PRELIMINARY DRAINAGE REPORT
FOR
SKYPORT HANGARS

APN: 215-56-114A

Date: 8/1/24

Location:
7600 E. Redfield Rd.,
Scottsdale, AZ

Prepared for:
Regehr Air Two
Attn: Jeff LaFrance
3335 E. Indian School Rd, #100
Phoenix, AZ 85018

Engineer:

SWS Engineering, Inc.
4001 N. 3rd Street, Suite 165
Phoenix, AZ 85012
602-848-0249
PN: 24-162A

Submittal Stage: Design Review

Date	Comments
04-19-24	Original
06-19-24	DRC Rev 1
08-01-24	DRC Rev 2

Plan # _____

Case # 7-DR-2024

Q-S # _____

X Accepted

____ Corrections

M.R. 08/21/2024
Reviewed By Date

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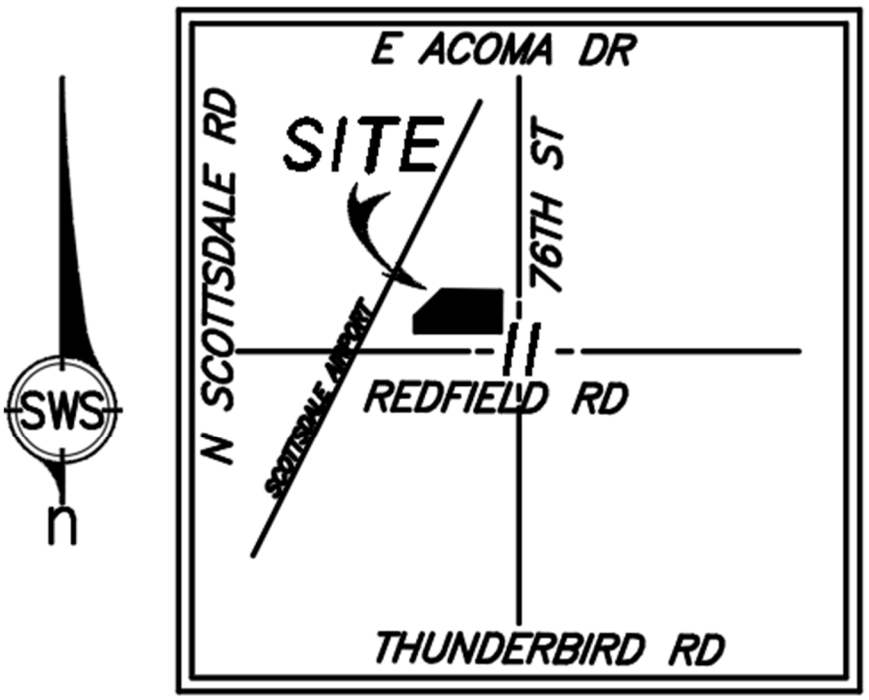
APPENDICES

1.0 INTRODUCTION

The Skyport at Redfield Hangars Project (Project) is being developed by West Stone Group of Companies and architecturally design by Ware Malcomb and is located at the northwest corner of the intersection of N. 76th Place and E. Redfield Rd. within the Scottsdale Airpark in Scottsdale, Arizona. The purpose of this report is to show that the proposed development will be designed to meet the City of Scottsdale's (City) design standards to provide the supporting documentation required for the Client to acquire the pertinent permits to construct the Project.

The site is further described as a portion of the NW ¼ of Section 11, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian within the Thunderbird Industrial Park No. 4 subdivision. Refer to the Vicinity Map below.



VICINITY MAP

NOT TO SCALE

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The existing site is a 3.69-acre parcel of land and consists of an existing developed office park with fire buildings. The Project will consist of a redevelopment of the majority of the parcels total area, utilizing as much of the existing site infrastructure as possible including one existing driveway and existing water/sewer taps/loops where possible. All existing facilities will be confirmed via City of Scottsdale records and site inspection. The Project will consist of two buildings which will contain four private hangars and four attached offices.

The Site is identified on a Flood Insurance Rate Map (FIRM) panel number 04013C1760L, Maricopa County, effective October 16, 2013. The Site is located within a Zone "X" designation. This is described as, "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." A copy of for the FIRM Map is in Appendix A at the back of this report.

3.0 OFF-SITE DRAINAGE

The off-site drainage associated with this project is not anticipated to affect the site as the surrounding areas are developed and it is assumed per City of Scottsdale drainage criteria that each surrounding lot is self-retained for the 100-year, 2-hour storm event. Flows in excess of the design storm will be conveyed overland to the historical low outfall for the site and the finished floors are designed with sufficient free-board.

City Staff has noted that the DRAFT East Shea Corridor Area Drainage Master Study (ESC-ADMS), shows that the eastern edge of the project site may be subject to offsite flows. Based on field inspection it does not appear that drainage should find its way onsite. However, further analysis of depth of flow at the curb line will be evaluated during the final design with the potential of replacing the existing driveway to help maintain the roadway flows to the curb line.

