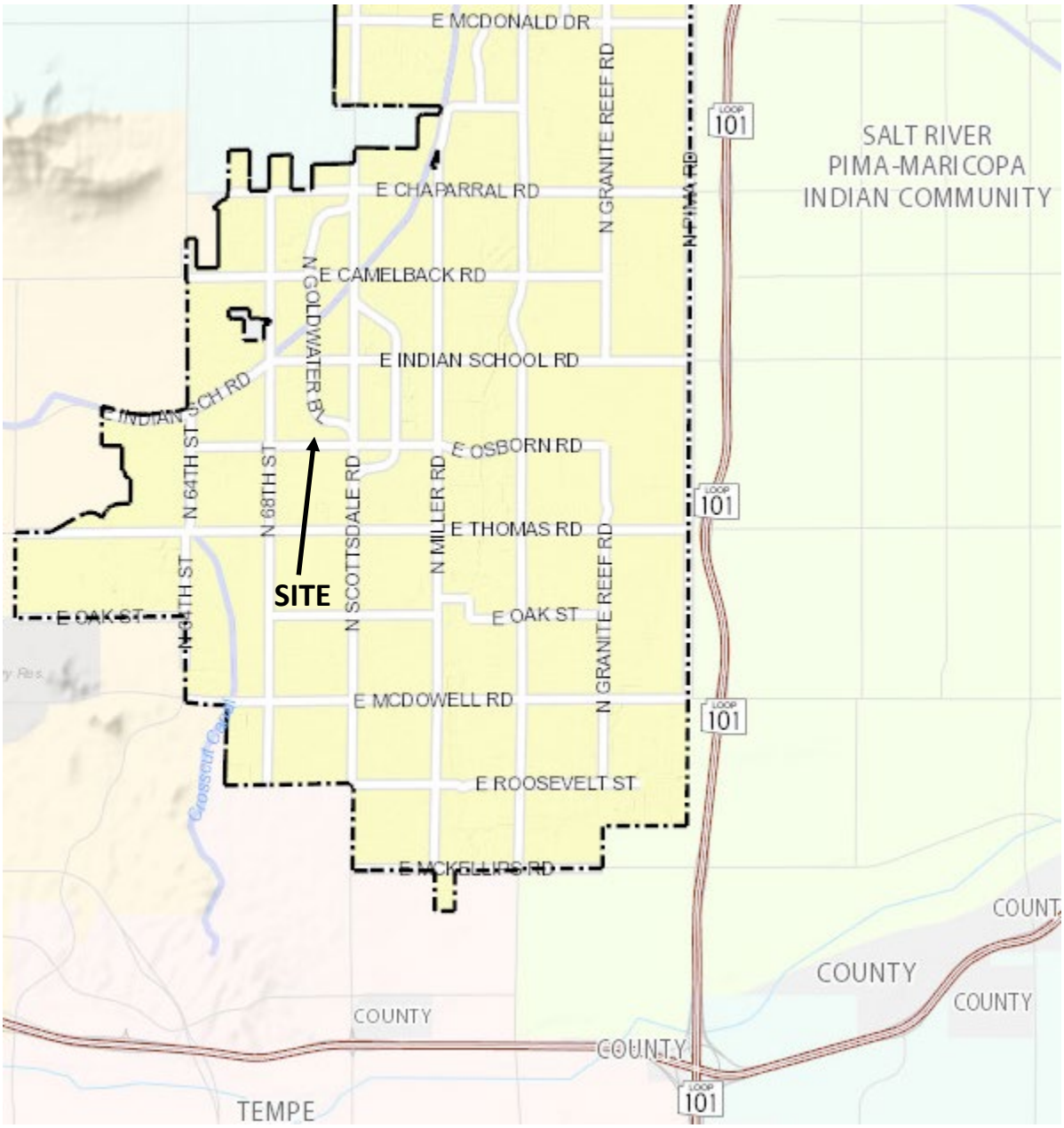


EXHIBIT 1 – Vicinity Map

EXHIBIT 2 –
Aerial

17-44

16-43

16-45

30-JAN-22

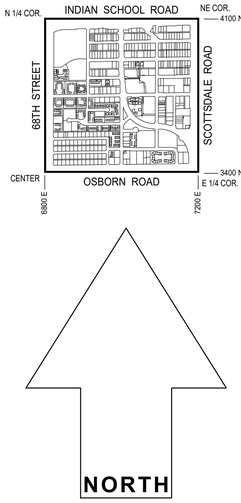
GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

- Air Release Valve (ARV)
- Non-potable Air Release Valve (NPARV)
- Blowoff
- Cap
- Cathodic Protection (CPT)
- Fill Drain (FND)
- Fire Hydrant
- Non-GPS Point
- Pressure Reducing Valve (PRV)
- Pump (WP)
- Reducer
- Sample Station (SS)
- Water Manhole (WMH)
- Non-Potable Manhole (NPMH)
- Well (WELL)
- Valve
- Non-potable Valve (NPV)
- Vault (WVT)
- Water Main
- Non-Potable Main (NP)
- Fire / Private Main
- Non-Scottsdale Main

VICINITY MAP



WATER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

EXHIBIT 3

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

16-2N-2022
1/27/23

APPENDIX I.

