PRELIMINARY WASTEWATER REPORT

for

Magnolia on Osborn

Scottsdale, Arizona

Prepared For:

Magnolia PROPERTY COMPANY

Prepared by:

SEG

Sustainability Engineering Group
8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 **www.azSEG.com**

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 DEVELOPEMENT

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

The purpose of this report is to provide an updated sewer system analysis supporting the proposed residential development. Wastewater service will be provided via a new connection to the existing 8" sewer line along 6th Street.

1.2 LEGAL DESCRIPTION

The following parcels of subdivided land are located in the SE 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 s.f. (0.73 ac) NET
- APN 130-13-062; 31,430 s.f. (0.72 ac) NET

The two APNs are platted as Lots 16 and 18, Orange Acres and 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 sewer system is designed to meet design criteria of the City of Scottsdale ("the city") Water Resources Department, the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

2.2 PROCEDURES, POLICIES AND METHODOLOGIES

Hydraulic design of the service pipe will include the peak flow, including pool backwash, compliant to the calculated demand.

2.3 SOFTWARE ACKNOWLEDGEMENT:

Onsite sewer service line will be hydraulically evaluated using Bentley FlowMaster® V8i (SELECTseries 1).

3. EXISTING CONDITIONS

3.1 EXISTING AND PROPOSED ZONING AND LAND USES

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.

3.2 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.

3.3 EXISTING SEWER INFRASTRUCTURE:

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

- An existing 12" VCP sanitary sewer line is located along the south side of Osborn Road.
- An existing 8" VCP sanitary sewer line is located along the center of East 6th Street and presently provides service to the site.

3.4 FLOW MONITORING OF EXISTING SEWER SYSTEM:

Flow monitoring is not proposed as the service area of the existing 10" pipe in Bishop Lane just north of Osborn Road was evaluated using DS+PN criteria applied to the information gathered from the County Assessor's Interactive Maps. Refer to **APPENDIX I** for details.

4. PROPOSED CONDITIONS

4.1 SITE PLAN

All onsite structures and service lines will be removed compliant to City requirements.

4.2 PROPOSED SEWER SERVICE CONNECTIONS

Sewer service will consist of a 6'' line connecting to the 8" sewer in East 6th Street A preliminary utility plan layout is shown in **APPENDIX II**.

4.3 MAINTENANCE RESPONSIBILITIES

The sewer service line will be owned and maintained by the property owner.

5. SEWER SYSTEM COMPUTATIONS

5.1 SEWER DEMANDS

The unit demands are taken from Figure 7.1-2 in the City's DS+PM.

Table 1: PROPOSED SEWER DEMAND CALCULATIONS

	Bldg Area (sq.ft.)	Dwelling Units	ADD (gpd/unit)	Peaking Factor	Avg. Day Demand (gpm)	Peak Flow (gpm)
Residential		92	140	4.5	8.9	40.3
Retail	5,800		0.5	3.0	2.0	6.0
Pool			144,000		100.0	100.0
				TOTAL DEMANDS (gpm):	111.0	146.3

The proposed service line connecting to the existing 8" sewer line will be hydraulically evaluated for both the peak flow and the peak flow plus the pool backwash.

5.2 MINIMUM SERVICE REQUIREMENTS

A 6" service line is sufficient to convey the peak flow without the pool backwash at a depth of 1.7" and velocity of 2.2 fps. The peak flow with the pool backwash will have a depth of 3.3" and velocity of 3.0 fps. Refer to **APPENDIX I** for the service pipe hydraulic calculations.

6. SUMMARY / CONCLUSIONS

6.1 SUMMARY:

The proposed sewer flow, and 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 shown in **APPENDIX I** indicates that the 6" sewer connection is sufficient to provide service to this project, the 8" sewer line in 6th Street has sufficient capacity to serve the local area and the 10" sewer line in Bishop Lane has sufficient capacity to serve the overall basin.