4.0 PROPOSED ON-SITE DRAINAGE AND IMPROVEMENTS

The proposed project will be designed to self-retain the 100-year, 2-hour storm event onsite through the utilization of existing underground retention, minor basins may be used for nuisance flows. The retention for this project was analyzed using the Rational Method. Point precipitation frequency estimates were derived from NOAA Atlas 14 for the design storm event. The rainfall depth for the design storm is 2.23 in/hour. All retention basins and underground storage will be drained within 36-hours through drywells and natural percolation per City of Scottsdale criteria.

The extreme low outfall for this project is located southwest corner of the site at an elevation of approximately 1437.00. The finished floor of the lowest building is at an elevation of 1442.00 and will provide sufficient freeboard and protection from a storm event in excess of the 100-year storm.

5.0 HYDROLOGY

The hydrology for this Project was analyzed using the Rational Method. Point precipitation frequency estimates were derived from NOAA Atlas 14 using a 5-minute time of concentration. The supporting

website documentation has been provided in Appendix C of this report. The resultant 100-year, 5-minute intensity are 7.57 in/hour. The runoff coefficient used for this Project is 0.95 for pavement.

6.0 HYDRAULICS

Drainage flows will be determined by their respective contributing tributary areas. These areas will be broken down into sub-areas that will be used for determining peak flows to analyze capacity of each drainage structure during final design. The hydraulics for this Project will be calculated for the final drainage report using Hydraulic Toolbox, version 4.2. The summary of peak discharges will be summarized within the final drainage report, as well as depicted within an On-site Watershed Map.

Catch basins/inlets will be sized based on the contributing sub drainage area flows and a 50% clogging factor was applied for inflows to account for debris.

Storm drains will be sized based on the contributing sub drainage area flows with a capacity no greater that d/D of 75%.

Supporting hydraulic calculations will be provided with the final drainage report.

7.0 STORMWATER RETENTION REQUIREMENTS

The onsite retention requirements for this Project are based on the 100-year, 2-hour storm event, and the 100-year peak flows will be conveyed through the site as previously described. Retention volume requirements for the development are calculated as follows:

Skyport at Redfield Hangers

SWS JOB:	24-162A
DATE:	18-Jun-24
PREPARED BY:	AV
CHECKED BY:	AM

RETENTION CALCULATIONS

METHOD	[RATIONAL - Vr=D/12*C*A]
C=	0.95
D=	2.23
A= Area, SF	[AREA]

DRAINAGE AREA I.D.	AREA (Ac)	AREA (sf)	VOLUME REQUIRED (cf)	VOLUME PROVIDED (cf)	EXCESS/ SHORT (cf)	SHORTAGE TO DA
DA1	**1.62**	70,562	**12,457**	12,959	**502**	N/A
DA2	**1.64**	71,432	**12,611**	12,959	**348**	N/A
DA2	**0.61**	26,614	**4,698**	5,105	**407**	N/A
Total	**3.87**	**168,608**	**29,766**	**31,023**	**1,257**	

PROPOSED UNDERGROUND RETENTION CALCS 1 LF OF 10' DIAM. CMP UG TANK = 78.54 CF		
TANK ID	LENGTH (LF)	VOLUME PROVIDED (CF)
UG 1	165	12,959
UG 2	165	12,959
UG 3	65	5,105
	TOTAL:	31,023

PROPOSED UNDERGROUND DRY-UP CALCS 0.1 CFS Assumed Infiltration Rate			
TANK ID	VOLMUME (CF)	HOURS TO DRAIN 36 HOUR MAX	DRYWELLS NEEDED
UG 1	12959	36	1
UG 2	12959	36	1
UG 3	5105	14	1
		TOTAL:	3

0.1 CFS per drywell*(60 seconds)*(60 mins)*(36 hours)=12,960 cf assumed infiltration rate.

The stormwater retention required for the ultimate condition was evaluated and considered to verify there will be adequate space on the site to accommodate, and to consider the earthwork volumes necessary for construction purposes. The retention basins and underground retention systems are shown on the Conceptual Grading and Drainage Plans in Appendix D of this report.

During and after large rain events, the retention basins along with the inlet(s) and outlet(s) will need to be inspected and maintained to remain clear of any debris. To control sedimentation transport during construction, Stormwater Management Plans will be provided to accompany the Grading and Drainage Plans.

The volume provided by the underground retention systems will be dewatered by drywells. It is assumed that the drywells will dewater the underground pipe/basin volume at a design rate of 0.10 cfs. Once one drywell is installed in each retention area and underground retention system it will be flow tested using multiple fire hydrant flows to calculate the actual infiltration rates. The actual number of drywells will be adjusted based on this testing (accounting for a 50% clogging factor).

