PRELIMINARY DRAINAGE REPORT
Magnolia on Osborn

NEC of 70th Street and Osborn Road

Prepared For:

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Southlake, TX 76092

Prepared by:

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Case No.: 18-ZN-2022 **Plan Check No.: TBD**

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Review Cycle 2 Date 7/17/2023

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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for a multi-family residential development proposed in Scottsdale, Arizona. The purpose of this report is to provide the hydrologic and hydraulic analysis, required by the City of Scottsdale, to support the proposed site plan for said development. This report includes discussions and calculations defining the storm water management concepts for the collection and conveyance necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2018 [1], and the Drainage Design Manuals for Maricopa County, Arizona, Volume I[2] and Volume II[3].

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property consists of land located in a portion of the Northeast Quarter of Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County Arizona:

- Parcel ID: 130-13-064 and 130-13-062, Zoning is C-3.
- Address: 7018 E Osborn Rd Scottsdale, AZ 85251
  7024 E Osborn Rd, Scottsdale, AZ 85251

Refer to **FIGURE 1** - **Vicinity Map** for the project's location with respect to major cross streets

2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

- South: Across Osborn Road
  - Parcel 130-16-087; First Baptist Church; Zoning is R-5
- North: Across 6th Street
  - Parcel 130-13-075 to 130-13-088; Loloma Cove Condos; Zoning is R-5.
  - Parcel 130-13-063; Extended Stay America (hotel); Zoning is C-3.
- West:
  - Parcel 130-13-431; 70th Street Lofts Condominiums; Zoning is D/DMU-2.
  - Parcel 130-13-068; Residential home; Zoning is C-3.
- East:
  - Parcel 130-13-060A; Two Men and a Truck (moving company); Zoning is C-3.
  - Parcel 130-13-060B; Arizona Party Bike – Scottsdale (Tour Operator); Zoning is C-3.

2.3 EXISTING SITE DESCRIPTION:

The project area includes two parcels totaling approximately 1.45 acres of land and is designated with zoning C-3. The west parcel is a parking lot. The east parcel is an office building with surface parking and an enclosed storage yard.

Per Topographic Survey received from the client, the site topography slopes from the northwest to the southeast with approximately three feet of fall.

Refer to **FIGURE 2** attached for an aerial of the site.

2.4 PROPOSED SITE DEVELOPMENT:

Site development includes the demolition of existing structures and designated parking lots for the construction of a new high density multifamily project. The development will include two access points proposed at Osborn Road and 6th Street.

Refer to **APPENDIX III** – Preliminary Grading and Drainage Plan for site layout.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 04013C2235M dated September 18, 2020 indicates the site is designated as Zone "X". As such, it is defined as areas determined to be outside the 0.2% annual chance floodplain and therefore is not in a special flood hazard area. Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS

The topographic survey and FLO-2D maps provides the following information for offsite drainage:

- *North*: Half of the runoff from 6th Street flows towards the site, where it is conveyed through curb and gutter into an existing catch basin located approximately 200 ft east of the site. No offsite flows from the north affect the site. Refer to **APPENDIX II** for 6th Street gutter calculations.
- *East*: Runoff from the properties east of the site travels south into Osborn Road, where it is conveyed via curb and gutter into an existing catch basin approximately 100 ft east of the site.
- *West*: Runoff from the properties west of the site travels south into Osborn Road, where it is conveyed via curb and gutter into an existing catch basin south of the site.
- *South*: Half of the runoff from Osborn Road flows towards the site, where it is conveyed through curb and gutter into an existing catch basin south of the site.

Refer to **FIGURE 4 -** FLO-2D Map (North) and **FIGURE 5** - FLO-2D Map (South)

3.2 ON-SITE DRAINAGE

Based on the topographic information, the historical outfalls are as follows:

- Flows from drainage areas EX-A1 through EX-A3 are collected in retention areas (EX-Basin 1 and EX-Basin 2) north of the screen walls in the west parcel.
- Flows from drainage areas EX-B1 and EX-B2 are collected by EX-CB-2 located in the southeastern corner of the west parcel in EX-Basin 3.
- Flows from drainage area EX-C1 and EX-C2 flow overland southerly to Osborn Road, where flows then travel easterly via curb and gutter into an existing catch basin south of the site (EX-CB-3) or continue easterly to additional existing catch basins.
- Flows from drainage area EX-D1 are self-retaining due to ponding on the area (EX-Basin 4).

Refer to **APPENDIX II** for **Existing Conditions Drainage Area Map**.

Table 1 below is a summary of existing conditions runoff calculations:

TABLE 1:

EXISTING SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	1.43		4.70	-	7.44	-	-	4.80	7.60
EX-A1	0.03	0.45	4.70	0.07	7.44	0.11	EX-Pipe-1	0.07	0.11
EX-A2	0.25	0.93	4.70	1.11	7.44	1.76	EX-CB-1	1.13	1.80
EX-A3	0.01	0.45	4.70	0.02	7.44	0.04			
EX-B1	0.34	0.92	4.70	1.47	7.44	2.33	EX-CB-2	1.53	2.42
EX-B2	0.03	0.45	4.70	0.05	7.44	0.09			
EX-C1	0.05	0.75	4.70	0.19	7.44	0.30	EX-CB-3	2.07	3.27
EX-C2	0.47	0.86	4.70	1.88	7.44	2.98			
EX-D1	0.25	0.48	4.70	0.56	7.44	0.89	N/A	N/A	N/A

Overall project area includes **1.43 Acres at C_{wt} = 0.80** (Existing conditions)

Refer to the **Existing Conditions Cwt and Existing Conditions Drainage Area Map** in **APPENDIX II**.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

Given that the site has been previously developed, on-site retention shall be calculated per City of Scottsdale DSPM 4-1.201. In order to preserve existing drainage patterns, most of the on-site drainage will discharge to the historical outlets, a portion of the site run-off will also be stored in basins to fulfill stormwater retention and first flush requirements. The roof will be drained into a proposed underground storage tank. The proposed underground storage tank and open retention basins will store the pre-vs-post associated volume of the site. Excess

volume will be discharged to Osborn Street south and 6th Street north. A drywell will be proposed for the underground storage tank. **APPENDIX II** for **Proposed Conditions Drainage Area Map**.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements for lots that are already developed, stormwater storage for the 100-year 2-hour storm event is required based on maintaining existing retention volume plus the difference between the pre vs. post development runoff from the 100-year 2-hour storm event if increased or first flush, whichever is greater.

4.3 LAND CHARACTERISTICS:

The proposed project site consists of a multi-family residential building with a retail space and landscape areas along the perimeter of the structure. Based on the DS&PM, runoff coefficients for the 100-year storm event used are as follows:

- C=0.95 for building or concrete
- C=0.95 for paved surface
- C=0.45 for undisturbed natural desert or desert landscape

HYDROLOGIC ANALYSIS: The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I.

Table 2 below is a summary of proposed conditions runoff calculations:

TABLE 2:

PROPOSED SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	1.43		4.70	-	7.44	-	-	5.28	8.37
DA-A1	1.14	0.95	4.70	5.09	7.44	8.05	Basin 1	5.09	8.05
DA-A2	0.08	0.52	4.70	0.20	7.44	0.31	Basin 1	0.20	0.31
DA-A3	0.01	0.45	5.70	0.03	8.44	0.05	Basin 1	0.03	0.05
DA-B1	0.06	0.65	4.70	0.20	7.44	0.31	Osborn Road	0.20	0.31
DA-C1	0.05	0.45	4.70	0.10	7.44	0.16	Basin 3	0.10	0.16
DA-D1	0.04	0.62	4.70	0.11	7.44	0.17	Basin 2	0.11	0.17
DA-E1	0.05	0.74	4.70	0.18	7.44	0.28	6th Street	0.18	0.28

Overall project area includes **1.43 Acres at C_{wt} = 0.88** (Proposed conditions)

Refer to the **Proposed Conditions Cwt and Proposed Conditions Drainage Area Map** in **APPENDIX II**.

4.4 STORMWATER RETENTION:

100-YR, 2-HR STORM: Per City of Scottsdale DSPM 4-1.201, development storage requirements for the 100-yr, 2-hr storm event are calculated as follows:

$$V_r = \Delta C \left(\frac{R}{12}\right) A$$

where:
$V_r =$ Required storage (cf)
$R =$ Precipitation amount =2.16 in per NOAA Atlas 14 Precipitation Frequency Estimates
$A =$ Total area of site (sf)
$\Delta C = C_{post} - C_{pre}$

$$V_r = (0.88 - 0.80)\left(\frac{2.16}{12}\right)(62{,}392) = 898\ cf$$

Since the difference of the weighted coefficients is positive, stormwater flows in the project area will increase, generating additional flow contributions to existing drainage patterns. Therefore, stormwater retention is required for the development following the pre vs. post analysis.

FIRST FLUSH: First Flush storage required is calculated in accordance with City of Scottsdale DSPM 4-1.201. Only the areas where runoff could be affected by vehicular contact are considered in the first flush calculation. The roof drainage is considered to be free of heavy traffic pollutants, therefore, on-site driveway areas and sidewalks will be considered for the calculation. As shown in the Proposed Conditions Cwt Exhibit, first flush area is calculated as the total project area (62,392 sf) minus roof area (49,638 sf) and landscape areas (9,252 sf), equating to 937 sf. Since the first flush area is less than one acre, no first flush calculation is required.

Retention shall be provided for the Pre vs Post, therefore on-site retention will be designed to store the Pre vs. Post volume. (898 cf). The provided storage volume will also account for the existing basins provided volumes, which have a combined volume of 4,293 cf. Refer to **APPENDIX II** for existing basins volume calculations. The total required volume is 4,293 cf + 898 cf = **5,191** cf.

Required retention for basins 2 through 4 is calculated below:

***TABLE 4*:**

Required Storage Volume Calculations					
					Vr=1*(P/12)*Cw*A
					P=100-yr,2-hr= 2.16in.
Drainage Area ID	Area (acres)	C (-)	Depth (in)	Volume Req. (acre-ft)	Volume Req. (CF)
ON-SITE RETENTION - BASIN 2 - Open Retention					
DA-D1	0.04	0.65	2.16	0.004	190.60
Basin 2 Total	**0.04**	**0.45**		**0.004**	**191**
ON-SITE RETENTION - BASIN 3 - Open Retention					
DA-C1	0.05	0.45	2.16	0.004	165.77
Basin 3 Total	**0.05**	**0.94**		**0.004**	**166**

Basin 1 will be sized to capture the remaining volume required for the pre vs post plus existing retention analysis 5,191 CF – 191 CF – 166 CF = 4,076 CF.