Hydrant Flow Test Report

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Olive Garden
Project Address:	Osborn Road & Scottsdale Road (SWC), Scottsdale, Arizona, 85251
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	21528
Flow Test Permit No.:	C66438
Date and time flow test conducted:	October 5, 2021 at 7:00 AM
Data is current and reliable until:	April 5, 2022
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	Ray Padilla –City of Scottsdale-Inspector (602-541-0586)

Raw Test Data

Static Pressure: **90.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **82.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **24.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: .9

Flowing GPM: **1,842 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **5,942 GPM**

Data with 18 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **64.0 PSI**
(Measured in pounds per square inch)

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Distance between hydrants: Approx..: 330 Feet

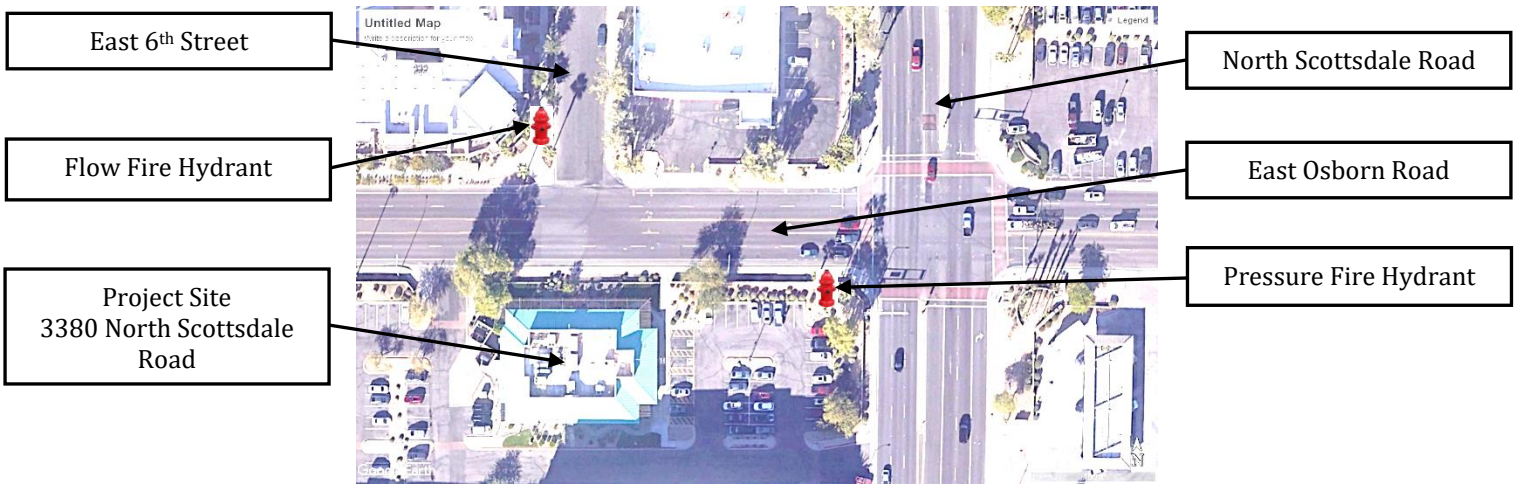
Main size: Not Provided

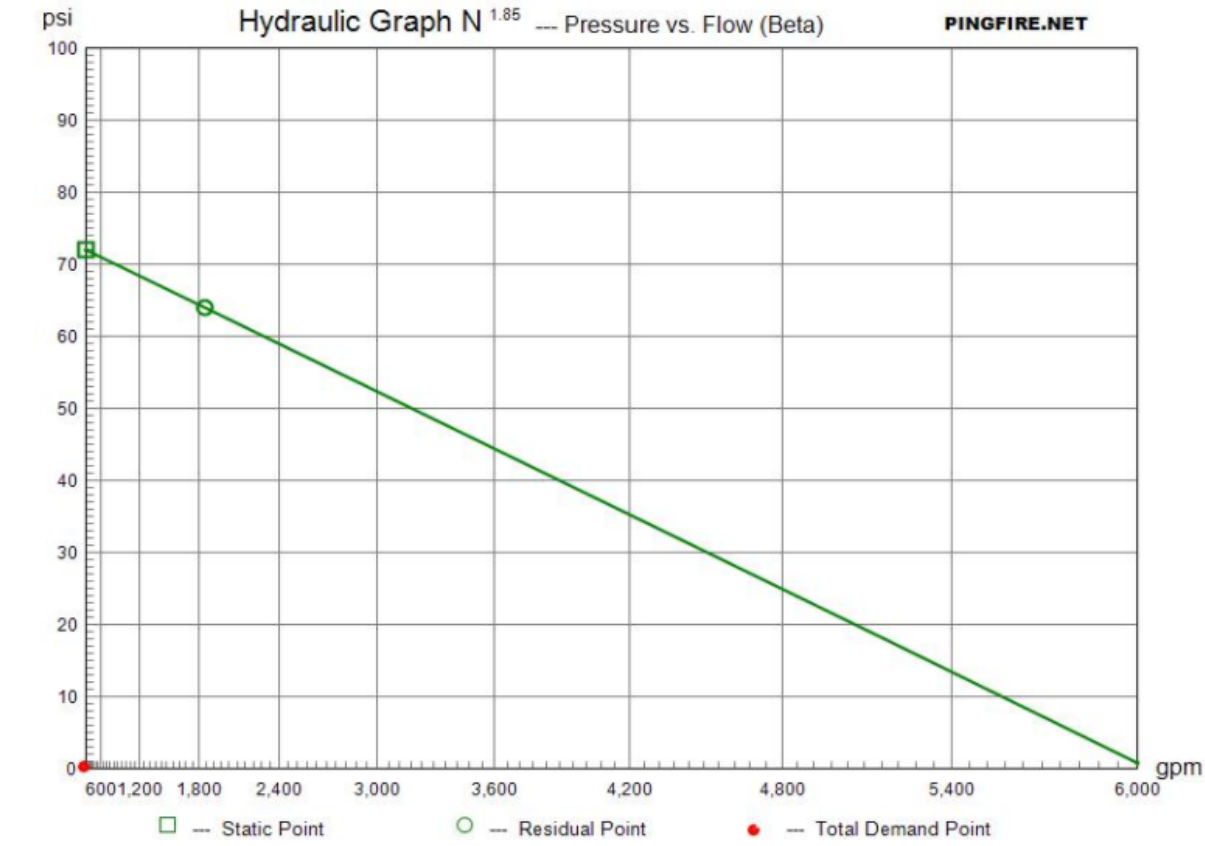
Flowing GPM: **1,842 GPM**

GPM @ 20 PSI**:** **5,061 GPM**

Flow Test Location

North