8.0 ADEQ STORM WATER POLLUTION PROVENTION PLAN

Due to the disturbance of the site being 152,509 SF (approx. 3.5 acres), the final design will include required Arizona Department of Environmental Quality Storm Water Pollution Prevention Plan which will provide guidance to the contractor on how to protect stormwater runoff from effecting areas outside of the construction area. This plan will include a plan sheet showing placement of temporary facilities to be maintained throughout the duration of the project. Items to be shown on the plan will include silt fencing, storm inlet protection interior to the site as well as localized offsite storm drains, concrete washout areas, construction entrance, and protected material storage.

The selected contractor will furnish information to submit a Notice of Intent (NOI) for the respective Arizona Pollutant Discharge Elimination System (AZPDES) for stormwater. The contractor will be responsible for maintaining the SWPPP throughout the duration of construction.

9.0 CONCLUSIONS

The proposed Skyport at Redfield Hanger project will adhere to the City of Scottsdale and Maricopa County onsite drainage criteria to retain the 100-year, 2-hour storm onsite and the underground storage and above ground retention basins will be dewatered within the 36-hour time requirement via drywells and natural infiltration. 100-year peak flows will be conveyed through the site and discharged at the historical low outfall for the site. Offsite drainage flows are not anticipated at this time. The ultimate site low outfall at the southwest corner of the property will discharge flows above the 100-year storm event based on historical drainage patterns.

9.0 REFERENCES

City of Scottsdale Drainage Design Policies and Standards Manual, Version 2021

Uniform Details for Public Works Construction, by the M.A.G., 2021 Revisions

NOAA Atlas 14 Point Precipitation Frequency Estimates, obtained September 3, 2022

Uniform Standard Specifications for Public Works Construction, by the M.A.G., Version 2021

FEMA Flood Map Online Service Center:

Flood Insurance Rate Map (FIRM) panel number 04013C1760L, Maricopa County, effective