6.2 PROJECT SCHEDULE:

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

7. REFERENCES

1. COS Sewer Q-S MAP 16-44
2. City of Scottsdale Design Standards & Policies Manual, 2018 (Chapter 7 – Sewer)

EXHIBITS

1. Vicinity Map

2. Aerial

3. Sewer Quarter Section Map

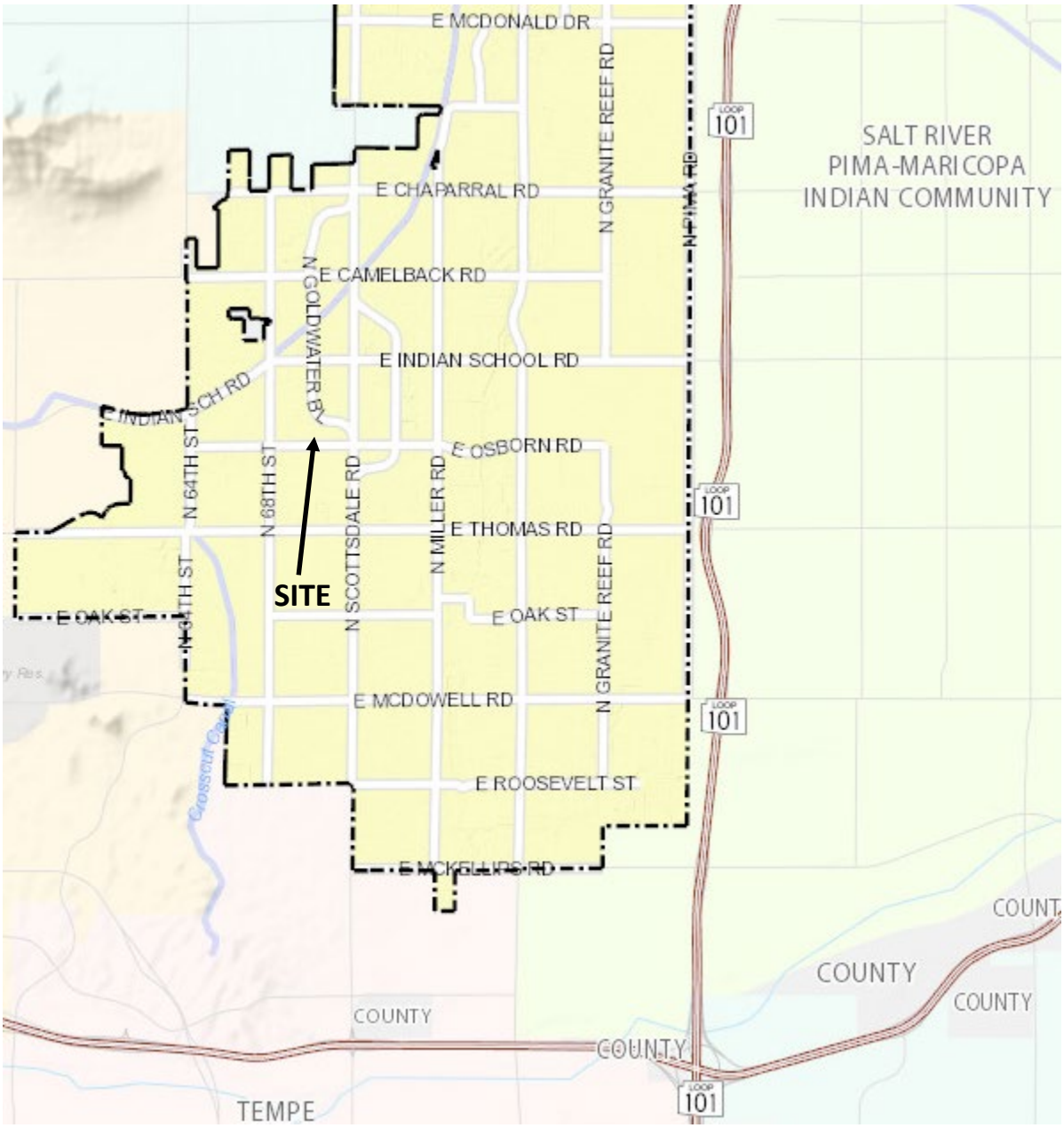


EXHIBIT 1 – Vicinity Map

EXHIBIT 2 –
Aerial

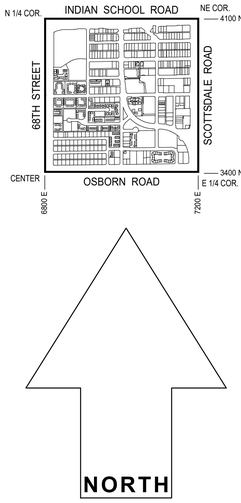
GENERAL NOTES:

- 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

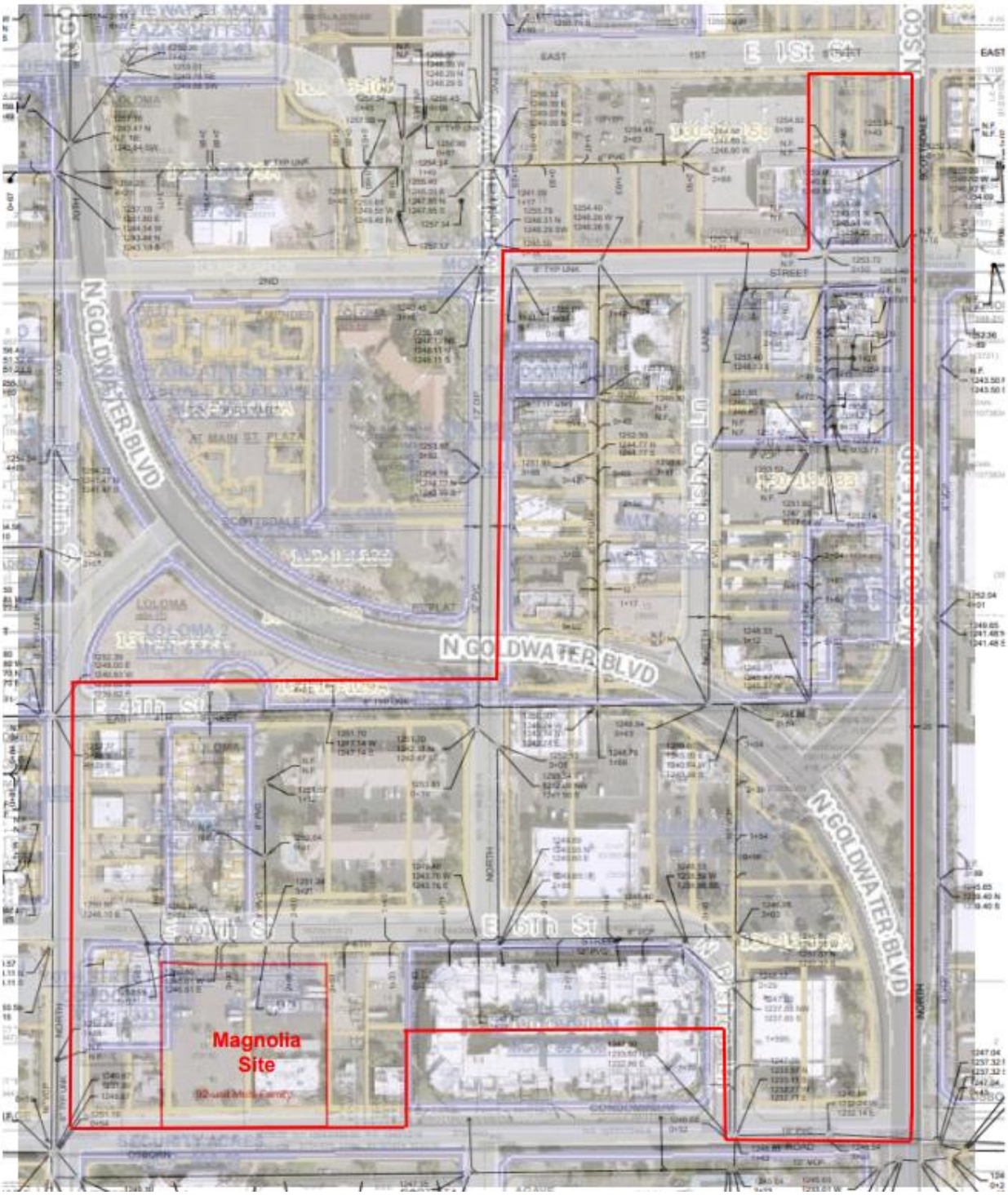
CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