Project Location: Magnolia on Osborn - 8" System

Flow Test: Hydrant Elev.= 1247.5 ft., Static Pressure= 72 psi, Residual Pressure= 64 psi, Flow= 1842 gpm

8" System

FH Flow Test – $N^{1.85}$ Graph

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Magnolia FH
Project Address:	70th Street & Osborn Road (NEC), Scottsdale, Arizona, 85251
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	22095
Flow Test Permit No.:	C67825
Date and time flow test conducted:	February 11, 2022 at 8:30 AM
Data is current and reliable until:	August 11, 2022
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	Ray Padilla –City of Scottsdale-Inspector (602-541-0586)

Raw Test Data

Static Pressure: **84.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **80.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **47.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Pollard Diffuser
(Measured in inches)

Coefficient of Diffuser: .9

Flowing GPM: **2,946 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **13,165 GPM**

Data with 12 PSI Safety Factor

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **68.0 PSI**
(Measured in pounds per square inch)

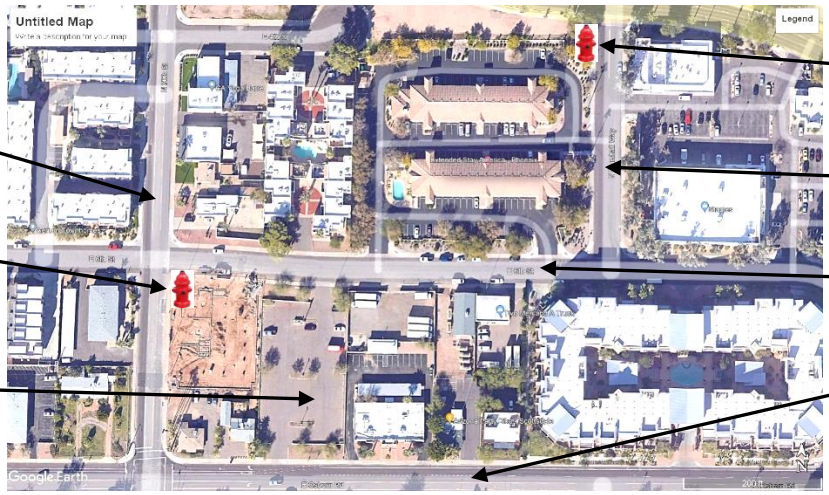
Distance between hydrants: Approx.: 950 Feet