Provided storage on proposed conditions is calculated below:

Provided storage of *Basin 1*:
Basin 1 will consist of a 8' diameter corrugated metal pipe and will have a length of 100 LF.
$V_P = \pi$* Pipe radius^2 * Pipe length
$V_P = (\pi * 4^2)*(100) = 5{,}027$ cf

Provided storage *Basin 2:*

Basin 2					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1251.0	64			0.00	Bottom
		1.00	406.75		
1252.0	750			**407**	

Provided storage *Basin 3:*

Basin 3					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1250.0	0			0.00	Bottom
		1.00	192.18		
1251.0	384			**192**	

The table below shows a summary of proposed and required volume for the site:

***TABLE 4*:**

Proposed Retention Basin Summary					
Basin (ID)		TYPE (--)	Vp (CF)	Vptotal (CF)	Vr (CF)
Basin 1	Basin 1	UG	5,027	5,027	4,834
Basin 2	Basin 2	OPEN	407	407	191
Basin 3	Basin 3	OPEN	192	192	166
Total:			**5,626**	**5,626**	**5,190**

The proposed basin has enough capacity to store the required additional volume generated from the Pre vs. Post analysis.

4.5 STORMWATER DISCHARGE

For Basins with no direct bleed-off available, Drywells are proposed in the on-site storage facilities to dispose of the stormwater within thirty-six (36) hours. The calculation is as follows:

- Minimum percolating rate of a drywell (for planning purposes) = 0.1 cfs
- Volume to be drained in 36 hours = 0.1 cfs * 36 hours * 3600 sec/hour = 12,960 cf = 0.298 acre-feet.
- The number of drywells will be reduced if geotechnical testing for percolation rates determine adequate infiltration is available in the native soils at lower depths. If the percolation rate of the drywells is less than 0.1 cfs the number of drywells may have to be increased.

Basin 1:
Total provided storage = **5,027** CF
5,027 CF / 12,960 CF per drywell = 0.38 = 1 drywell required.

No drywell is required for one-foot basins.

Pre vs post discharges
Proposed conditions will ultimately increase site flow contributions to the existing public storm drain system. The overall run-off coefficient of the site will be increased by 0.05
Table 3 below summarizes the project discharges per outfall for the 10-year and 100-year storm events, providing the differences between existing and proposed peak flows for each case.

TABLE 5:

	Q10 (cfs)			Q100 (cfs)		
Outfall	Existing	Proposed	Δ	Existing	Proposed	Δ
6th Street	0.00	0.18	0.18	0.00	0.28	0.28
EX-CB-4 (Osborn Rd)	3.60	0.20	-3.40	5.69	0.31	-5.38

During the 100-year storm event, discharges to the overall public storm drain system will be decreased by 5.10 cfs. Runoff increase to 6th Street (Q_{100}= 0.28 cfs) is insignificant.

Refer to **Existing Conditions Drainage Area Map** and **Proposed Conditions Drainage Area Map** in **APPENDIX II**.

4.6 ADEQ WATER QUALITY REQUIREMENTS

The total disturbed area of this site is approximately 1.45 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. A NOI will be submitted to ADEQ for this site after the first submittal of the construction documents as this site disturbance is over 1 acre.

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

This project lies in an "X" Flood Zone. Therefore, the proposed building finished floor elevation will be set a minimum of 14 inches above the lot ultimate outfall, located at the southeast corner of the site at an elevation of 1248.74'.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. The finish floor elevations will be designed a minimum of 14 inches above the low top of curb of the lot.
2. The historical outfalls will be affected at proposed conditions and overall discharge to the public storm drain system will be decreased.
3. On-site storage facilities will be provided to account for the Pre vs. Post volume and existing on-site basins required volume.

6.2 PROJECT PHASING:

This project will be constructed in a single phase.

7. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

8. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2018*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, December 14, 2018*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, December 14, 2018*

FIGURES

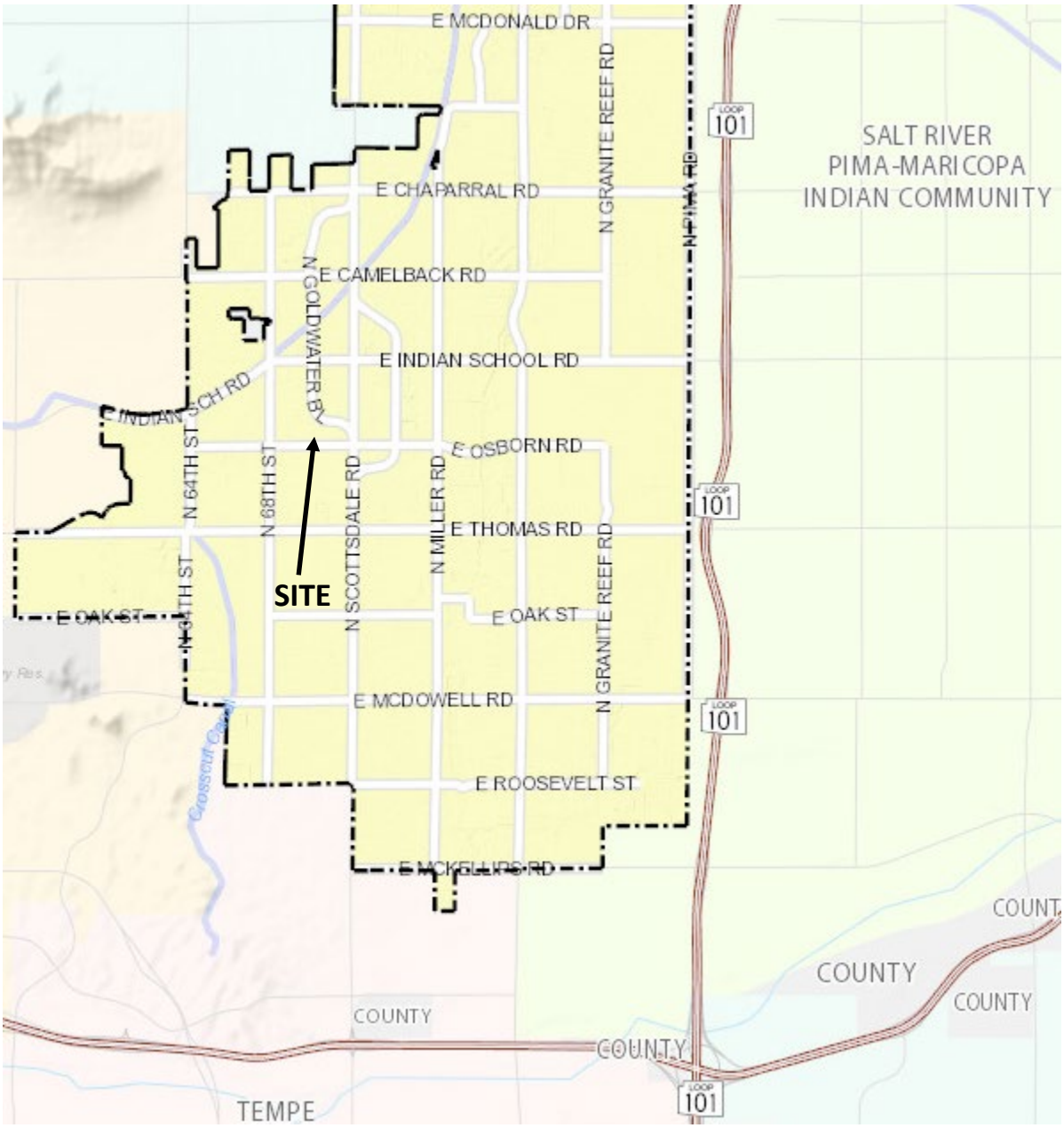
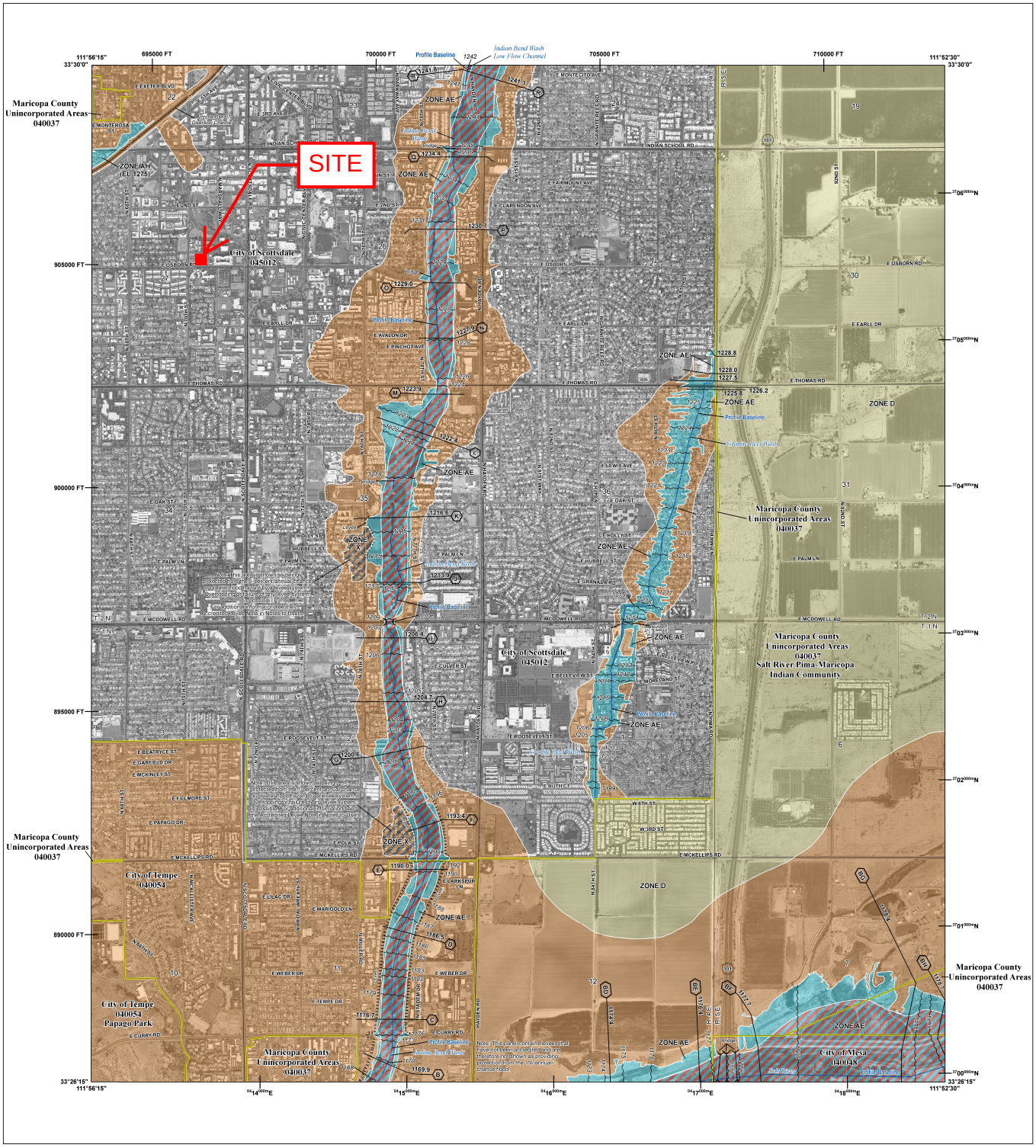


FIGURE 1. VICINITY MAP

FIGURE 2. AERIAL



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from U.S. Census Bureau TIGER files, dated 2014, and digital data provided by the Flood Control District of Maricopa County. Digital orthophotography was provided by the Flood Control District of Maricopa County. The imagery was flown in Fall 2013 and was produced with a 0.6 foot ground sample distance.