October 16, 2013 obtained September 3, 2022

Appendix A

FEMA FIRM Map
&
NOAA ATLAS 14 Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.6143°, Longitude: -111.9182°
Elevation: 1440 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	0.191 (0.158-0.232)	0.249 (0.209-0.303)	0.335 (0.278-0.407)	0.402 (0.333-0.487)	0.492 (0.400-0.594)	0.560 (0.451-0.671)	0.632 (0.499-0.755)	0.702 (0.545-0.837)	0.798 (0.604-0.953)	0.871 (0.646-1.04)
10-min	0.290 (0.241-0.354)	0.379 (0.318-0.462)	0.510 (0.423-0.620)	0.612 (0.506-0.741)	0.749 (0.608-0.904)	0.853 (0.686-1.02)	0.962 (0.760-1.15)	1.07 (0.830-1.27)	1.22 (0.920-1.45)	1.32 (0.984-1.58)
15-min	0.360 (0.298-0.439)	0.470 (0.394-0.573)	0.632 (0.525-0.768)	0.759 (0.628-0.919)	0.928 (0.754-1.12)	1.06 (0.851-1.26)	1.19 (0.942-1.42)	1.32 (1.03-1.58)	1.51 (1.14-1.80)	1.64 (1.22-1.96)
30-min	0.485 (0.402-0.591)	0.633 (0.531-0.771)	0.851 (0.707-1.03)	1.02 (0.845-1.24)	1.25 (1.02-1.51)	1.42 (1.14-1.70)	1.60 (1.27-1.92)	1.78 (1.39-2.13)	2.03 (1.54-2.42)	2.21 (1.64-2.64)
60-min	0.600 (0.497-0.731)	0.784 (0.657-0.954)	1.05 (0.875-1.28)	1.26 (1.05-1.53)	1.55 (1.26-1.87)	1.76 (1.42-2.11)	1.99 (1.57-2.38)	2.21 (1.72-2.63)	2.51 (1.90-3.00)	2.74 (2.03-3.27)
2-hr	0.701 (0.590-0.834)	0.908 (0.768-1.08)	1.21 (1.01-1.43)	1.44 (1.19-1.70)	1.75 (1.45-2.06)	1.98 (1.62-2.33)	2.23 (1.78-2.60)	2.48 (1.95-2.89)	2.81 (2.16-3.28)	3.07 (2.31-3.59)
3-hr	0.782 (0.660-0.958)	1.00 (0.848-1.23)	1.30 (1.10-1.60)	1.55 (1.29-1.88)	1.89 (1.55-2.28)	2.16 (1.75-2.59)	2.44 (1.94-2.92)	2.74 (2.14-3.26)	3.14 (2.38-3.75)	3.46 (2.56-4.13)
6-hr	0.944 (0.810-1.12)	1.19 (1.02-1.42)	1.52 (1.29-1.79)	1.78 (1.50-2.10)	2.14 (1.78-2.51)	2.41 (1.98-2.82)	2.70 (2.18-3.14)	3.00 (2.38-3.50)	3.40 (2.63-3.96)	3.72 (2.80-4.34)
12-hr	1.05 (0.901-1.25)	1.32 (1.13-1.57)	1.67 (1.42-1.97)	1.94 (1.64-2.28)	2.30 (1.93-2.70)	2.58 (2.14-3.02)	2.88 (2.34-3.35)	3.17 (2.55-3.69)	3.56 (2.79-4.17)	3.86 (2.98-4.55)
24-hr	1.24 (1.07-1.44)	1.56 (1.36-1.83)	2.01 (1.74-2.35)	2.36 (2.04-2.75)	2.86 (2.45-3.32)	3.25 (2.76-3.76)	3.66 (3.07-4.24)	4.08 (3.38-4.72)	4.66 (3.79-5.40)	5.13 (4.10-5.96)
2-day	1.31 (1.13-1.52)	1.67 (1.44-1.94)	2.17 (1.86-2.53)	2.57 (2.20-2.98)	3.12 (2.64-3.62)	3.55 (2.98-4.12)	4.01 (3.34-4.66)	4.48 (3.69-5.23)	5.14 (4.15-5.99)	5.66 (4.50-6.63)
3-day	1.40 (1.22-1.62)	1.79 (1.56-2.07)	2.35 (2.04-2.71)	2.80 (2.43-3.22)	3.43 (2.95-3.95)	3.94 (3.36-4.53)	4.48 (3.79-5.16)	5.04 (4.22-5.82)	5.84 (4.81-6.75)	6.48 (5.26-7.52)
4-day	1.50 (1.32-1.72)	1.92 (1.69-2.20)	2.54 (2.23-2.90)	3.04 (2.66-3.46)	3.75 (3.26-4.28)	4.32 (3.74-4.94)	4.94 (4.24-5.65)	5.60 (4.75-6.42)	6.53 (5.46-7.50)	7.29 (6.03-8.41)
7-day	1.69 (1.48-1.95)	2.16 (1.89-2.49)	2.86 (2.50-3.29)	3.43 (2.99-3.94)	4.24 (3.67-4.86)	4.90 (4.20-5.61)	5.60 (4.77-6.42)	6.34 (5.35-7.30)	7.40 (6.16-8.54)	8.26 (6.79-9.57)
10-day	1.83 (1.61-2.10)	2.34 (2.06-2.69)	3.10 (2.71-3.54)	3.71 (3.23-4.23)	4.57 (3.96-5.20)	5.26 (4.53-5.99)	6.00 (5.12-6.84)	6.78 (5.74-7.76)	7.88 (6.58-9.04)	8.77 (7.23-10.1)
20-day	2.26 (1.99-2.58)	2.92 (2.56-3.32)	3.85 (3.38-4.38)	4.56 (3.99-5.18)	5.53 (4.82-6.28)	6.27 (5.44-7.13)	7.03 (6.07-8.02)	7.81 (6.70-8.93)	8.87 (7.53-10.2)	9.69 (8.16-11.2)
30-day	2.66 (2.33-3.03)	3.42 (3.01-3.89)	4.51 (3.96-5.12)	5.34 (4.68-6.06)	6.46 (5.63-7.33)	7.33 (6.35-8.31)	8.22 (7.09-9.32)	9.12 (7.82-10.3)	10.3 (8.79-11.8)	11.3 (9.51-12.9)
45-day	3.07 (2.72-3.49)	3.96 (3.50-4.49)	5.22 (4.61-5.91)	6.16 (5.42-6.98)	7.41 (6.49-8.38)	8.35 (7.29-9.45)	9.30 (8.08-10.5)	10.3 (8.86-11.7)	11.5 (9.87-13.2)	12.5 (10.6-14.3)
60-day	3.40 (3.01-3.84)	4.39 (3.89-4.96)	5.78 (5.12-6.51)	6.79 (6.00-7.66)	8.11 (7.14-9.15)	9.10 (7.97-10.3)	10.1 (8.80-11.4)	11.1 (9.61-12.5)	12.4 (10.6-14.1)	13.3 (11.4-15.2)