Main size: 12-inch DIP

Flowing GPM: **2,946 GPM**

GPM @ 20 PSI**:** **11,769 GPM**

Flow Test Location **North**



North 70th Street

Pressure Fire Hydrant

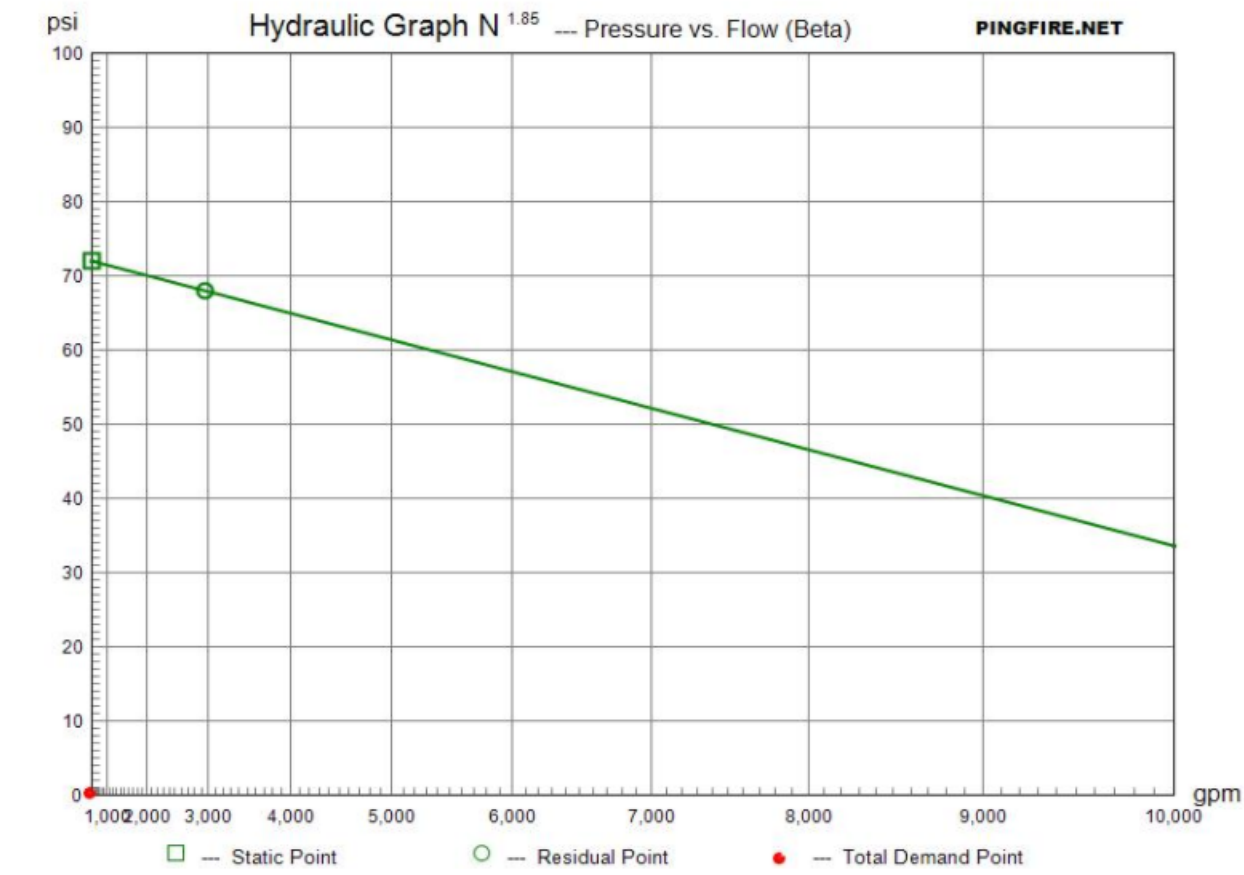
Project Site
70th Street & Osborn Road (NEC)

Flow Fire Hydrant

North Marshall Way

East 6th Street

East Osborn Road



Project Location: Magnolia on Osborn - 12" System

Flow Test: Hydrant Elev.= 1251.1 ft., Static Pressure= 72 psi, Residual Pressure= 68 psi, Flow= 2946 gpm

12" System

FH Flow Test – $N^{1.85}$ Graph

APPENDIX II.