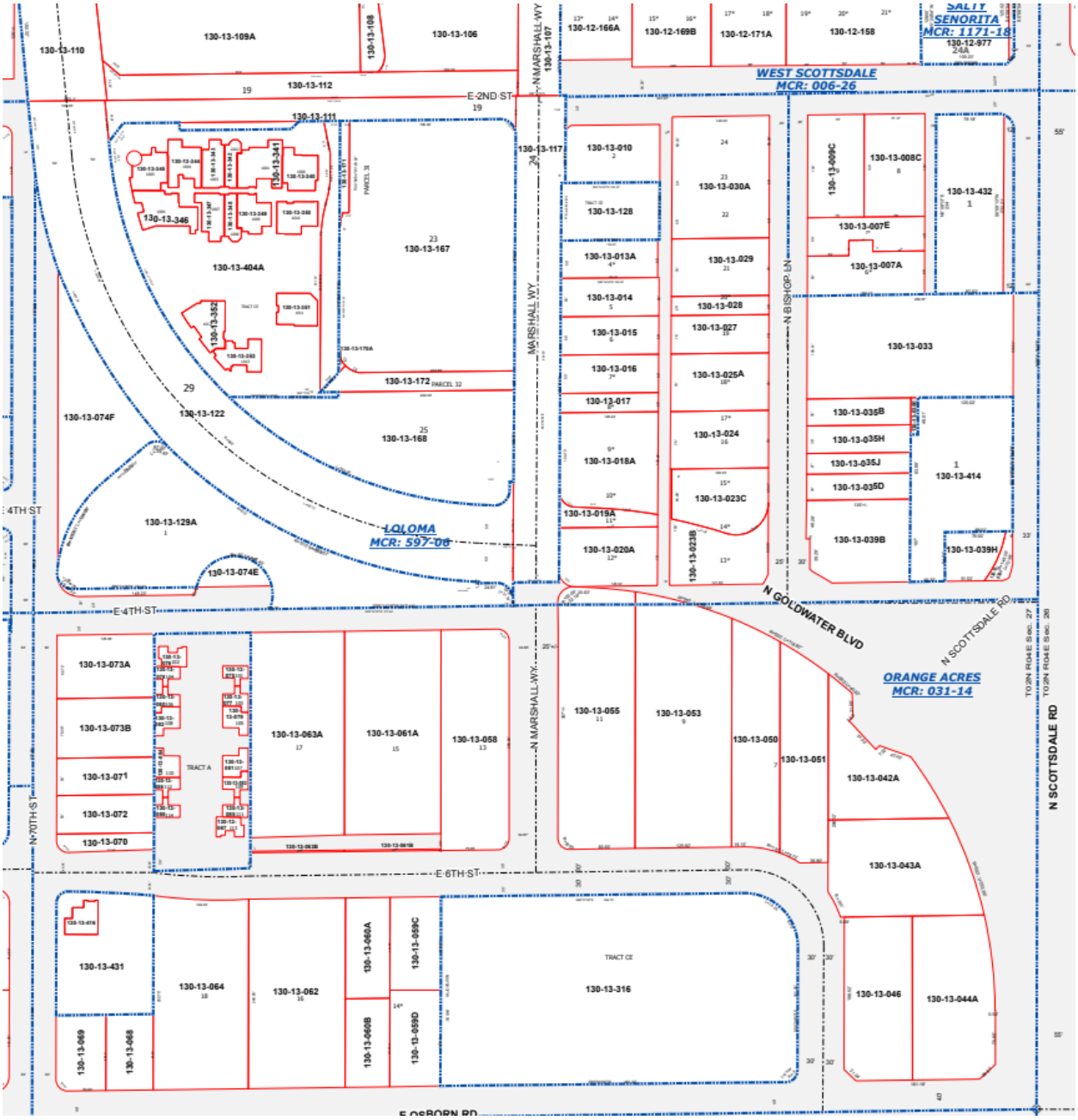
APPENDIX I.