[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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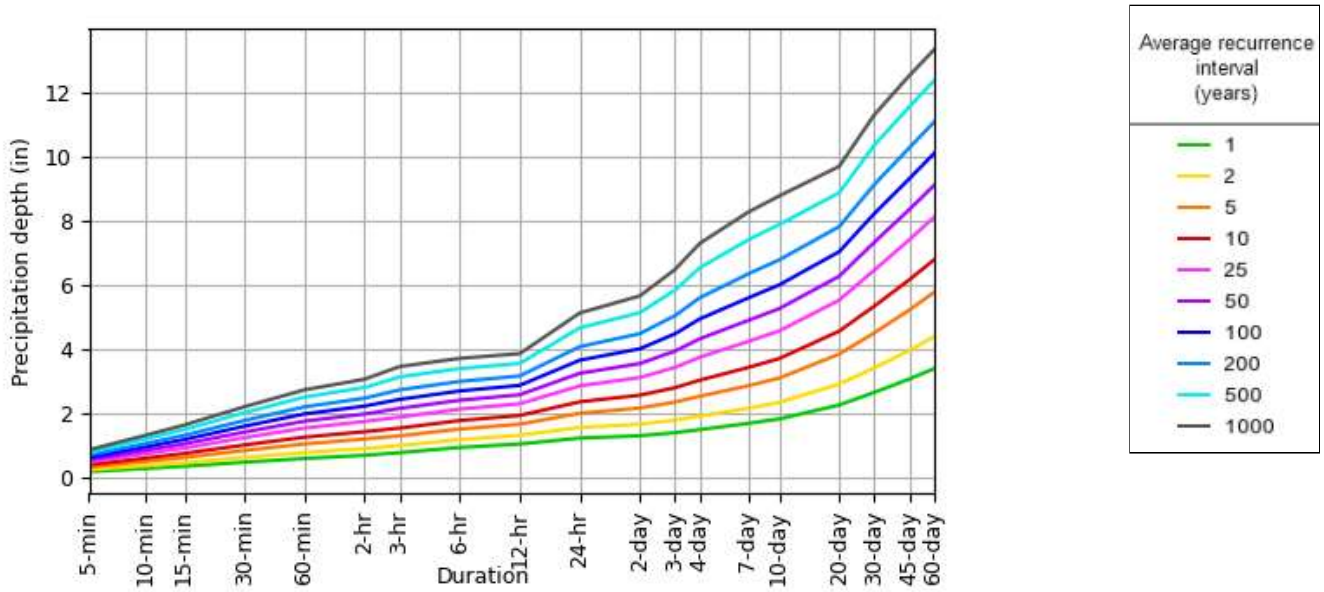
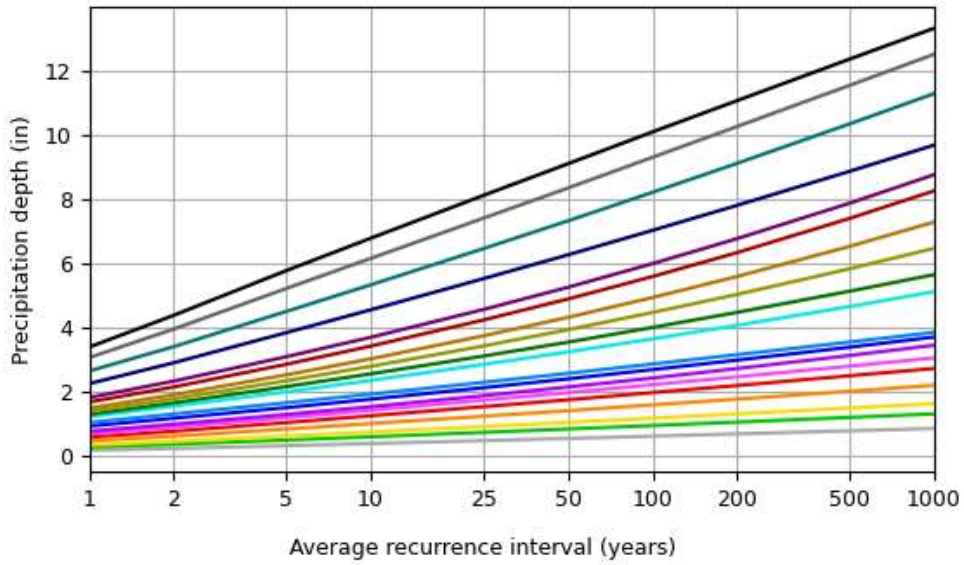
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.6143°, Longitude: -111.9182°





NOAA Atlas 14, Volume 1, Version 5

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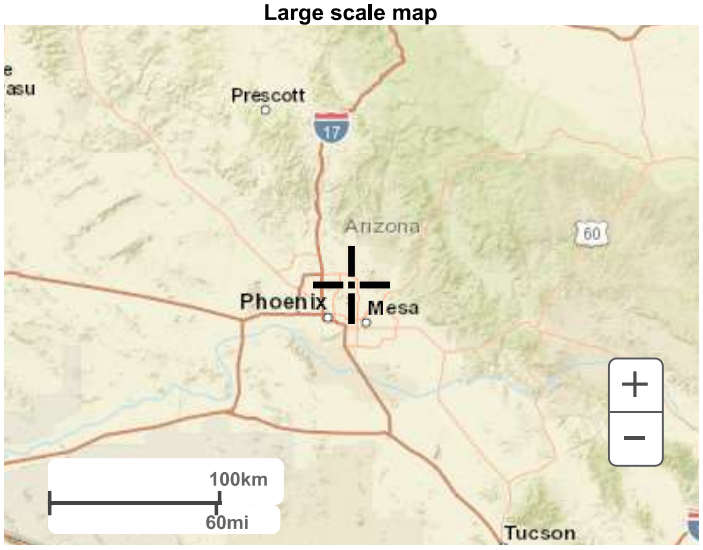
Maps & aerials