ACCREDITED LEVEE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/national-flood-insurance-program.

FIGURE 3. FIRM

SCALE

Map Projection:
NAD 1983 HARN StatePlane Arizona Central FIPS 0202 Feet Intl.
Western Hemisphere; Vertical Datum: NAVD88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 feet

0 250 500 1,000 meters

PANEL LOCATOR

MARICOPA COUNTY	1770	1790*	1795
2210	2230	2235	2255	2260
2220	2240	2245	2265	2270
		2244	2264	

* PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA
and Incorporated Areas

PANEL 2235 OF 4425

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2235	M
MESA, CITY OF	040048	2235	M
SCOTTSDALE, CITY OF	045012	2235	M
TEMPE, CITY OF	040054	2235	M

VERSION NUMBER
2.3.3.2

MAP NUMBER
04013C2235M

MAP REVISED
September 18, 2020

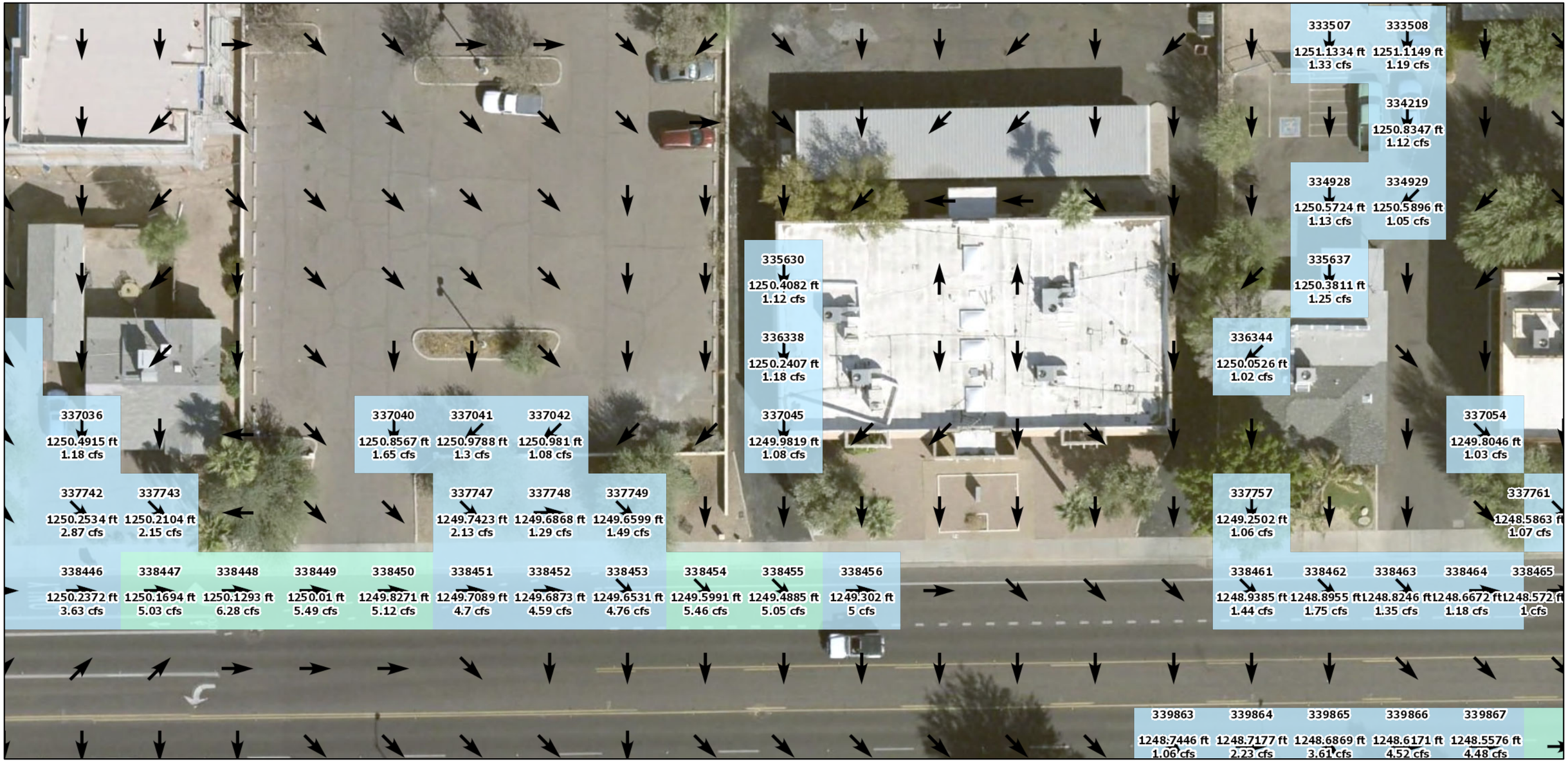
February 14, 2022

1:300

0 15 30 60 ft

0 5 10 20 m

FIGURE 4. FLO-2D MAP (NORTH)



February 14, 2022

1:300

0 15 30 60 ft

0 5 10 20 m

FIGURE 4. FLO-2D MAP (SOUTH)