Service Area Map and Hydraulic Calculations



Service Area Map

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260
Sustainability Engineering Group info@azSEG.com 480.588.7226 www.azSEG.com



Service Area Map

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260
Sustainability Engineering Group info@azSEG.com 480.588.7226 www.azSEG.com

6" Service Line at 1.0% w/o Pool Backwash

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	6.0	in
Discharge	46.3	gpm

Results

Normal Depth	1.74	in
Flow Area	0.05	ft²
Wetted Perimeter	0.57	ft
Hydraulic Radius	1.00	in
Top Width	5.4	in
Critical Depth	1.90	in
Percent Full	29.0	%
Critical Slope	0.00709	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	0.22	ft
Froude Number	1.19	
Maximum Discharge	270.9	gpm
Discharge Full	251.8	gal/min
Slope Full	0.00034	ft/ft
Flow Type	SuperCritical	

6" Service Line at 1.0% w/ Pool Backwash

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	6.0	in
Discharge	146.3	gpm

Results

Normal Depth	3.28	in
Flow Area	0.11	ft²
Wetted Perimeter	0.83	ft
Hydraulic Radius	1.58	in
Top Width	6.0	in
Critical Depth	3.47	in
Percent Full	54.7	%
Critical Slope	0.00835	ft/ft
Velocity	2.96	ft/s
Velocity Head	0.14	ft
Specific Energy	0.41	ft
Froude Number	1.11	
Maximum Discharge	270.9	gpm
Discharge Full	251.8	gal/min
Slope Full	0.00338	ft/ft
Flow Type	SuperCritical	

Table A – Service Area to 8" Sewer in 6th Street – 70th Street to Marshall Lane / 4th Street to Osborn Road

Parrcel APN / Development	Site Use	Sq. Ft.	Units	Pool	Demand (gpd or unit)	Avg Day Demand (gpd)	Peaking Factor	Peak Demand (gpd)	Pool Backwash Gpd)
130-13-073A	Office	3,648			0.4	1,459	3.0	4,378	
130-13-073B	Office	2,601			0.4	1,040	3.0	3,121	
130-13-071	Residential		1		250	250	4.0	1,000	
130-13-072	Retail	1,427			0.5	714	3.0	2,141	
70th St Lofts	Condominium		28	Yes	140	3,920	4.5	17,640	48,000
130-13-069	Medical	1,042			0.5	521	4.5	2,345	
130-13-068	Residential		1		250	250	4.0	1,000	
130-13-064 130-13-062	Proposed Site Residential-Retail		92	Yes	170	15,640	4.5	70,380	48,000
		5,800			0.5	2,900	3.0	8,700	
130-13-060A	Warehouse	1,800			0.4	720	3.0	2,160	
130-13-060B	Office	1,341			0.4	536	3.0	1,609	
130-13-059C	Office	1,728			0.4	691	3.0	2,074	
130-13-059D	Office	2,511			0.4	1,004	3.0	3,013	
Stay America	Multi-Family		160	Yes	140	22,400	4.5	100,800	48,000
					Totals (gpd)	52,046		220,360	144,000
					Totals (gpm)	36		**153**	**100**

Table B – Service Area to 10" Sewer in Bishop Lane – Marshall Way to Scottsdale Road / 2nd Street to Osborn Road

Parrcel APN / Development	Site Use	Sq. Ft.	Units	Pool	Demand (gpd or unit)	Avg Day Demand (gpd)	Peaking Factor	Peak Demand (gpd)	Pool Backwash Gpd)
130-13-316	Motel		28	Yes	380	10,640	4.5	47,880	72,000
130-13-046	Retail	14,820			0.5	7,410	3.0	22,230	
130-13-050	Retail	3,080			0.5	1,540	3.0	4,620	
130-13-053	Retail	16,995			0.5	8,498	3.0	25,493	
130-13-055	Retail	9,142			0.5	4,571	3.0	13,713	
130-13-018A	Church	7,238			0.1	724	3.0	2,171	
130-13-015	Retail	5,062			0.5	2,531	3.0	7,593	
130-13-014	Commercial	3,456			0.5	1,728	3.0	5,184	
130-13-013A	Motel	6,417	12	Yes	380	4,560	4.5	20,520	72,000
130-13-128	Condominiums		5		140	700	4.5	3,150	
130-13-010	Retail	4,325			0.5	2,163	3.0	6,488	
130-13-024	Office	1,644			0.4	658	3.0	1,973	
130-13-025A	Retail	1,666			0.5	833	3.0	2,499	
130-13-030A	Restaurant	5,120			1.2	6,144	6.0	36,864	
130-13-039B	Retail	3,327			0.5	1,664	3.0	4,991	
130-13-035H	Retail	7,087			0.5	3,544	3.0	10,631	
130-13-035H	Residential		1		250	250	4.0	1,000	
130-13-414	Restaurant	5,452			1.2	6,542	6.0	39,254	
130-13-414	Retail	5,040			0.5	2,520	3.0	7,560	
130-13-033	Restaurant	4,910			1.2	5,892	6.0	35,352	
130-13-007A	Retail	5,018			0.5	2,509	3.0	7,527	
130-13-432	Retail	10,599			0.5	5,300	3.0	15,899	
130-13-008C	Commercial	7,500			0.5	3,750	3.0	11,250	
130-12-977	Restaurant	4,264			1.2	5,117	6.0	30,701	
130-12-977	Retail	1,001			0.5	501	3.0	1,502	
					Totals (gpd)	90,286		366,042	144,000
					Totals (gpm)	63		254	100