Preliminary Utility Plan

MAGNOLIA AT OSBORN

PRELIMINARY UTILITY PLAN

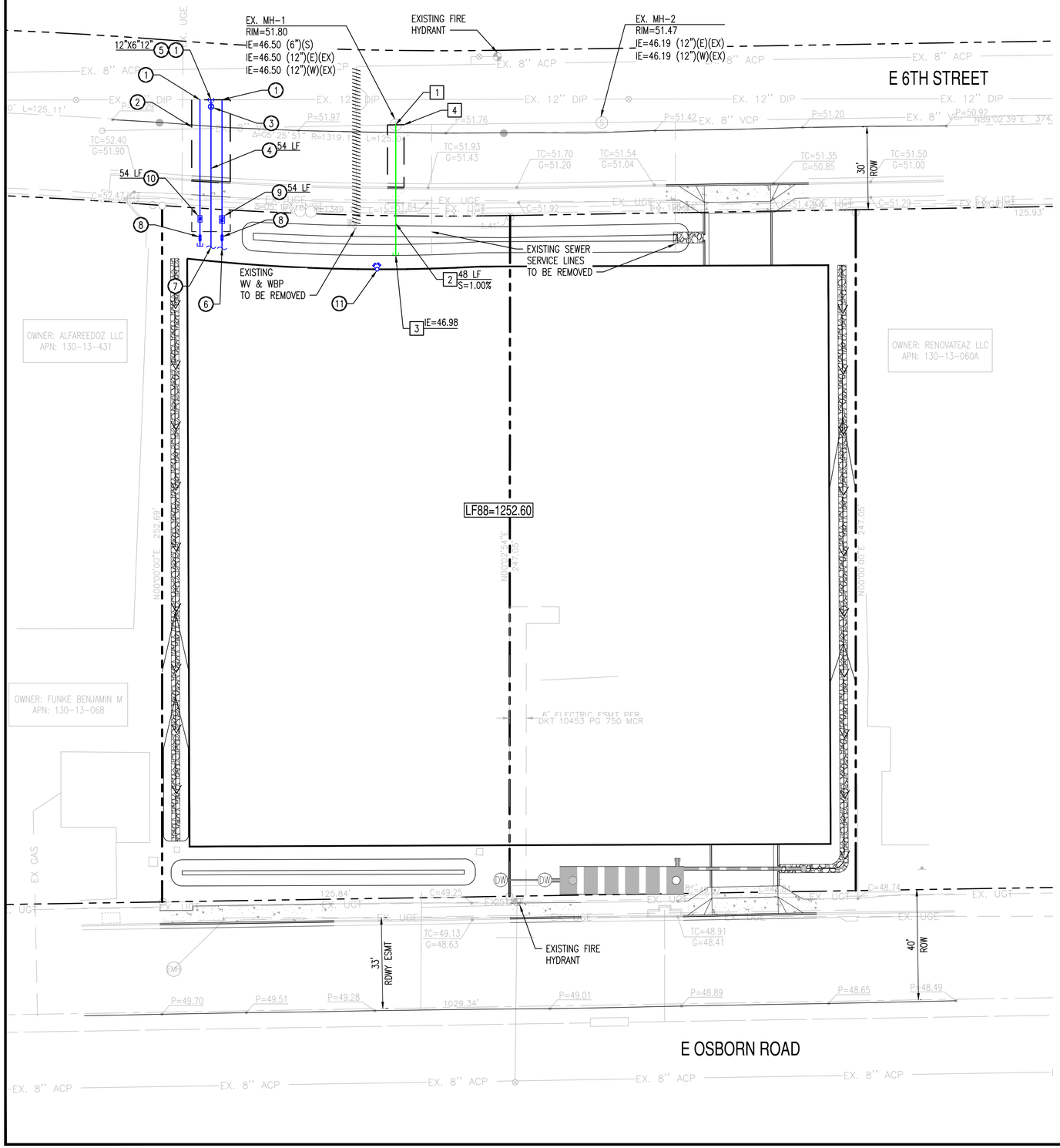
NEC OF 70TH STREET & OSBORN ROAD

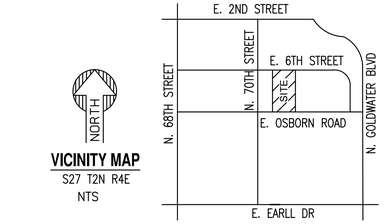
A PORTION OF THE NORTHEAST QUARTER OF SECTION 27, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.

CIVIL ENGINEER
SUSTAINABILITY ENGINEERING GROUP
8280 E. GELDING DR., SUITE 101
SCOTTSDALE, ARIZONA 85260
PHONE: 480-588-7226
ATTN: ALI FAKIH
EMAIL: ALI@AZSEG.COM

CLIENT:
MAGNOLIA PROPERTY COMPANY
2435 E SOUTHLAKE BLVD.. SUITE 150
SOUTHLAKE, TEXAS 76092

SURVEYOR
AW LAND SURVEYING, LLC
P.O. BOX 2170
CHANDLER, ARIZONA 85244
PHONE: 480-244-7630
ATTN: DANIEL ARMIJO





VICINITY MAP
S27 T2N R4E
NTS

PRELIMINARY WATER KEY NOTES

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTION.
2. SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT.
3. 6" GATE VALVE WITH VALVE BOX AND COVER.
4. 6" DUCTILE IRON PIPE. LENGTH PER PLAN.
5. INSTALL CUT-IN TEE, SIZE PER PLAN.
6. DOMESTIC CONNECTION TO BUILDING.
7. FIRE CONNECTION TO BUILDING.
8. BACKFLOW PREVENTION, SIZE TO MATCH WATER METER SIZE.
9. INSTALL 2" TYPE "K" COPPER DOMESTIC SERVICE CONNECTION. LENGTH PER PLAN.
10. INSTALL 1" TYPE "K" COPPER IRRIGATION SERVICE CONNECTION. LENGTH PER PLAN.
11. INSTALL FIRE DEPARTMENT CONNECTION.

