Larson Engineering, Inc.
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Scottsdale, AZ 85251
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Larson

Hayden and McDowell
Drainage Report
Case No. 94-PA-2021

8101 E McDowell Road
Scottsdale, AZ 85257

PREPARED BY:

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July 30, 2021

Prepared by: MH

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Introduction

The proposed Hayden and McDowell Commercial (The Project) is located at 8101 E McDowell Road in Scottsdale, Arizona. The parcel number for this project is 131-09-002N. The Project consists of adding two new buildings, curbing, refuse container and landscaping. The buildings are 2,400 square feet and 4,000 square feet in size. The Project is located just east of the intersection of Hayden Road at McDowell Road. See Location Map below:

The Project will not alter the existing zoning, which is C-3. The surrounding area at his locations is commercial businesses and consists of commercial services and offices. The new buildings will remain consistent with the City of Scottsdale's general plan.

Design Documentation

Drainage Design Flows are based on criteria provided in the City of Scottsdale's Design Standards & Policies Manual Chapter 4 dated 2009 and the Flood Control District of Maricopa County Volume I & II. Specifically, the criteria used are as follows:

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This project will utilize the new access aisles and parking to convey stormwater runoff. The site currently has no retention and directs to the west and south. The site has not been previously developed. This project proposes to capture the 100-year 2-hour storm event

The elevations for this design are based on the survey performed by Synergy Geomatics performed on May 2021. The benchmark used is the City of Scottsdale Point Number 5022 Brass Cap in handhole at elevation 1221.29.

Existing Conditions

The Project will not alter the existing zoning, which is C-3. The existing lot currently has no structures on site and consist of weeds and dirt.

Currently, the site has no retention provided. All runoff is directed to west and south. The site slopes at less than 0.5%.

Offsite flows do not affect this property. McDowell Road conveys stormwater to the City's System and serves as the property's outfall. The adjacent sites have retention provided on site.

FEMA Information

According to the FEMA Flood Insurance Rate Map (FIRM), panel number 04013C2235M Dated September 18, 2020 the project site is within a Zone "X". A Zone "X" is described as follows:

> "Areas of 0.2% annual chance of flood; areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."

Proposed Conditions

The proposed condition includes a 2,400 square foot building and a 4,000 square foot building, parking lot, curb stops, vertical curb, a refuse enclosure and landscaping. The site is proposed to have moderate slopes of around 0.5-3%. Stormwater will be conveyed away from the building into the underground retention areas

The building finish floors has been designed to protected during the 100-year peak runoff event.

Calculations

The Project has been designed to provide positive drainage away from the building. The project will convey runoff into the parking lots where adequate retention will be provided in the form of underground retention units. The grading plan shows the 2 proposed underground retention units and volume provided. The appendix includes the calculations for the required retention.

The proposed site is broken down by open space and a weighted C value is calculated and included. The grading plan includes callouts for the proposed landscaping and square footage and a calculations sheet for the proposed C factor. Utilizing the City of Scottsdale's Design

Standards & Policies Manual Chapter 4 Figure 4.1-4 yields the C values utilized for the calculations. The Depth of precipitation was gathered from the City's Isopluvial Map in the Design Standards & Policies Manual Appendix 4-1D, which has been included in the appendix of this report.