APPENDIX I

RAINFALL DATA

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4877°, Longitude: -111.9298°
Elevation: 1250.77 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.183** (0.154-0.223)	**0.240** (0.202-0.291)	**0.326** (0.273-0.395)	**0.392** (0.326-0.472)	**0.481** (0.394-0.577)	**0.550** (0.444-0.657)	**0.620** (0.492-0.739)	**0.692** (0.540-0.824)	**0.788** (0.598-0.940)	**0.862** (0.641-1.03)
10-min	**0.279** (0.234-0.339)	**0.364** (0.307-0.443)	**0.495** (0.415-0.600)	**0.596** (0.496-0.719)	**0.732** (0.599-0.878)	**0.837** (0.676-1.00)	**0.944** (0.748-1.12)	**1.05** (0.821-1.25)	**1.20** (0.911-1.43)	**1.31** (0.976-1.57)
15-min	**0.345** (0.290-0.420)	**0.452** (0.381-0.549)	**0.614** (0.514-0.744)	**0.739** (0.614-0.891)	**0.907** (0.743-1.09)	**1.04** (0.838-1.24)	**1.17** (0.928-1.39)	**1.31** (1.02-1.55)	**1.49** (1.13-1.77)	**1.63** (1.21-1.94)
30-min	**0.465** (0.390-0.565)	**0.608** (0.513-0.740)	**0.827** (0.692-1.00)	**0.995** (0.827-1.20)	**1.22** (1.00-1.47)	**1.40** (1.13-1.67)	**1.58** (1.25-1.88)	**1.76** (1.37-2.09)	**2.00** (1.52-2.39)	**2.19** (1.63-2.61)
60-min	**0.575** (0.483-0.700)	**0.753** (0.635-0.915)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.51** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.32)	**2.18** (1.70-2.59)	**2.48** (1.88-2.95)	**2.71** (2.02-3.24)
2-hr	**0.666** (0.569-0.795)	**0.863** (0.736-1.03)	**1.16** (0.983-1.37)	**1.38** (1.16-1.64)	**1.69** (1.40-1.99)	**1.92** (1.57-2.26)	**2.16** (1.75-2.54)	**2.41** (1.91-2.82)	**2.74** (2.12-3.21)	**2.99** (2.27-3.54)
3-hr	**0.724** (0.614-0.870)	**0.929** (0.793-1.12)	**1.22** (1.04-1.47)	**1.45** (1.22-1.74)	**1.78** (1.47-2.11)	**2.04** (1.66-2.41)	**2.31** (1.85-2.73)	**2.59** (2.04-3.06)	**2.98** (2.28-3.52)	**3.29** (2.46-3.91)
6-hr	**0.873** (0.756-1.03)	**1.11** (0.962-1.30)	**1.42** (1.23-1.66)	**1.67** (1.43-1.95)	**2.01** (1.70-2.33)	**2.28** (1.90-2.63)	**2.56** (2.10-2.95)	**2.84** (2.28-3.28)	**3.23** (2.53-3.74)	**3.53** (2.71-4.11)
12-hr	**0.977** (0.855-1.13)	**1.23** (1.08-1.44)	**1.57** (1.36-1.81)	**1.82** (1.58-2.11)	**2.17** (1.86-2.50)	**2.44** (2.07-2.81)	**2.72** (2.27-3.13)	**3.00** (2.47-3.45)	**3.37** (2.71-3.91)	**3.67** (2.89-4.28)
24-hr	**1.17** (1.05-1.32)	**1.49** (1.33-1.68)	**1.93** (1.72-2.18)	**2.28** (2.02-2.56)	**2.76** (2.43-3.11)	**3.14** (2.75-3.53)	**3.54** (3.08-3.97)	**3.95** (3.41-4.44)	**4.53** (3.86-5.08)	**4.98** (4.20-5.60)
2-day	**1.26** (1.13-1.43)	**1.62** (1.44-1.82)	**2.12** (1.89-2.39)	**2.53** (2.24-2.84)	**3.09** (2.73-3.47)	**3.54** (3.11-3.98)	**4.02** (3.50-4.52)	**4.51** (3.90-5.08)	**5.21** (4.45-5.87)	**5.76** (4.88-6.51)
3-day	**1.34** (1.19-1.51)	**1.71** (1.52-1.93)	**2.25** (2.00-2.53)	**2.69** (2.38-3.02)	**3.30** (2.91-3.70)	**3.79** (3.32-4.25)	**4.32** (3.75-4.84)	**4.87** (4.20-5.47)	**5.64** (4.80-6.34)	**6.26** (5.28-7.06)
4-day	**1.41** (1.25-1.59)	**1.80** (1.60-2.04)	**2.38** (2.11-2.68)	**2.85** (2.52-3.20)	**3.51** (3.08-3.94)	**4.04** (3.53-4.53)	**4.61** (4.00-5.17)	**5.22** (4.49-5.86)	**6.07** (5.16-6.82)	**6.77** (5.69-7.61)
7-day	**1.57** (1.39-1.77)	**2.00** (1.78-2.26)	**2.64** (2.34-2.98)	**3.16** (2.80-3.56)	**3.90** (3.43-4.38)	**4.49** (3.92-5.04)	**5.12** (4.44-5.75)	**5.79** (4.98-6.51)	**6.73** (5.72-7.57)	**7.49** (6.30-8.45)
10-day	**1.70** (1.51-1.92)	**2.18** (1.94-2.45)	**2.87** (2.55-3.23)	**3.44** (3.04-3.86)	**4.22** (3.71-4.73)	**4.85** (4.24-5.43)	**5.52** (4.79-6.18)	**6.22** (5.36-6.98)	**7.21** (6.14-8.08)	**8.00** (6.74-8.99)
20-day	**2.09** (1.87-2.34)	**2.69** (2.40-3.01)	**3.55** (3.17-3.97)	**4.20** (3.74-4.69)	**5.08** (4.50-5.67)	**5.76** (5.08-6.42)	**6.44** (5.65-7.19)	**7.14** (6.23-7.98)	**8.08** (6.99-9.05)	**8.81** (7.56-9.88)
30-day	**2.44** (2.17-2.74)	**3.14** (2.80-3.52)	**4.14** (3.68-4.63)	**4.90** (4.35-5.47)	**5.92** (5.23-6.60)	**6.70** (5.89-7.47)	**7.51** (6.57-8.36)	**8.32** (7.25-9.27)	**9.42** (8.14-10.5)	**10.3** (8.81-11.5)
45-day	**2.83** (2.53-3.16)	**3.64** (3.26-4.07)	**4.80** (4.29-5.36)	**5.66** (5.04-6.32)	**6.78** (6.02-7.57)	**7.63** (6.76-8.52)	**8.49** (7.49-9.49)	**9.35** (8.21-10.5)	**10.5** (9.13-11.8)	**11.3** (9.82-12.7)
60-day	**3.13** (2.81-3.49)	**4.04** (3.63-4.51)	**5.32** (4.76-5.92)	**6.24** (5.58-6.95)	**7.45** (6.64-8.29)	**8.34** (7.41-9.29)	**9.24** (8.17-10.3)	**10.1** (8.91-11.3)	**11.3** (9.87-12.6)	**12.1** (10.6-13.6)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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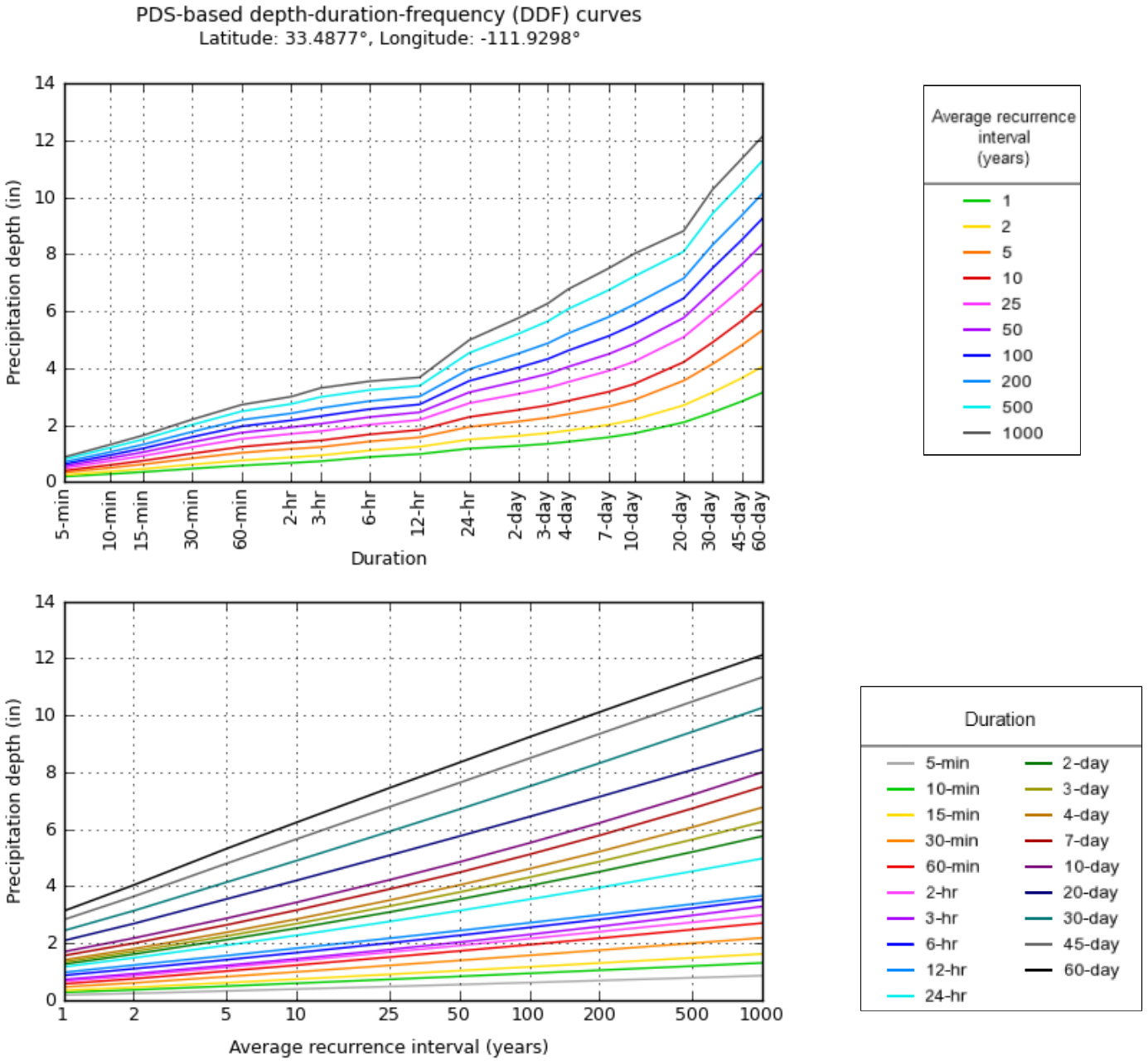
PF graphical