PRELIMINARY SEWER KEY NOTES

1. CONNECTION TO EXISTING SEWER MANHOLE.
2. 6" PVC SEWER LINE. LENGTH AND SLOPE PER PLAN.
3. SEWER CONNECTION TO BUILDING.
4. SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT.

C.O.S. GENERAL NOTES FOR PUBLIC WORKS CONSTRUCTION

1. ALL CONSTRUCTION IN THE PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO THE LATEST MAG UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE SUPPLEMENTAL STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENTAL STANDARD DETAILS WILL GOVERN.
2. THE CITY ONLY APPROVES THE SCOPE, NOT THE DETAIL, OF ENGINEERING DESIGNS; THEREFORE, IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. THE APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF A RIGHT-OF-WAY PERMIT FOR THE CONSTRUCTION HAS NOT BEEN ISSUED WITHIN SIX MONTHS, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR REAPPROVAL.
4. A PUBLIC WORKS INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY RIGHTS-OF-WAY AND IN EASEMENTS. NOTIFY INSPECTION SERVICES 24 HOURS PRIOR TO BEGINNING CONSTRUCTION BY CALLING 480-312-5750.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS. THE CENTER WILL SEE THAT THE LOCATION OF THE UNDERGROUND UTILITY LINES IS IDENTIFIED FOR THE PROJECT.
6. RIGHT-OF-WAY PERMITS ARE REQUIRED FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. A RIGHT-OF-WAY PERMIT WILL BE ISSUED BY THE CITY ONLY AFTER THE REGISTRANT HAS PAID A BASE FEE PLUS A FEE FOR INSPECTION SERVICES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AND BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE SUSPENSION OF ALL WORK UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.
7. ALL EXCAVATION AND GRADING THAT IS NOT IN THE PUBLIC RIGHTS-OF-WAY OR NOT IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO APPENDIX J, GRADING, OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE. A PERMIT FOR THIS GRADING MUST BE SECURED FROM THE CITY FOR A FEE ESTABLISHED BY THE CITY.

NOTE:

1. EXISTING MANHOLES RIMS AND INVERTS HAVE BEEN SET BASED ON ALTA NO. 21-10003 BY MLC SERVICES DATED 11/02/2021. ELEVATIONS TO BE VERIFIED IN FIELD.

PROPOSED UTILITY LEGEND:

- PROPERTY LINE
- EASEMENT LINE
- WATER LINE
- SEWER LINE
- WATER LINE REMOVAL
- FDC
- WATER METER
- GATE VALVE
- BACK FLOW PREVENTER
- CAP
- BUILDING CONNECTION
- FIRE HYDRANT
- SEWER CLEAN OUT

EXISTING LEGEND

- EX. S — SEWER LINE
- EX. W — WATER LINE
- IRR — IRRIGATION LINE
- STORM DRAIN LINE
- CB — CATCH BASIN
- S — SEWER MANHOLE
- D — STORM MANHOLE
- WV — WATER VALVE
- WMB — WATER METER BOX
- FIRE HYDRANT
- ECB — ELECTRIC CABINET

NORTH

0' 20' 40' 60'

SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP
SEG
8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