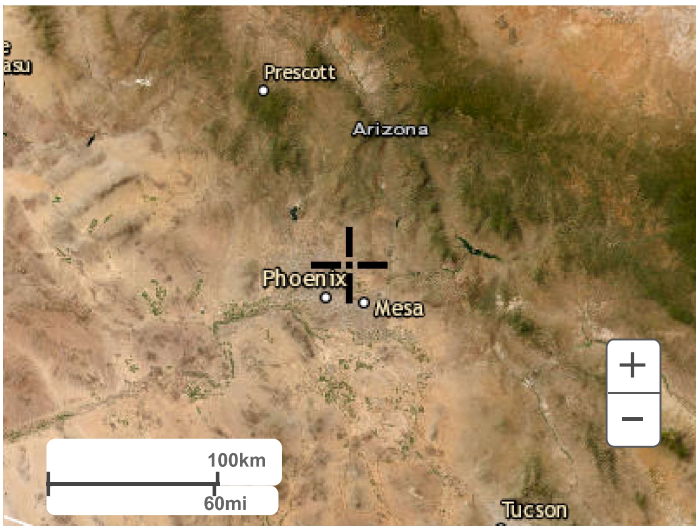
Small scale terrain

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

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.6143°, Longitude: -111.9182°
Elevation: 1440 ft**
* source: ESRI Maps
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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	**2.29** (1.90-2.78)	**2.99** (2.51-3.64)	**4.02** (3.34-4.88)	**4.82** (4.00-5.84)	**5.90** (4.80-7.13)	**6.72** (5.41-8.05)	**7.58** (5.99-9.06)	**8.42** (6.54-10.0)	**9.58** (7.25-11.4)	**10.5** (7.75-12.5)
10-min	**1.74** (1.45-2.12)	**2.27** (1.91-2.77)	**3.06** (2.54-3.72)	**3.67** (3.04-4.45)	**4.49** (3.65-5.42)	**5.12** (4.12-6.12)	**5.77** (4.56-6.89)	**6.41** (4.98-7.64)	**7.29** (5.52-8.71)	**7.95** (5.90-9.50)
15-min	**1.44** (1.19-1.76)	**1.88** (1.58-2.29)	**2.53** (2.10-3.07)	**3.04** (2.51-3.68)	**3.71** (3.02-4.48)	**4.23** (3.40-5.06)	**4.77** (3.77-5.70)	**5.30** (4.12-6.32)	**6.02** (4.56-7.20)	**6.57** (4.88-7.86)
30-min	**0.970** (0.804-1.18)	**1.27** (1.06-1.54)	**1.70** (1.41-2.07)	**2.04** (1.69-2.47)	**2.50** (2.03-3.02)	**2.85** (2.29-3.41)	**3.21** (2.54-3.84)	**3.57** (2.77-4.25)	**4.06** (3.07-4.84)	**4.42** (3.28-5.29)
60-min	**0.600** (0.497-0.731)	**0.784** (0.657-0.954)	**1.05** (0.875-1.28)	**1.26** (1.05-1.53)	**1.55** (1.26-1.87)	**1.76** (1.42-2.11)	**1.99** (1.57-2.38)	**2.21** (1.72-2.63)	**2.51** (1.90-3.00)	**2.74** (2.03-3.27)
2-hr	**0.350** (0.295-0.417)	**0.454** (0.384-0.540)	**0.603** (0.507-0.713)	**0.717** (0.596-0.848)	**0.876** (0.723-1.03)	**0.992** (0.808-1.16)	**1.12** (0.891-1.30)	**1.24** (0.975-1.45)	**1.40** (1.08-1.64)	**1.53** (1.15-1.80)
3-hr	**0.260** (0.219-0.319)	**0.333** (0.282-0.410)	**0.434** (0.366-0.532)	**0.515** (0.428-0.625)	**0.628** (0.515-0.758)	**0.719** (0.582-0.861)	**0.812** (0.645-0.972)	**0.911** (0.711-1.09)	**1.04** (0.791-1.25)	**1.15** (0.853-1.38)
6-hr	**0.157** (0.135-0.187)	**0.198** (0.170-0.236)	**0.253** (0.215-0.299)	**0.297** (0.250-0.349)	**0.356** (0.297-0.418)	**0.402** (0.330-0.471)	**0.451** (0.364-0.524)	**0.500** (0.397-0.584)	**0.567** (0.438-0.660)	**0.620** (0.468-0.723)
12-hr	**0.087** (0.074-0.103)	**0.109** (0.093-0.130)	**0.138** (0.118-0.163)	**0.160** (0.136-0.189)	**0.191** (0.160-0.224)	**0.214** (0.177-0.250)	**0.238** (0.194-0.278)	**0.262** (0.211-0.306)	**0.295** (0.231-0.345)	**0.320** (0.246-0.377)
24-hr	**0.051** (0.044-0.060)	**0.065** (0.056-0.076)	**0.083** (0.072-0.097)	**0.098** (0.085-0.114)	**0.119** (0.102-0.138)	**0.135** (0.114-0.156)	**0.152** (0.128-0.176)	**0.169** (0.140-0.196)	**0.194** (0.158-0.225)	**0.213** (0.171-0.248)
2-day	**0.027** (0.023-0.031)	**0.034** (0.029-0.040)	**0.045** (0.038-0.052)	**0.053** (0.045-0.062)	**0.064** (0.055-0.075)	**0.074** (0.062-0.085)	**0.083** (0.069-0.097)	**0.093** (0.076-0.108)	**0.107** (0.086-0.124)	**0.117** (0.093-0.138)
3-day	**0.019** (0.017-0.022)	**0.024** (0.021-0.028)	**0.032** (0.028-0.037)	**0.038** (0.033-0.044)	**0.047** (0.041-0.054)	**0.054** (0.046-0.062)	**0.062** (0.052-0.071)	**0.070** (0.058-0.080)	**0.081** (0.066-0.093)	**0.089** (0.073-0.104)
4-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.022)	**0.026** (0.023-0.030)	**0.031** (0.027-0.036)	**0.039** (0.033-0.044)	**0.045** (0.038-0.051)	**0.051** (0.044-0.058)	**0.058** (0.049-0.066)	**0.068** (0.056-0.078)	**0.075** (0.062-0.087)
7-day	**0.010** (0.008-0.011)	**0.012** (0.011-0.014)	**0.017** (0.014-0.019)	**0.020** (0.017-0.023)	**0.025** (0.021-0.028)	**0.029** (0.025-0.033)	**0.033** (0.028-0.038)	**0.037** (0.031-0.043)	**0.044** (0.036-0.050)	**0.049** (0.040-0.056)
10-day	**0.007** (0.006-0.008)	**0.009** (0.008-0.011)	**0.012** (0.011-0.014)	**0.015** (0.013-0.017)	**0.019** (0.016-0.021)	**0.021** (0.018-0.024)	**0.024** (0.021-0.028)	**0.028** (0.023-0.032)	**0.032** (0.027-0.037)	**0.036** (0.030-0.042)
20-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.011** (0.010-0.013)	**0.013** (0.011-0.014)	**0.014** (0.012-0.016)	**0.016** (0.013-0.018)	**0.018** (0.015-0.021)	**0.020** (0.016-0.023)
30-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.010)	**0.010** (0.008-0.011)	**0.011** (0.009-0.012)	**0.012** (0.010-0.014)	**0.014** (0.012-0.016)	**0.015** (0.013-0.017)
45-day	**0.002** (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** (0.009-0.012)	**0.011** (0.009-0.013)
60-day	**0.002** (0.002-0.002)	**0.003** (0.002-0.003)	**0.004** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.004-0.006)	**0.006** (0.005-0.007)	**0.007** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.007-0.010)