Summary

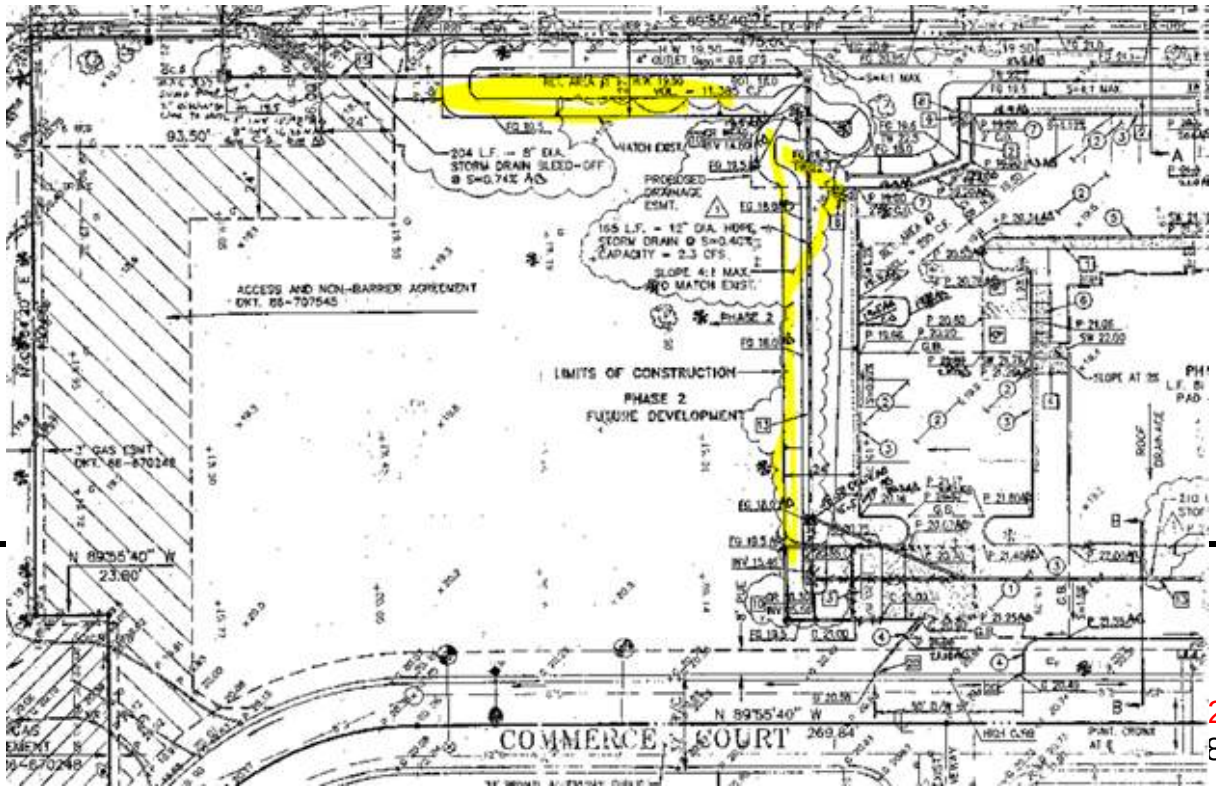
Based on the results of the Project Drainage design, the following can be concluded:

- The Project resides in a FEMA Designated Zone X per the FIRM panel number 04013C2235M Dated September 18, 2020
- The development retention will be provided in underground retention
- The Finish Floors has been designed to protect the building from flooding

This has been added.

Provide a separate section for stormwater storage. The site has existing stormwater storage basins and easements within the site boundary from the Republic West development to the east. See below. The project will need to preserve the volume within the site and provide a recorded agreement for the shared storage (or relocate the volume with the Republic West site. The development will also need to provide storage for the 100-year, 2-hour rainfall event to mitigate increases in site runoff which is in addition to the Republic West storage volume. The City will review the storage element of the project closely on 2nd submittal if provided.

The report needs to acknowledge the use of underground stormwater storage basins and City policy relating to them. See the DSPM for the policy.