Magnolia PROPERTY COMPANY

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

PROJECT	MAGNOLIA ON OSBORN
LOCATION	NEC OF 70TH STREET AND OSBORN ROAD

DRAWN	JC	11/09/2022
DESIGNED	JC	11/09/2022
QC	SC	03/02/2022
FINAL QC		
PROJ. MGR.	AF	11/09/2022

DATE: 11/09/2022

ISSUED FOR: REZONING

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 220205

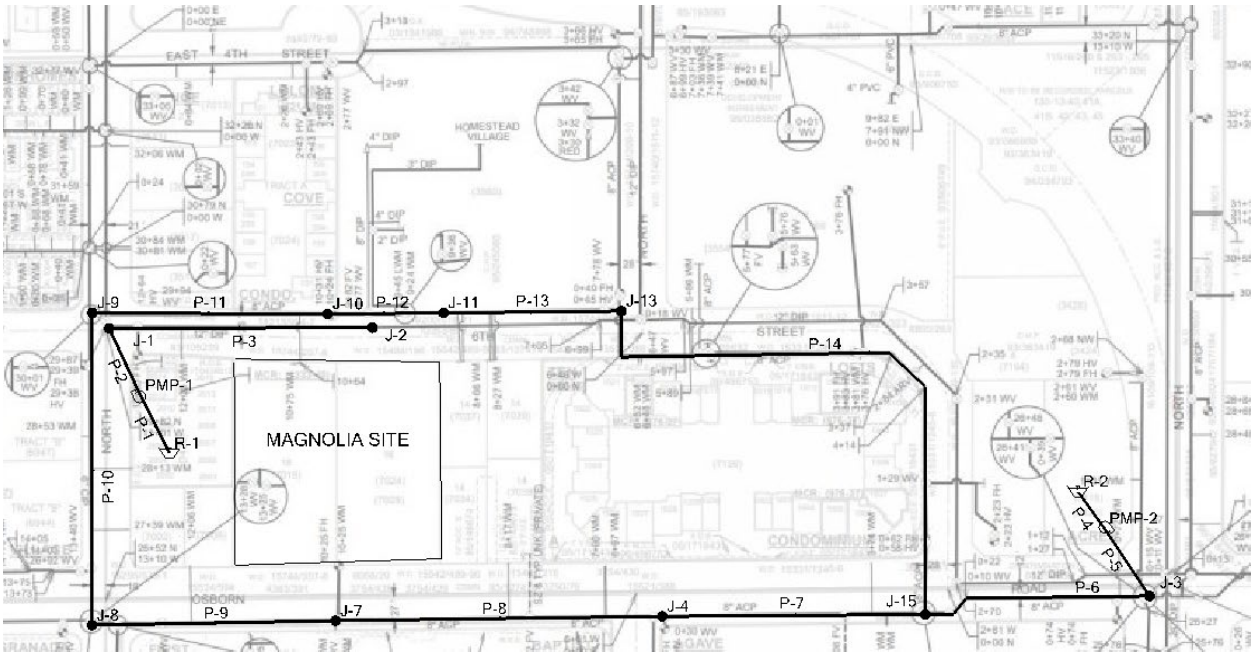
SHEET TITLE: **PRELIMINARY UTILITY PLAN**

PAGE NO.:	SHEET NO.:
3 OF 3	C4.10

18-ZN-2022
1/27/23

APPENDIX III.

Water Model Map and Reports



Water Model Map

Magnolia Osborn.wtg
Active Scenario: PHD
FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
34	J-1	1,250.60	0	1,417.08	72
36	J-2	1,249.90	91	1,417.07	72
40	J-3	1,245.60	0	1,413.50	73
42	J-4	1,247.40	0	1,413.50	72
49	J-7	1,248.20	0	1,413.50	72
51	J-8	1,249.30	0	1,413.50	71
53	J-9	1,250.60	0	1,413.50	70
55	J-10	1,250.30	0	1,413.50	71
57	J-11	1,249.70	0	1,413.50	71
64	J-13	1,249.40	0	1,413.50	71
68	J-15	1,245.79	0	1,413.50	73

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Active Scenario: PHD
FlexTable: Pipe Table

Label	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Length (ft)	Velocity (ft/s)	Pressure Loss (psi)
P-1	24.0	Ductile Iron	130.0	91	109	0.06	0.0
P-2	24.0	Ductile Iron	130.0	91	124	0.06	0.0
P-3	12.0	Ductile Iron	130.0	91	442	0.26	0.0
P-4	24.0	ACP	130.0	0	77	0.00	0.0
P-5	24.0	ACP	130.0	0	136	0.00	0.0
P-6	8.0	ACP	130.0	0	390	0.00	0.0
P-7	8.0	ACP	130.0	0	442	0.00	0.0
P-8	8.0	ACP	130.0	0	549	0.00	0.0
P-9	8.0	ACP	130.0	0	409	0.00	0.0
P-10	6.0	CIP	130.0	0	525	0.00	0.0
P-11	8.0	ACP	130.0	0	395	0.00	0.0
P-12	8.0	ACP	130.0	0	195	0.00	0.0
P-13	8.0	ACP	130.0	0	299	0.00	0.0
P-14	8.0	ACP	130.0	0	993	0.00	0.0

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Active Scenario: MDD+FF

Fire Flow Node FlexTable: Fire Flow Report

Label	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)		Fire Flow (Total Upper Limit) (gpm)	Junction w/ Minimum Pressure (System)	Pressure (Upper Fire Flow Limit) (psi)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
J-1	2,500	69	J-2		3,000	J-2	68	P-2	2.16
J-2	2,552	66	J-1		3,052	J-1	68	P-3	8.66

Magnolia Osborn.wtg

Active Scenario: FF on 8" System

Fire Flow Node FlexTable: Fire Flow Report

Label	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)		Fire Flow (Total Upper Limit) (gpm)	Junction w/ Minimum Pressure (System)	Pressure (Upper Fire Flow Limit) (psi)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
J-3	1,500	67	J-9		1,501	J-9	65	P-5	1.06
J-4	1,500	55	J-8		1,501	J-8	55	P-6	9.58
J-7	1,500	51	J-8		1,501	J-8	51	P-6	9.58
J-8	1,500	49	J-7		1,501	J-7	52	P-6	9.58
J-9	1,500	47	J-10		1,501	J-10	49	P-6	9.58
J-10	1,500	48	J-9		1,501	J-9	49	P-6	9.58
J-11	1,500	49	J-10		1,501	J-10	49	P-6	9.58
J-13	1,500	51	J-11		1,501	J-11	51	P-6	9.58
J-15	1,500	61	J-9		1,501	J-9	58	P-6	9.58