Total Peak Demand in 10" Sewer at Bishop Lane and Osborn Road: 153 gpm (Table A) + 254 gpm (Table B) + 250 gpm (pools) = 657 gpm
10" Pipe Hydraulic Calculations per APPENDIX I for 10" Sewer at 1.25% and d/D = 0.65 is 831.6 gpm (pipe capacity okay)

6th Street 8" Sewer

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00470	ft/ft
Diameter	8.0	in
Discharge	253.0	gpm

Results

Normal Depth	4.84	in
Flow Area	0.22	ft²
Wetted Perimeter	1.19	ft
Hydraulic Radius	2.23	in
Top Width	7.8	in
Critical Depth	4.23	in
Percent Full	60.5	%
Critical Slope	0.00722	ft/ft
Velocity	2.55	ft/s
Velocity Head	0.10	ft
Specific Energy	0.50	ft
Froude Number	0.77	
Maximum Discharge	400.0	gpm
Discharge Full	371.8	gal/min
Slope Full	0.00218	ft/ft
Flow Type	SubCritical	

10" Pipe at 6th and Bishop - S=1.25% Peak Flow = 657 gpm

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01250	ft/ft
Diameter	10.0	in
Discharge	657.0	gpm

Results

Normal Depth	5.57	in
Flow Area	0.31	ft²
Wetted Perimeter	1.40	ft
Hydraulic Radius	2.67	in
Top Width	9.9	in
Critical Depth	6.50	in
Percent Full	55.7	%
Critical Slope	0.00779	ft/ft
Velocity	4.69	ft/s
Velocity Head	0.34	ft
Specific Energy	0.81	ft
Froude Number	1.35	
Maximum Discharge	1182.6	gpm
Discharge Full	1099.4	gal/min
Slope Full	0.00446	ft/ft
Flow Type	SuperCritical	

10" Pipe at 6th and Bishop - S=1.25% d/D=0.65

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01250	ft/ft
Normal Depth	6.50	in
Diameter	10.0	in

Results

Discharge	831.6	gpm
Flow Area	0.38	ft²
Wetted Perimeter	1.56	ft
Hydraulic Radius	2.88	in
Top Width	9.5	in
Critical Depth	7.33	in
Percent Full	65.0	%
Critical Slope	0.00908	ft/ft
Velocity	4.94	ft/s
Velocity Head	0.38	ft
Specific Energy	0.92	ft
Froude Number	1.27	
Maximum Discharge	1182.6	gpm
Discharge Full	1099.4	gal/min
Slope Full	0.00715	ft/ft
Flow Type	SuperCritical	

APPENDIX II.