GRADING PLAN

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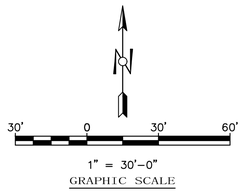
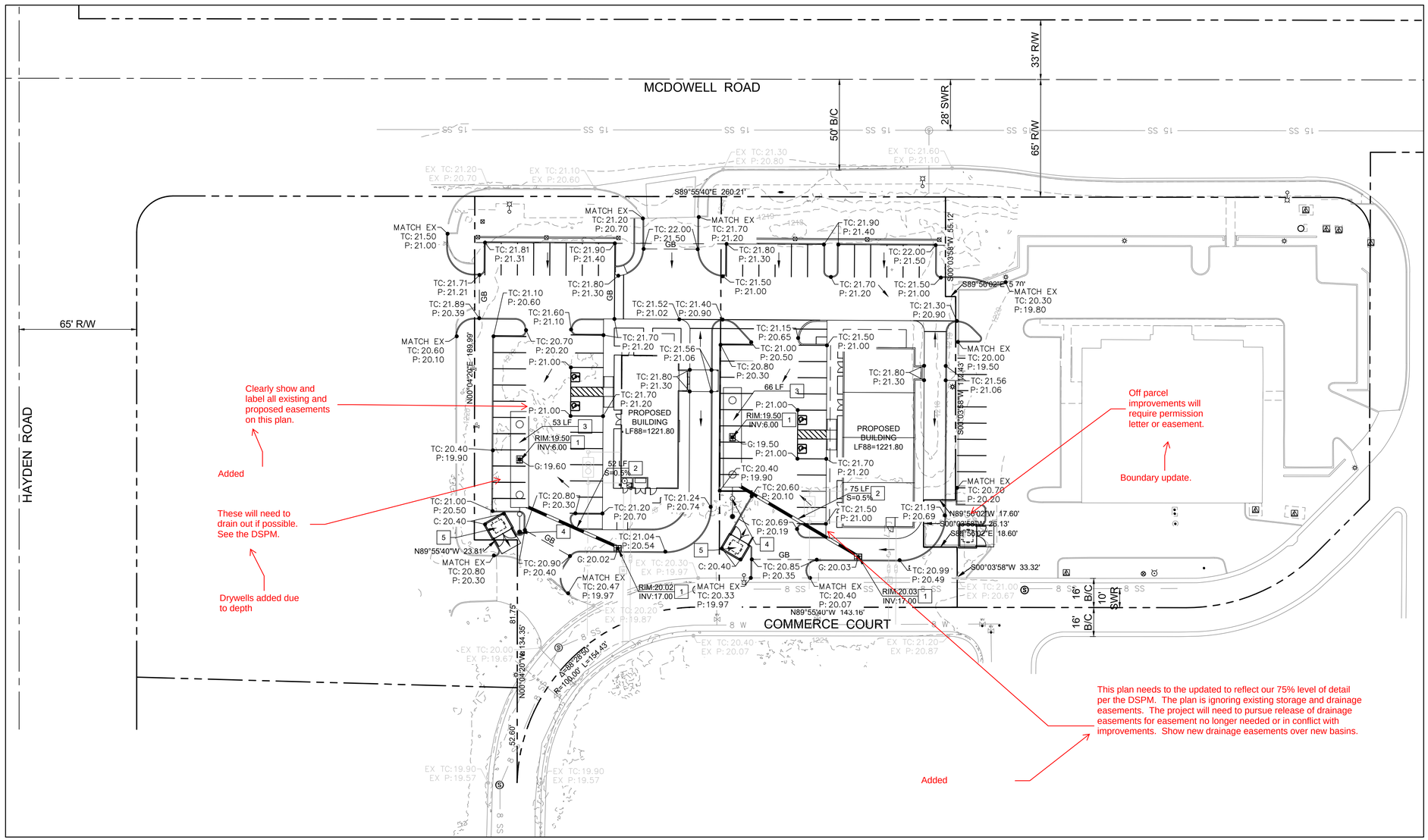
32-DR-2021
8/12/2021

PRELIMINARY GRADING & DRAINAGE PLAN FOR MCDOWELL - HAYDEN RETAIL

8101 EAST MCDOWELL ROAD, SCOTTSDALE, AZ 85257

A PORTION OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 1 NORTH, RANGE 4 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA





GRADING AND STORM DRAIN CONSTRUCTION NOTES

1. INSTALL CATCH BASIN PER MAG STD DTL 535
2. INSTALL 18" HDPE, LENGTH AND SLOPE PER PLAN
3. INSTALL 10' Ø RETENTION PIPE WITH ACCESS RISERS PER MAG STD DTL 535
4. INSTALL DRYWELL PER MANUFACTURES SPECIFICATIONS
5. INSTALL REFUSE ENCLOSURE PER ARCHITECTURAL PLANS