18-ZN-2022



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Maps & aerials

Small scale terrain

18-ZN-2022

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4877°, Longitude: -111.9298°
Elevation: 1250.77 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**2.20** (1.85-2.68)	**2.88** (2.42-3.49)	**3.91** (3.28-4.74)	**4.70** (3.91-5.66)	**5.77** (4.73-6.92)	**6.60** (5.33-7.88)	**7.44** (5.90-8.87)	**8.30** (6.48-9.89)	**9.46** (7.18-11.3)	**10.3** (7.69-12.3)
10-min	**1.67** (1.40-2.03)	**2.18** (1.84-2.66)	**2.97** (2.49-3.60)	**3.58** (2.98-4.31)	**4.39** (3.59-5.27)	**5.02** (4.06-6.00)	**5.66** (4.49-6.74)	**6.32** (4.93-7.52)	**7.19** (5.47-8.58)	**7.87** (5.86-9.40)
15-min	**1.38** (1.16-1.68)	**1.81** (1.52-2.20)	**2.46** (2.06-2.98)	**2.96** (2.46-3.56)	**3.63** (2.97-4.36)	**4.15** (3.35-4.96)	**4.68** (3.71-5.58)	**5.22** (4.07-6.22)	**5.95** (4.52-7.09)	**6.50** (4.84-7.76)
30-min	**0.930** (0.780-1.13)	**1.22** (1.03-1.48)	**1.65** (1.38-2.00)	**1.99** (1.65-2.40)	**2.44** (2.00-2.93)	**2.79** (2.26-3.34)	**3.15** (2.50-3.75)	**3.52** (2.74-4.18)	**4.00** (3.04-4.77)	**4.38** (3.26-5.23)
60-min	**0.575** (0.483-0.700)	**0.753** (0.635-0.915)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.51** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.32)	**2.18** (1.70-2.59)	**2.48** (1.88-2.95)	**2.71** (2.02-3.24)
2-hr	**0.333** (0.284-0.398)	**0.432** (0.368-0.516)	**0.578** (0.492-0.687)	**0.690** (0.580-0.818)	**0.842** (0.700-0.992)	**0.960** (0.787-1.13)	**1.08** (0.872-1.27)	**1.20** (0.954-1.41)	**1.37** (1.06-1.61)	**1.50** (1.13-1.77)
3-hr	**0.241** (0.204-0.290)	**0.309** (0.264-0.374)	**0.407** (0.345-0.489)	**0.484** (0.407-0.578)	**0.592** (0.491-0.703)	**0.678** (0.554-0.803)	**0.768** (0.616-0.909)	**0.862** (0.680-1.02)	**0.992** (0.759-1.17)	**1.10** (0.818-1.30)
6-hr	**0.146** (0.126-0.172)	**0.185** (0.161-0.217)	**0.237** (0.205-0.278)	**0.279** (0.239-0.325)	**0.335** (0.284-0.389)	**0.380** (0.317-0.439)	**0.427** (0.350-0.493)	**0.474** (0.381-0.548)	**0.539** (0.423-0.625)	**0.590** (0.452-0.686)
12-hr	**0.081** (0.071-0.094)	**0.102** (0.090-0.119)	**0.130** (0.113-0.150)	**0.151** (0.131-0.175)	**0.180** (0.154-0.208)	**0.203** (0.172-0.233)	**0.226** (0.188-0.260)	**0.249** (0.205-0.287)	**0.280** (0.225-0.324)	**0.304** (0.240-0.355)
24-hr	**0.049** (0.044-0.055)	**0.062** (0.055-0.070)	**0.080** (0.072-0.091)	**0.095** (0.084-0.107)	**0.115** (0.101-0.129)	**0.131** (0.115-0.147)	**0.148** (0.128-0.166)	**0.165** (0.142-0.185)	**0.189** (0.161-0.212)	**0.207** (0.175-0.233)
2-day	**0.026** (0.023-0.030)	**0.034** (0.030-0.038)	**0.044** (0.039-0.050)	**0.053** (0.047-0.059)	**0.064** (0.057-0.072)	**0.074** (0.065-0.083)	**0.084** (0.073-0.094)	**0.094** (0.081-0.106)	**0.108** (0.093-0.122)	**0.120** (0.102-0.136)
3-day	**0.019** (0.017-0.021)	**0.024** (0.021-0.027)	**0.031** (0.028-0.035)	**0.037** (0.033-0.042)	**0.046** (0.040-0.051)	**0.053** (0.046-0.059)	**0.060** (0.052-0.067)	**0.068** (0.058-0.076)	**0.078** (0.067-0.088)	**0.087** (0.073-0.098)
4-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.021)	**0.025** (0.022-0.028)	**0.030** (0.026-0.033)	**0.037** (0.032-0.041)	**0.042** (0.037-0.047)	**0.048** (0.042-0.054)	**0.054** (0.047-0.061)	**0.063** (0.054-0.071)	**0.071** (0.059-0.079)
7-day	**0.009** (0.008-0.011)	**0.012** (0.011-0.013)	**0.016** (0.014-0.018)	**0.019** (0.017-0.021)	**0.023** (0.020-0.026)	**0.027** (0.023-0.030)	**0.030** (0.026-0.034)	**0.034** (0.030-0.039)	**0.040** (0.034-0.045)	**0.045** (0.037-0.050)
10-day	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.012** (0.011-0.013)	**0.014** (0.013-0.016)	**0.018** (0.015-0.020)	**0.020** (0.018-0.023)	**0.023** (0.020-0.026)	**0.026** (0.022-0.029)	**0.030** (0.026-0.034)	**0.033** (0.028-0.037)
20-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.007-0.008)	**0.009** (0.008-0.010)	**0.011** (0.009-0.012)	**0.012** (0.011-0.013)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.015-0.019)	**0.018** (0.016-0.021)
30-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.012)	**0.012** (0.010-0.013)	**0.013** (0.011-0.015)	**0.014** (0.012-0.016)
45-day	**0.003** (0.002-0.003)	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.008-0.011)	**0.011** (0.009-0.012)
60-day	**0.002** (0.002-0.002)	**0.003** (0.003-0.003)	**0.004** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.008** (0.007-0.009)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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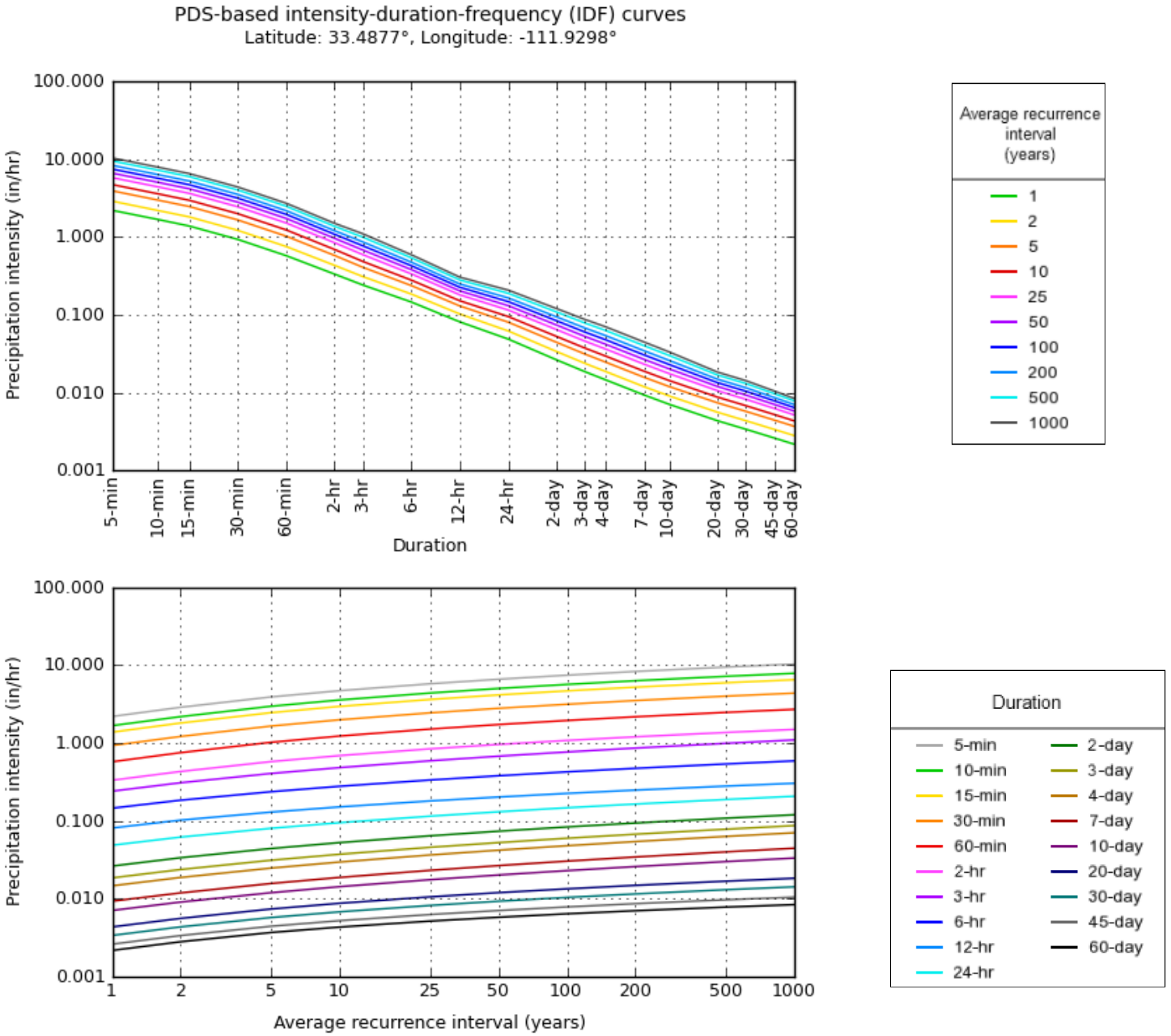
PF graphical

18-ZN-2022



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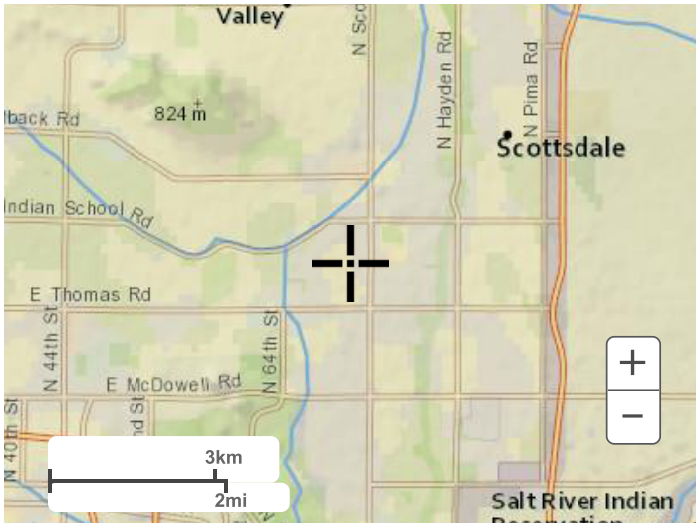
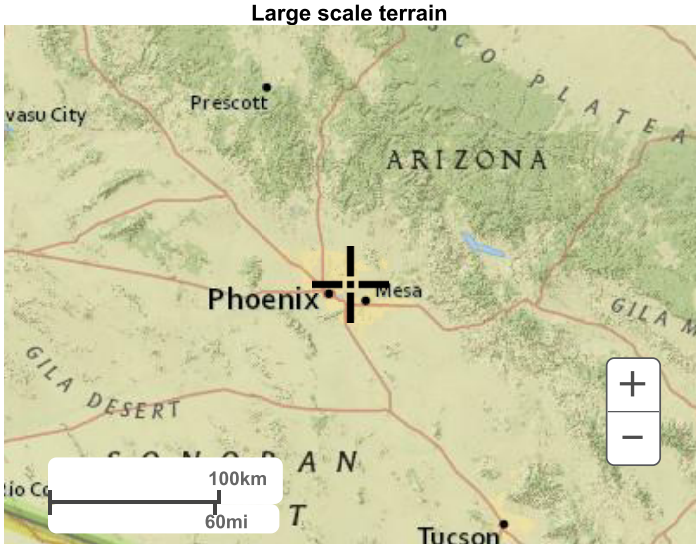
Maps & aerials

Small scale terrain

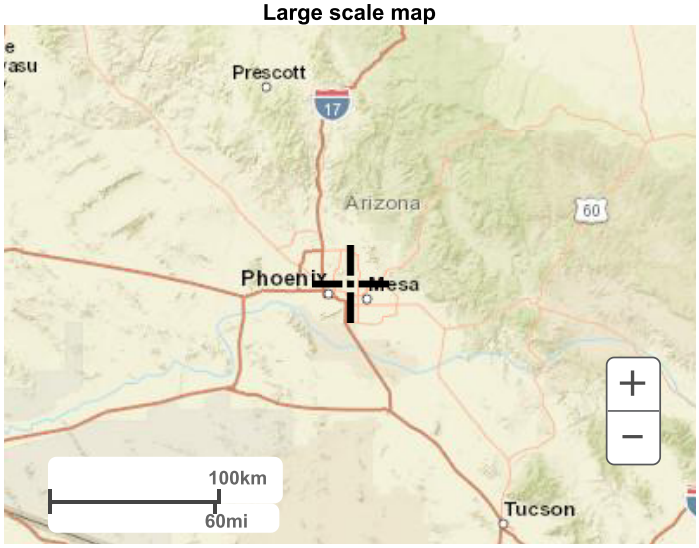
18-ZN-2022



Large scale terrain



Large scale map



Large scale aerial

18-ZN-2022

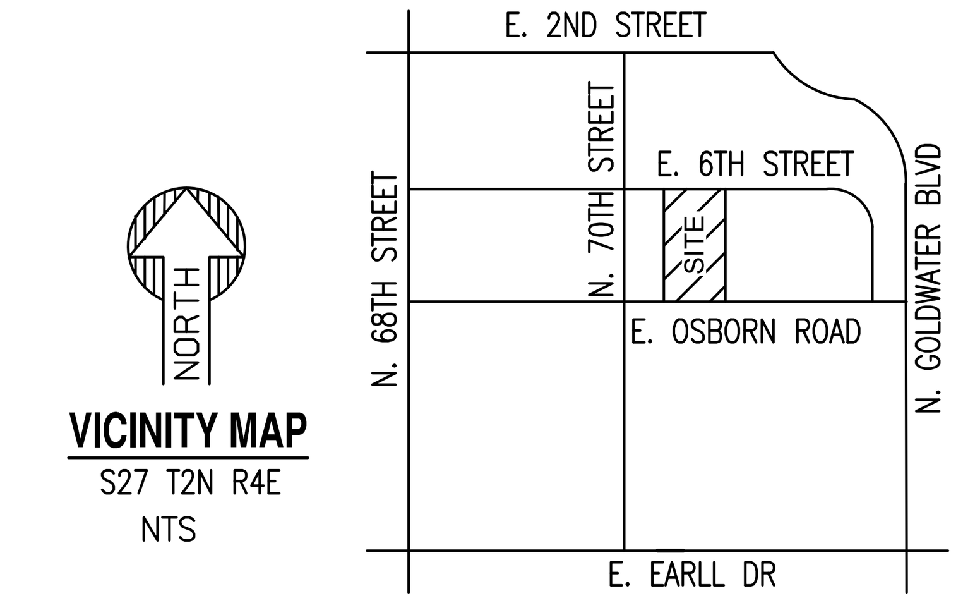
APPENDIX II

CALCULATIONS

MAGNOLIA AT OSBORN

EXISTING CONDITIONS C_{WT}

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.