[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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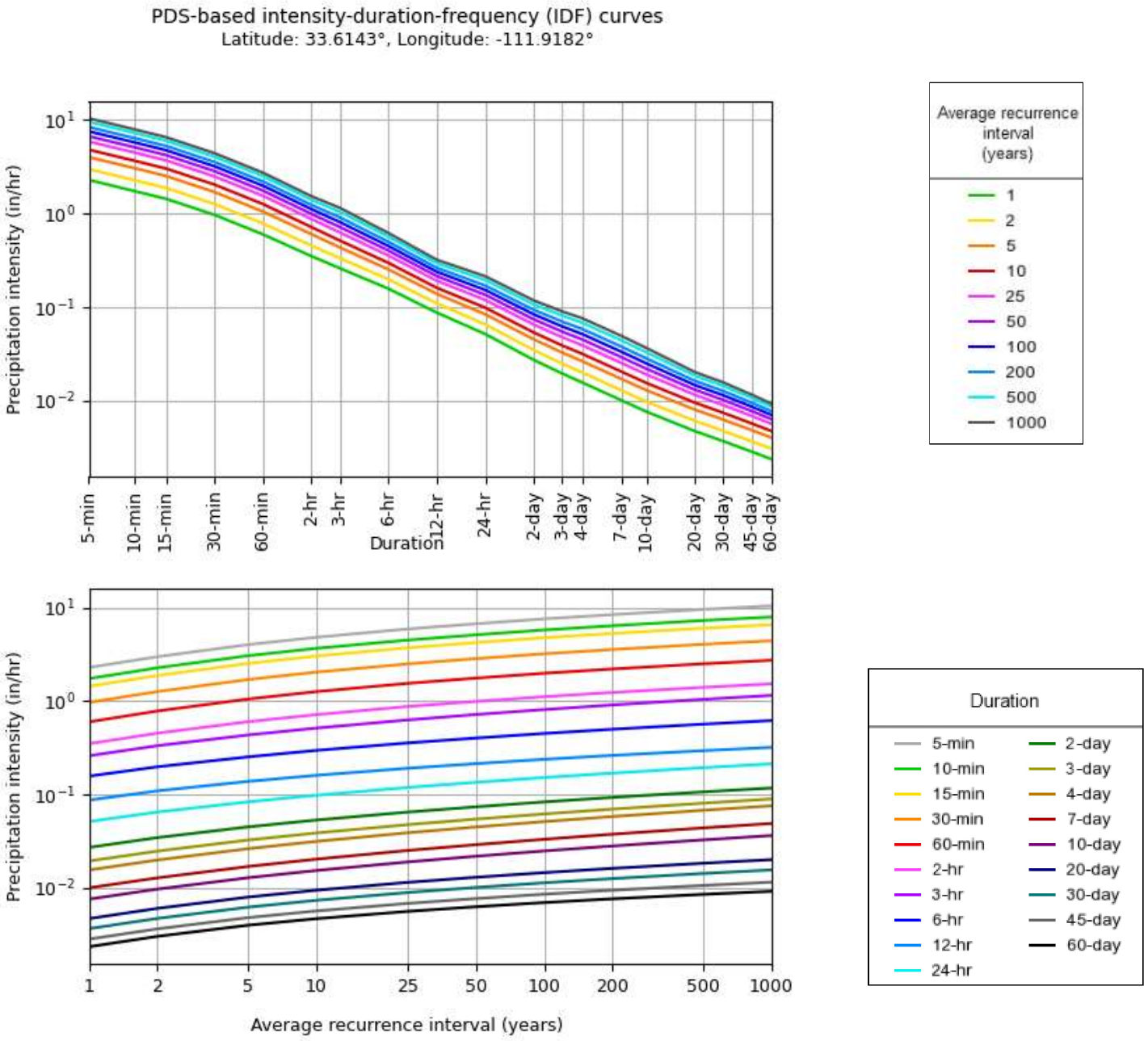
PF graphical