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

IRKAA
ARCHITECTS INC
2231 EAST THOMAS ROAD, PHOENIX, ARIZONA 85016
602-955-3900
RKAA.com

Registered Professional Engineer (Civil)
CERTIFICATE NO.
46279
MICHAEL HREHA
Date Signed 07-15-2021
ARIZONA, U.S.A.
EXPIRES 06/30/2022

NOTICE OF ALTERNATE BILLING OR PAYMENT CYCLE: THIS CONTRACT MAY ALLOW THE OWNER TO REQUIRE THE SUBMISSION OF BILLINGS OR ESTIMATES IN BILLING CYCLES OTHER THAN THIRTY DAYS. THIS CONTRACT MAY ALSO ALLOW THE OWNER TO REQUIRE ON SEMPI ALTERNATIVE SCHEDULE AFTER CERTIFICATION AND APPROVAL OF BILLING AND ESTIMATES. A WRITTEN DESCRIPTION OF SUCH OTHER BILLING CYCLE APPLICABLE TO THE PROJECT IS AVAILABLE FROM OWNER OR DESIGNATED AGENT.

MCDOWELL - HAYDEN RETAIL
8101 E MCDOWELL ROAD, SCOTTSDALE AZ 85257
E OF SEC OF MCDOWELL RD AND HAYDEN RD
DATE: 07-15-2021 (PRELIMINARY)

PRELIMINARY GRADING & DRAINAGE PLAN

design by: --
drawn by: --
checked by: --

GD1
project: **18107.00**

32-DR-2021
8/12/2021

CALCULATIONS

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McDowell and Hayden
RETENTION SUMMARY

DRAINAGE AREA	AREA (SF)	R_R (CF)	Underground Diameter(FT)	Underground Length (FT)	R_P (CF)		Basin ID	D (FT)	A_T (SF)	A_B (SF)	R_P (CF)	$R_P > R_R$?	EXCESS (CF)	EXCESS (%)	DRYWELLS REQ.
DA West	27245	4,090	10	53	4,162							OK	72	2%	1
							Total				4,162				
DA East	34130	5,124	10	66	5,183							OK	60	1%	
							Total				5,183				1

Retention Required (R_R) = C x (P/12) x A x1.1

Where:

C = Weighted runoff coefficient = 0.84
P = 100-year 2-hour rainfall depth = 2.15 inches
A = Contributing Area (SF)

Retention Provided (R_P) = [(A_T + A_B) / 2] x D

Where:

A_T = Basin Top Area (SF)
A_B = Basin Bottom Area (SF)
D = Basin Depth (FT)

Drywells Required = (R_R / Q) / (60*60*36)*

Where:

R_R = Retention Required (actual 100-year, 2 hour retention volume)
Q = Percolation rate per drywell = 0.1 cfs
** See retention basin dryup sheet for drywell calculations

See prior comments on storage and update. Enlarge text or provide in landscape. Text is too small.