VICINITY MAP
S27 T2N R4E
NTS

SCALE: 1" = 20'

DISTURBED AREA			
ON-SITE			
PAVED SURFACE =	43,272 SF (0.99 AC)	@ CWT=0.95	
NATURAL DESERT =	19,120 SF (0.44 AC)	@ CWT=0.45	
TOTAL =	62,392 SF (1.43 AC) @ CWT=0.80		

PRELIMINARY
NOT FOR
CONSTRUCTION

SEG
SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016
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	06/01/2023
DESIGNED		JC	06/01/2023
QC		SC	03/02/2022
FINAL QC			
PROJ. MGR.		AF	06/01/2023

DATE: 06/01/2023
ISSUED FOR: REZONING

REVISION NO.:		DATE:
1		
2		
3		
4		

JOB NO.: 220205

SHEET TITLE: EXISTING CONDITIONS C_{WT}

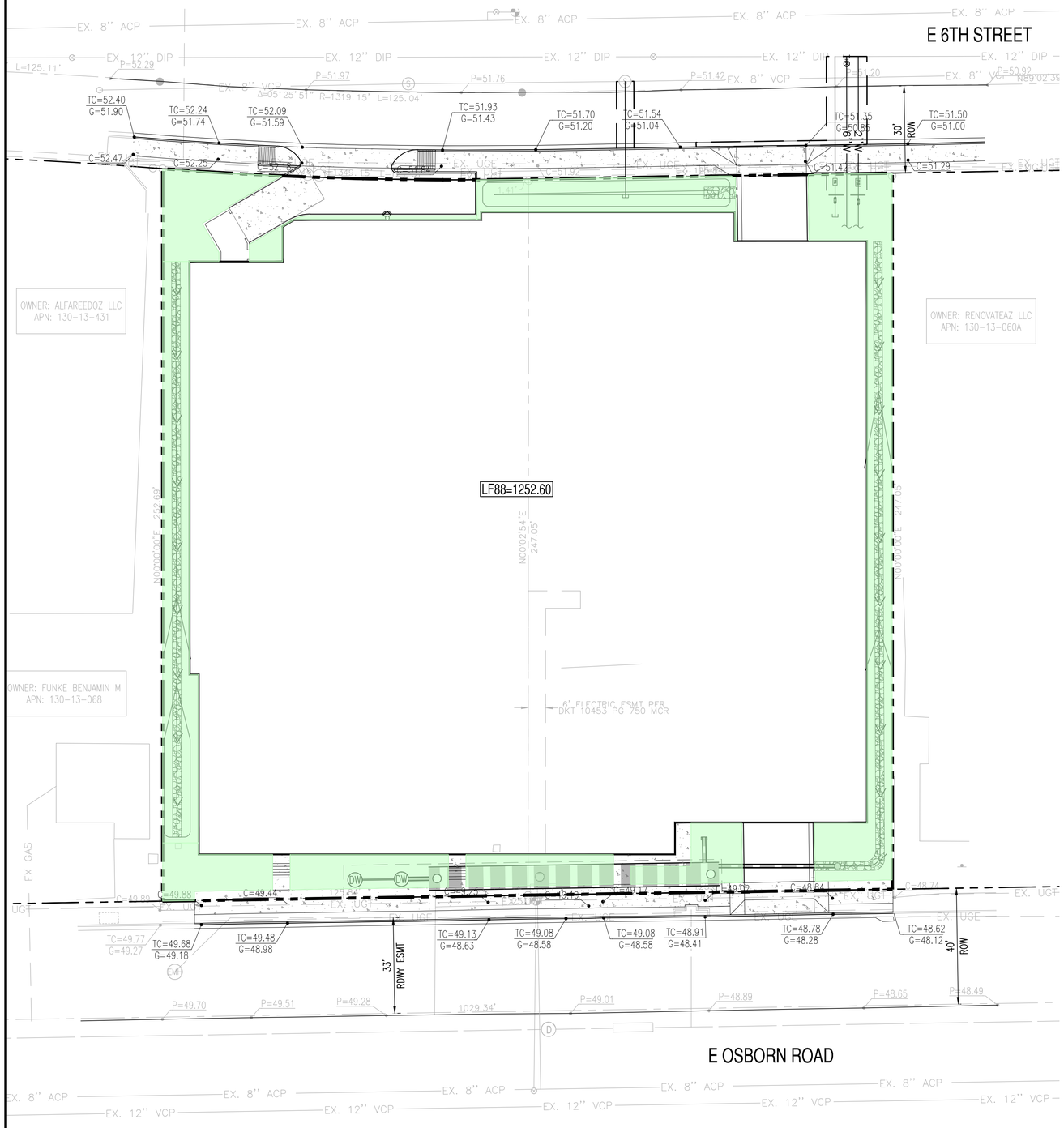
PAGE NO.: 1 OF 1
SHEET NO.: X-C_{WT}

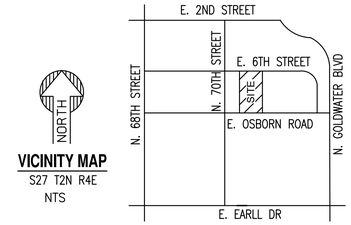
MAGNOLIA AT OSBORN

PROPOSED CONDITIONS Cwt

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.





VICINITY MAP
S27 T2N R4E
NTS

	DISTURBED AREA		
	ON-SITE		
	PAVED SURFACE =	53,140 SF (1.22 AC)	@ CWT=0.95
	NATURAL DESERT =	9,252 SF (0.21 AC)	@ CWT=0.45
	TOTAL =	62,392 SF (1.43 AC)	@ CWT=0.88

NORTH
0' 20' 40' 60'
SCALE: 1" = 20'

NORTH
0' 20' 40' 60'
SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016
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 visit Arizona811.com

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

DRAWN	JC	06/01/2023
DESIGNED	JC	06/01/2023
QC	SC	03/02/2022
FINAL QC		
PROJ. MGR.	AF	06/01/2023

DATE: 06/01/2023

ISSUED FOR: REZONING

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 220205

SHEET TITLE: **PROPOSED CONDITIONS Cwt**

PAGE NO.: 1 OF 1

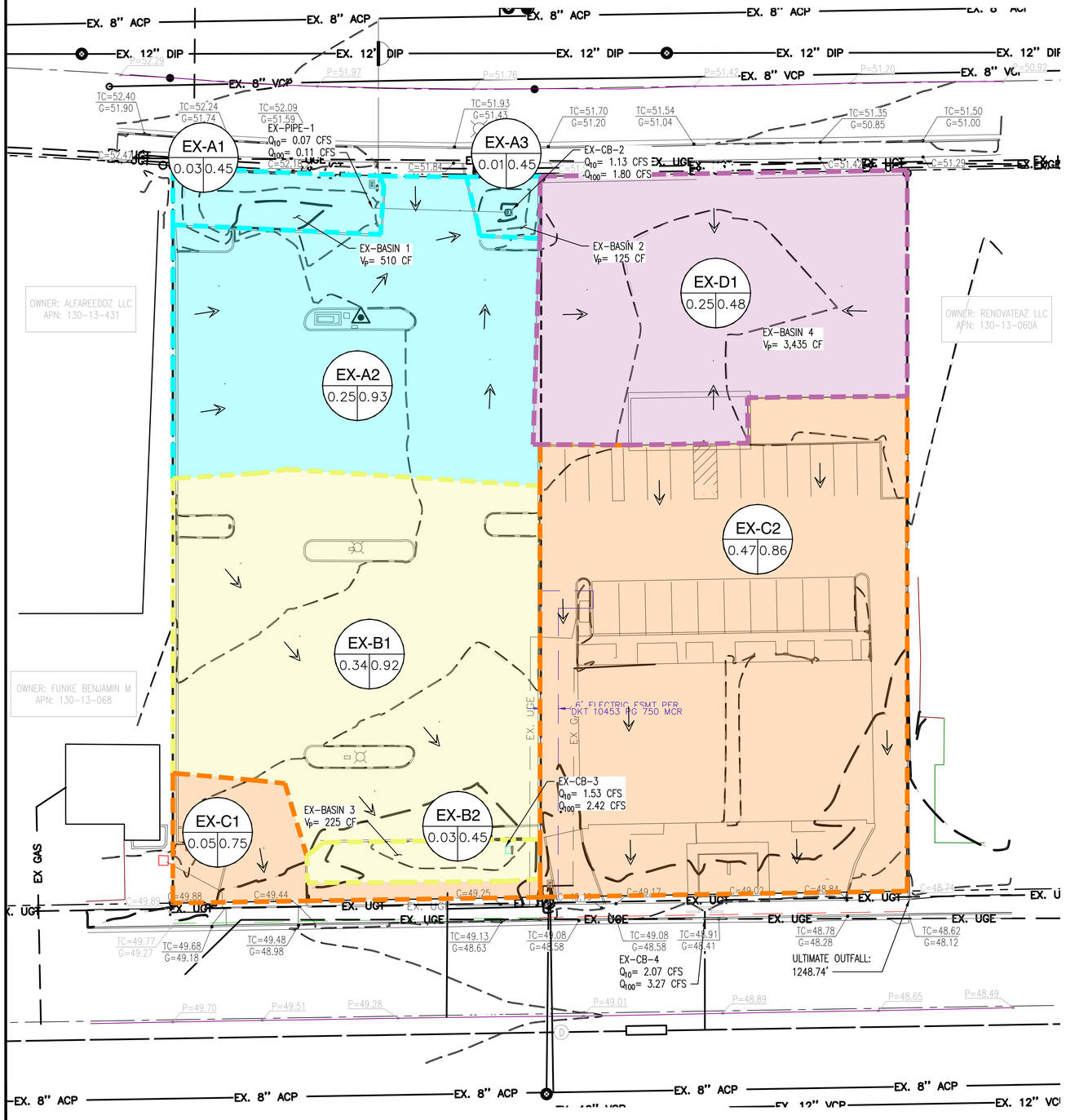
SHEET NO.: **P-Cwt**

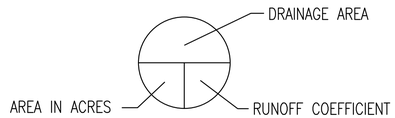
MAGNOLIA AT OSBORN

EXISTING CONDITIONS DRAINAGE AREA MAP

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.