Preliminary Utility Plan

MAGNOLIA AT OSBORN

PRELIMINARY UTILITY PLAN

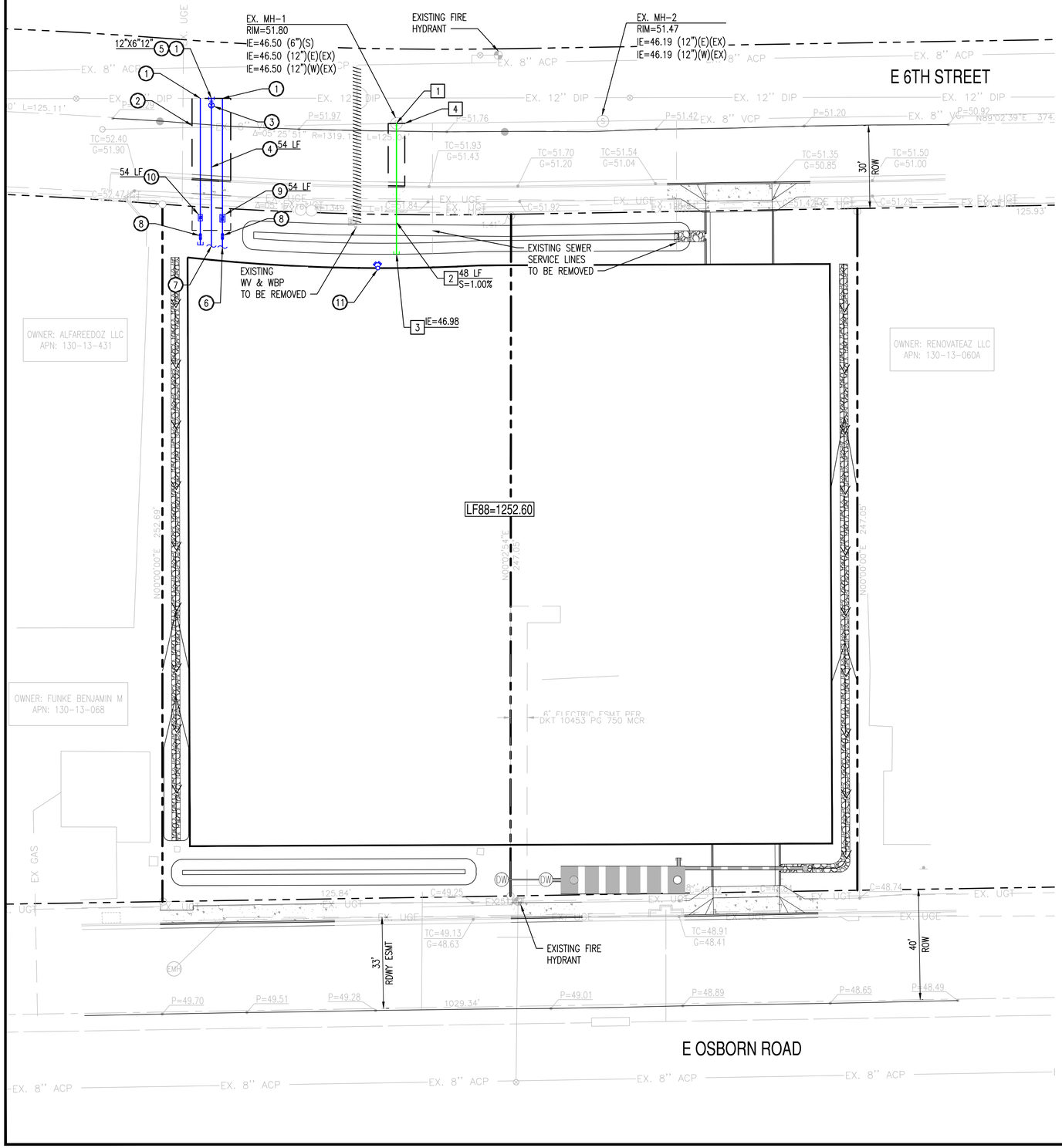
NEC OF 70TH STREET & OSBORN ROAD

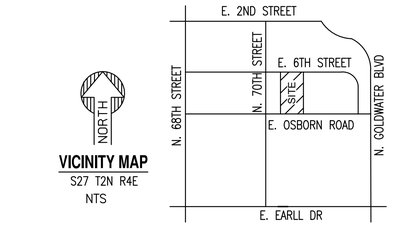
A PORTION OF THE NORTHEAST QUARTER OF SECTION 27, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.

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:

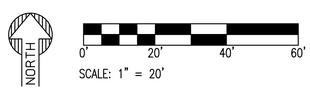
1. EXISTING MANHOLES RIMS AND INVERTS HAVE BEEN SET BASED ON ALTA NO. 21-10003 BY MLC SERVICES DATED 11/02/2021. ELEVATIONS TO BE VERIFIED IN FIELD.

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



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

18-ZN-2022
1/27/23