ok

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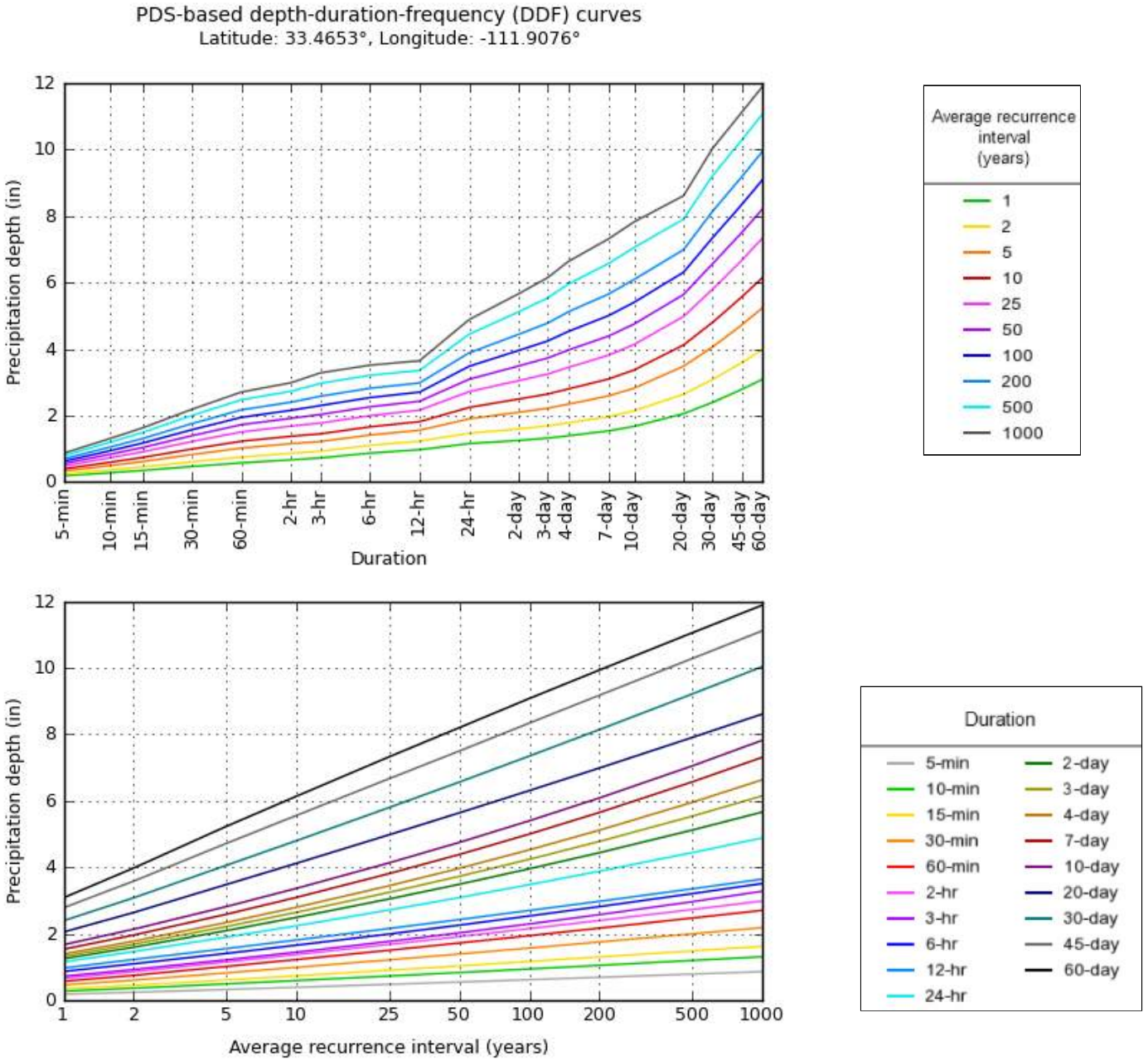

NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Jul 29 19:35:40 2021

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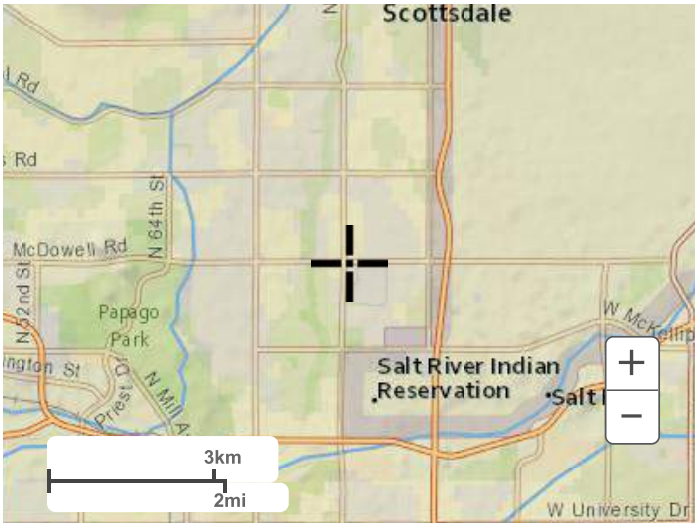
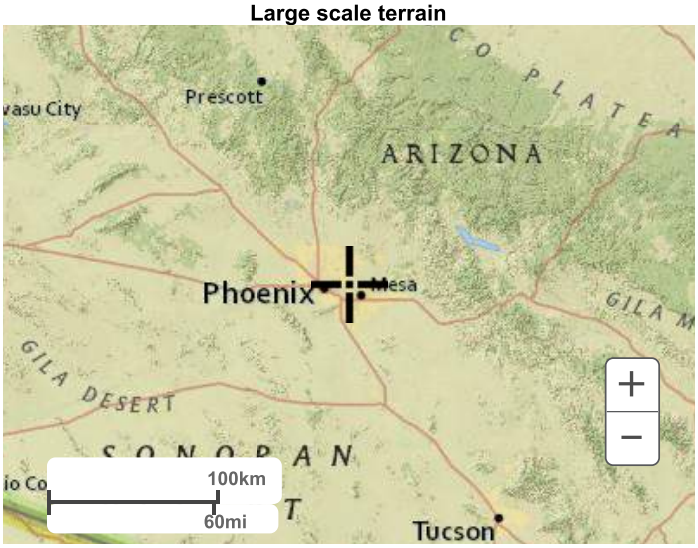
Maps & aerials

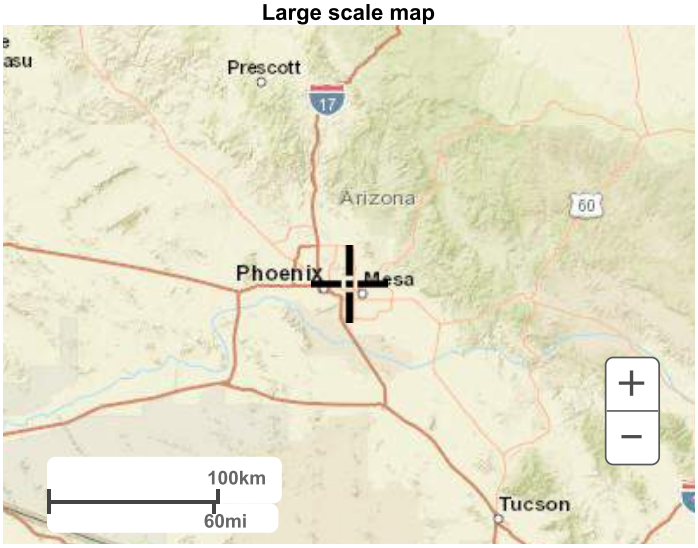
Small scale terrain



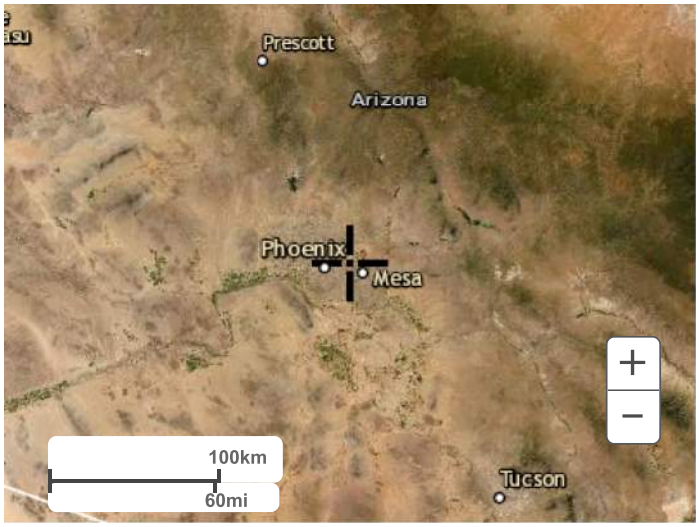
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