DRAINAGE AREA KEY

EXISTING LEGEND

- DRAINAGE AREAS DISCHARGING TO PUBLIC SYSTEM ON EX-CB-2.
- DRAINAGE AREAS DISCHARGING TO PUBLIC SYSTEM ON OSBORN ROAD.
- DRAINAGE AREAS DISCHARGING TO OSBRON ROAD.
- SELF-RETAINING DRAINAGE AREA.
- FLOW ARROW

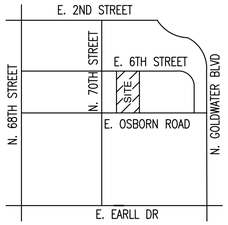
EXISTING SITE DISCHARGES

	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	1.43		4.70	-	7.44	-	-	4.80	7.60
EX-A1	0.03	0.45	4.70	0.07	7.44	0.11	EX-Pipe-1	0.07	0.11
EX-A2	0.25	0.93	4.70	1.11	7.44	1.76	EX-CB-1	1.13	1.80
EX-A3	0.01	0.45	4.70	0.02	7.44	0.04			
EX-B1	0.34	0.92	4.70	1.47	7.44	2.33	EX-CB-2	1.53	2.42
EX-B2	0.03	0.45	4.70	0.05	7.44	0.09			
EX-C1	0.05	0.75	4.70	0.19	7.44	0.30	EX-CB-3	2.07	3.27
EX-C2	0.47	0.86	4.70	1.88	7.44	2.98			
EX-D1	0.25	0.48	4.70	0.56	7.44	0.89	N/A	N/A	N/A

NORTH

0' 20' 40' 60'

SCALE: 1" = 20'



VICINITY MAP
S27 T2N R4E
NTS

PRELIMINARY
NOT FOR
CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016
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	06/01/2023
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QC	SC	03/02/2022
FINAL QC		
PROJ. MGR.	AF	06/01/2023

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3	
4	

JOB NO.: 220205

SHEET TITLE: EXISTING CONDITIONS DRAINAGE AREA MAP

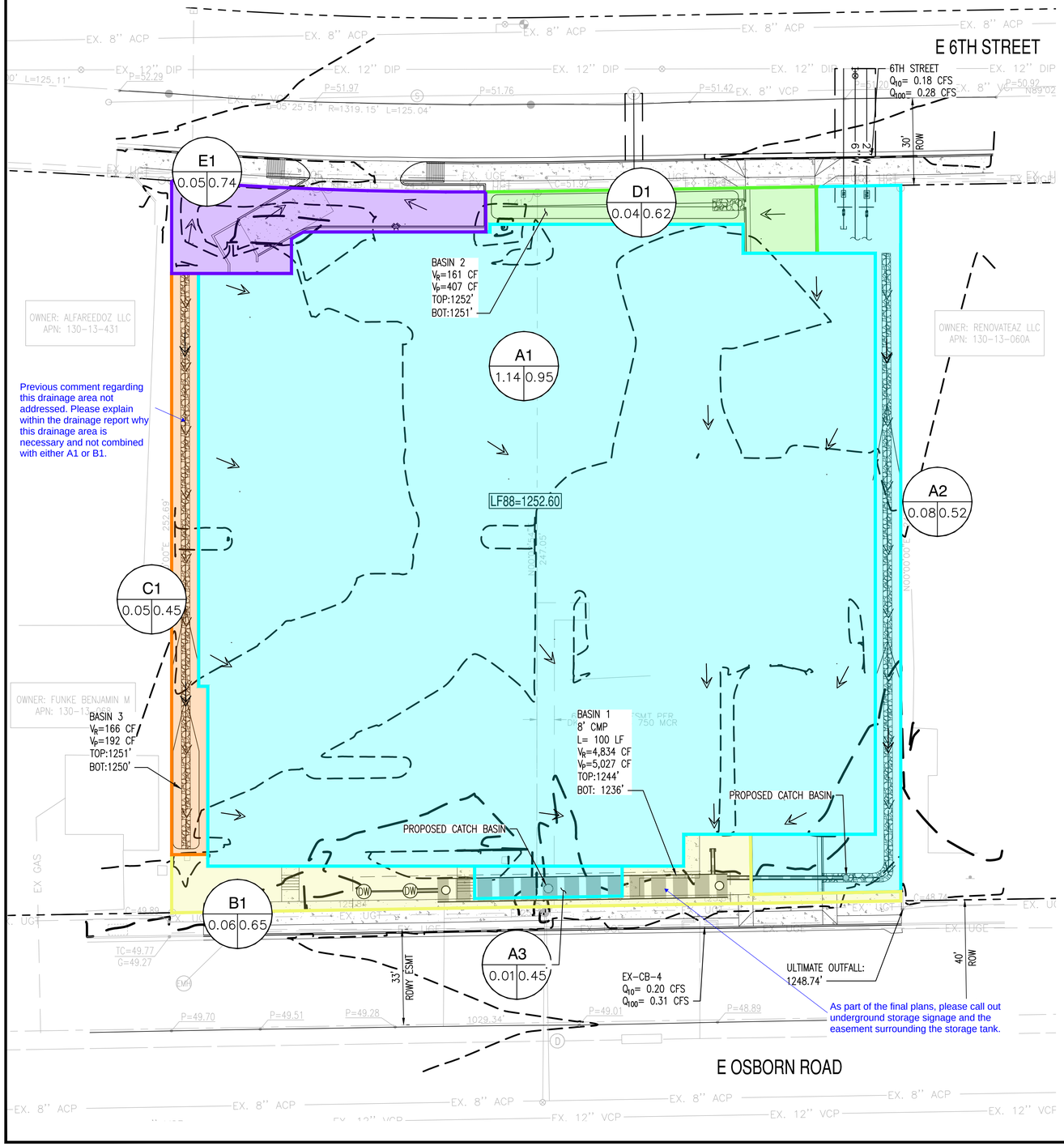
PAGE NO.: 1 OF 1
SHEET NO.: X-DAM

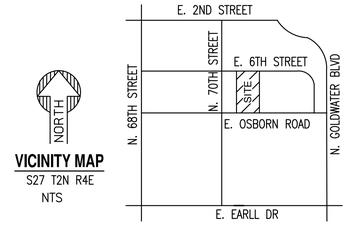
MAGNOLIA AT OSBORN

~~EXISTING~~ PROPOSED CONDITIONS DRAINAGE AREA MAP

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.





VICINITY MAP
S27 T2N R4E
NTS

DRAINAGE AREA
AREA IN ACRES — RUNOFF COEFFICIENT

DRAINAGE AREA KEY

PROPOSED LEGEND

- DRAINAGE AREAS DISCHARGING TO BASIN 1
- DRAINAGE AREAS DISCHARGING TO BASIN 2
- DRAINAGE AREAS DISCHARGING TO BASIN 3
- DRAINAGE AREAS DISCHARGING TO OSBORN ROAD
- DRAINAGE AREA DISCHARGING TO 6TH STREET
- FLOW ARROW

Proposed Retention Basin Summary

Basin (ID)		TYPE (--)	Vp (CF)	Vptotal (CF)	Vr (CF)
Basin 1	Basin 1	UG	5,027	5,027	4,834
Basin 2	Basin 2	OPEN	407	407	191
Basin 3	Basin 3	OPEN	192	192	166
Total:			**5,626**	**5,626**	**5,190**

PROPOSED SITE DISCHARGES

	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	1.43		4.70	-	7.44	-	-	5.28	8.37
DA-A1	1.14	0.95	4.70	5.09	7.44	8.05	Basin 1	5.09	8.05
DA-A2	0.08	0.52	4.70	0.20	7.44	0.31	Basin 1	0.20	0.31
DA-A3	0.01	0.45	5.70	0.03	8.44	0.05	Basin 1	0.03	0.05
DA-B1	0.06	0.65	4.70	0.20	7.44	0.31	Osborn Road	0.20	0.31
DA-C1	0.05	0.45	4.70	0.10	7.44	0.16	Basin 3	0.10	0.16
DA-D1	0.04	0.62	4.70	0.11	7.44	0.17	Basin 2	0.11	0.17
DA-E1	0.05	0.74	4.70	0.18	7.44	0.28	6th Street	0.18	0.28

NORTH
0' 20' 40' 60'
SCALE: 1" = 20'

PRELIMINARY
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LOCATION: NEC OF 70TH STREET AND OSBORN ROAD

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JOB NO.: 220205

SHEET TITLE: **PROPOSED CONDITIONS DRAINAGE AREA MAP**

PAGE NO.: 1 OF 1
SHEET NO.: **P-DAM**

EXISTING OVERALL SITE C_w				
	Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	0.99	0.44	**1.43**	0.80
EX-A1	0.00	0.03	0.03	0.45
EX-A2	0.24	0.01	0.25	0.93
EX-A3	0.00	0.01	0.01	0.45
EX-B1	0.32	0.02	0.34	0.92
EX-B2	0.00	0.03	0.03	0.45
EX-C1	0.03	0.02	0.05	0.75
EX-C2	0.39	0.08	0.47	0.86
EX-D1	0.01	0.24	0.25	0.48

PROPOSED OVERALL SITE C_w				
	Building/ Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	1.22	0.21	**1.43**	**0.88**
DA-A1	1.14	0.00	1.14	0.95
DA-A2	0.01	0.07	0.08	0.52
DA-A3	0.00	0.01	0.01	0.45
DA-B1	0.03	0.04	0.06	0.65
DA-C1	0.00	0.05	0.05	0.45
DA-D1	0.01	0.02	0.04	0.62
DA-E1	0.03	0.02	0.05	0.74

EX BASIN 1					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1250.0	234			0.00	Bottom
		1.00	510.15		
1251.0	786			510.15	**Volume Provided**