Magnolia Osborn.wtg
Active Scenario: MDD+FF
Pump Definition Detailed Report: PMP-1

Element Details

ID	61	Notes	
Label	PMP-1		

Pump Definition Type

Pump Definition Type	Standard (3 Point)	Design Head	157.00 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	11,769 gpm
Shutoff Head	166.30 ft	Maximum Operating Head	46.20 ft
Design Flow	2,946 gpm		

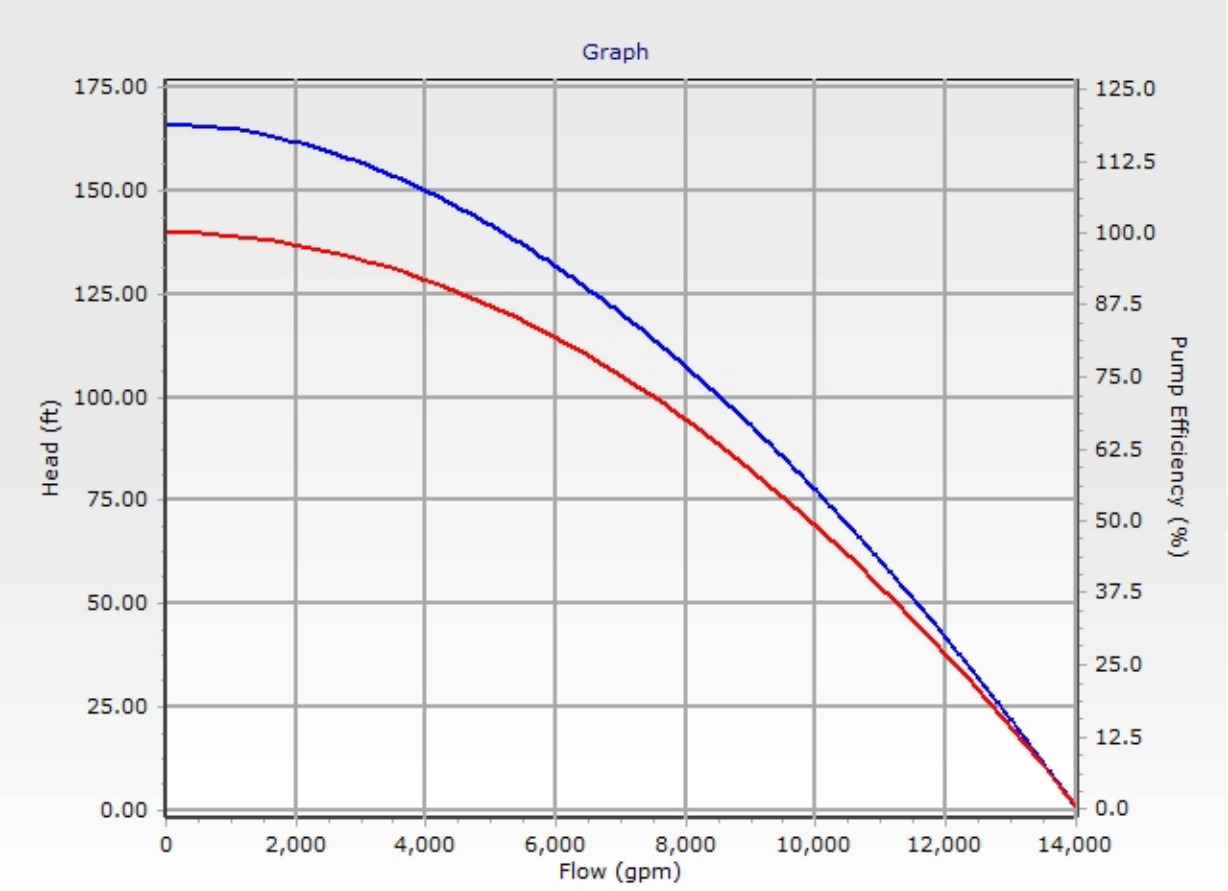
Pump Efficiency Type

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

Magnolia Osborn.wtg
Active Scenario: MDD+FF
Pump Definition Detailed Report: PMP-1



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Active Scenario: MDD+FF
Pump Definition Detailed Report: PMP-2

Element Details

ID	60	Notes	
Label	PMP-2		

Pump Definition Type

Pump Definition Type	Standard (3 Point)	Design Head	147.80 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	5,061 gpm
Shutoff Head	166.30 ft	Maximum Operating Head	46.20 ft
Design Flow	1,842 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

Magnolia Osborn.wtg
Active Scenario: MDD+FF
Pump Definition Detailed Report: PMP-2