FEMA FIRM

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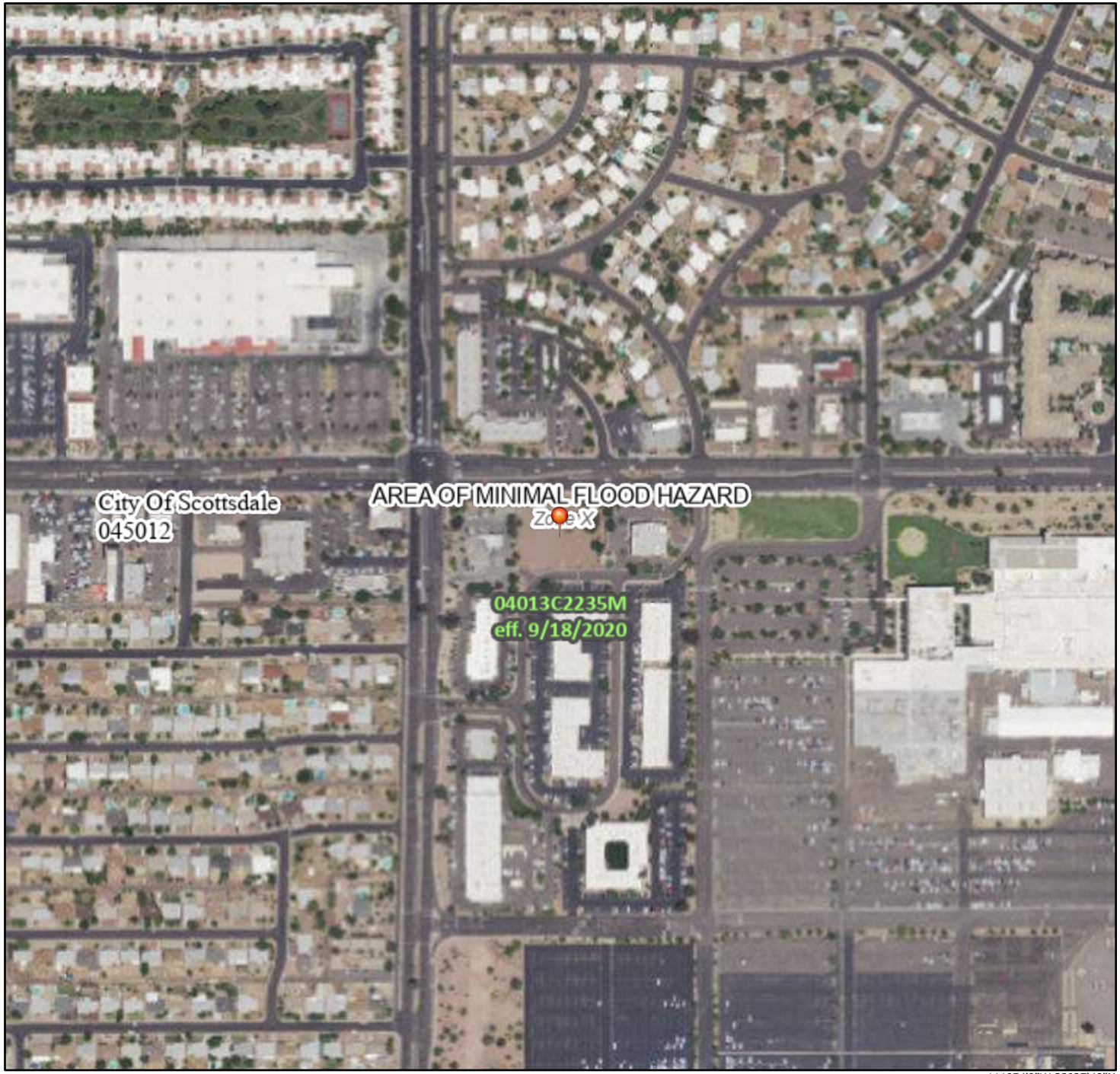
National Flood Hazard Layer FIRMette

FEMA

111°54'46"W 33°28'10"N



111°54'9"W 33°27'40"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

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*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/30/2021 at 9:37 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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