EX BASIN 2					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1250.0	28			0.00	Bottom
		1.00	124.67		
1251.0	221			124.67	**Volume Provided**

EX BASIN 3					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1248.0	40			0.00	Bottom
		1.00	224.98		
1249.0	410			**224.98**	

EX BASIN 4					
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME	COMMENT
(FT)	(SF)	(FT)	(CF)	(CF)	
1251.0	2,851			0.00	Bottom
		0.50	3,434.94		
1251.5	10,889			**3,434.94**	

6th Street Gutter

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.00380 ft/ft
Discharge	18.85 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.05800 ft/ft
Road Cross Slope	0.01700 ft/ft
Roughness Coefficient	0.013

Results	
Spread	26.5 ft
Flow Area	6.0 ft²
Depth	6.1 in
Gutter Depression	0.7 in
Velocity	3.14 ft/s

APPENDIX III

PRELIMINARY GRADING & DRIANAGE PLAN

MAGNOLIA AT OSBORN

PRELIMINARY GRADING & DRAINAGE PLAN

NEC OF 70TH STREET & OSBORN ROAD

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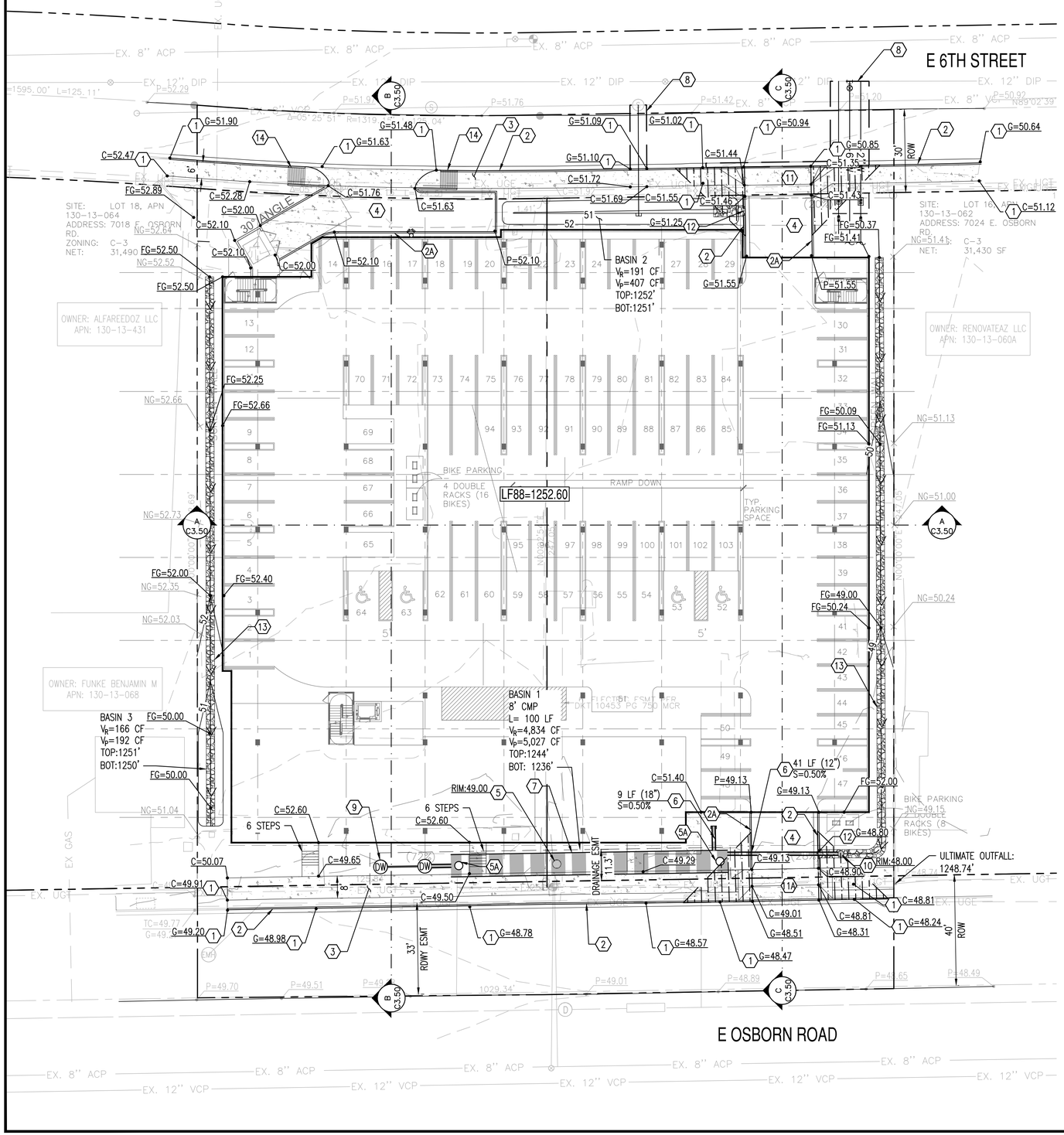
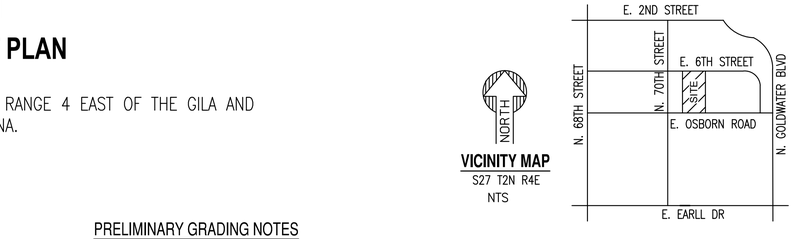
CIVIL ENGINEER
SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105
PHOENIX, ARIZONA 85016
PHONE: 480-588-7226
ATTN: ALI FAKIH
EMAIL: ALI@AZSEG.COM

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 GRADING NOTES

1. MATCH EXISTING GRADE.
2. 6" VERTICAL CURB AND GUTTER.
2A. 6" VERTICAL CURB.
3. CONSTRUCT CONCRETE SIDEWALK. WIDTH PER PLAN.
4. LIGHT DUTY PAVEMENT.
5. INSTALL 30" CMP RISER WITH STANDARD H-20 TRAFFIC GRATED LID.
5A. INSTALL 30" CMP RISER WITH STANDARD H-20 TRAFFIC SOLID LID.
6. INSTALL HDPE DOUBLE WALL PIPE. LENGTH, SIZE AND SLOPE PER PLAN.
7. INSTALL UNDERGROUND STORMWATER STORAGE SYSTEM.
8. SAWCUT EXISTING PAVEMENT TO PROVIDE STRAIGHT VERTICAL EDGES, FREE FROM IRREGULARITIES. MIN 2' FROM GUTTER.
9. INSTALL MAXWELL PLUS DRYWELL.
10. INSTALL 24" NYLOPLAST DRAIN BASIN WITH STANDARD GRATED LID.
11. DRIVEWAY ENTRANCE PER C.O.S. STD. DET. 2251-1.
11A. DRIVEWAY ENTRANCE PER C.O.S. STD. DET. 2251-2.
12. INSTALL RIP-RAP CURB OPENING.
13. TYPICAL GROUTED RIP-RAP DITCH.
14. CONSTRUCT ACCESIBLE RAMP.

EXISTING LEGEND:

- EX. MAJOR CONTOURS
- EX. MINOR CONTOURS
- EX. SPOT ELEVATION
- EASEMENT LINE AS NOTED
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER VALVE
- FIRE HYDRANT
- STORM DRAIN LINE
- STORM CATCH BASIN
- STORM MANHOLE
- GAS LINE
- FENCE
- SIGN
- STREET LIGHT
- TREE
- ROAD CENTERLINE

PROPOSED LEGEND:

- G=XX.XX — GUTTER ELEVATION, TC = G+0.5'
- P=XX.XX — PAVEMENT ELEVATION
- C=XX.XX — CONCRETE ELEVATION
- PROPERTY LINE
- CURB AND GUTTER
- RL — RIDGELINE
- FLOW ARROW
- STORM PIPE
- LIGHT DUTY PAVEMENT
- RIP-RAP

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.

NORTH

SCALE: 1" = 20'

0' 20' 40' 60'

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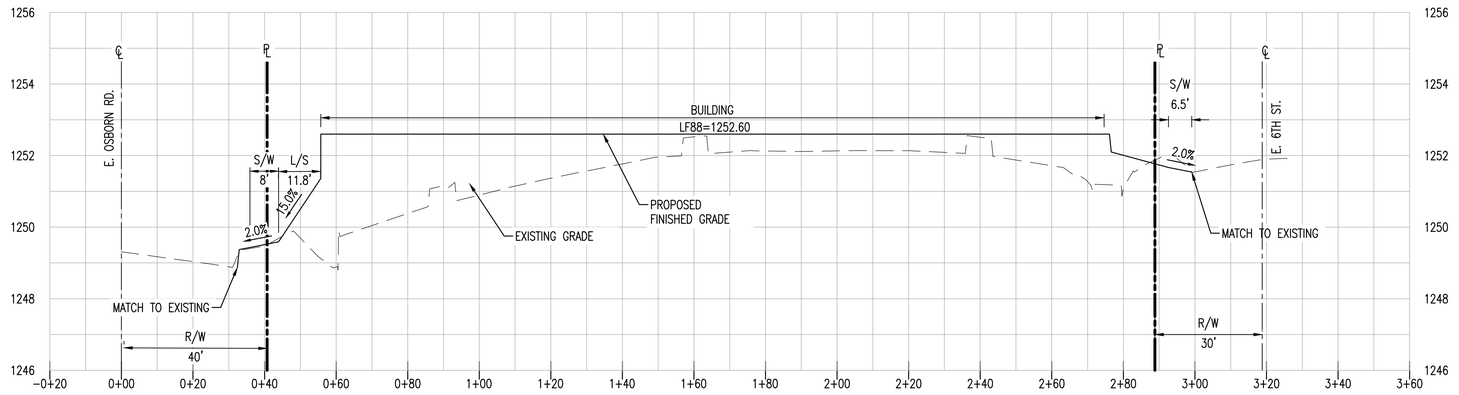
JOB NO.: 220205

SHEET TITLE: **PRELIMINARY GRADING & DRAINAGE PLAN**

PAGE NO.: 1 OF 3

SHEET NO.: **C3.10**

SECTION A-A C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



SECTION B-B C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

SECTION C-C C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

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SHEET TITLE:
PRELIMINARY GRADING CROSS SECTIONS

PAGE NO.:	SHEET NO.:
2 OF 3	**C3.50**