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Mon Apr 1 16:59:58 2024

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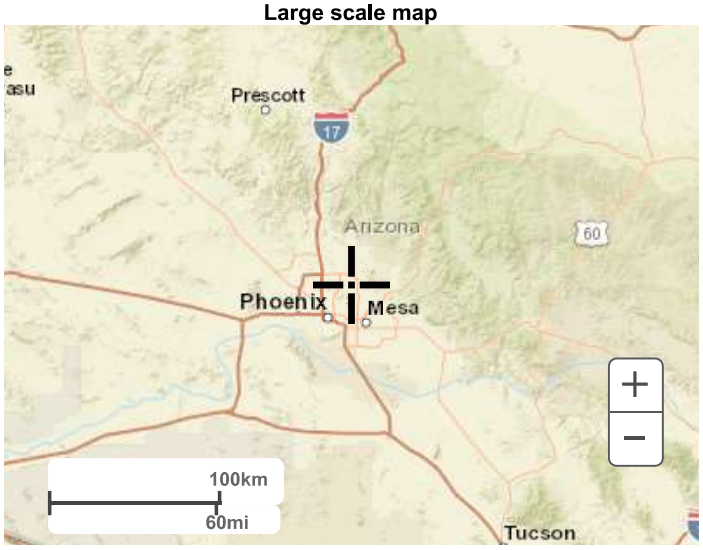
Maps & aerials

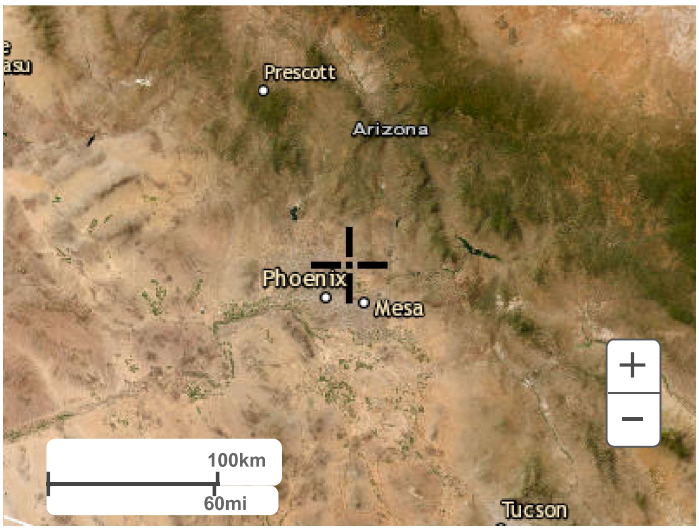
Small scale terrain

Large scale terrain

Large scale map



Large scale aerial



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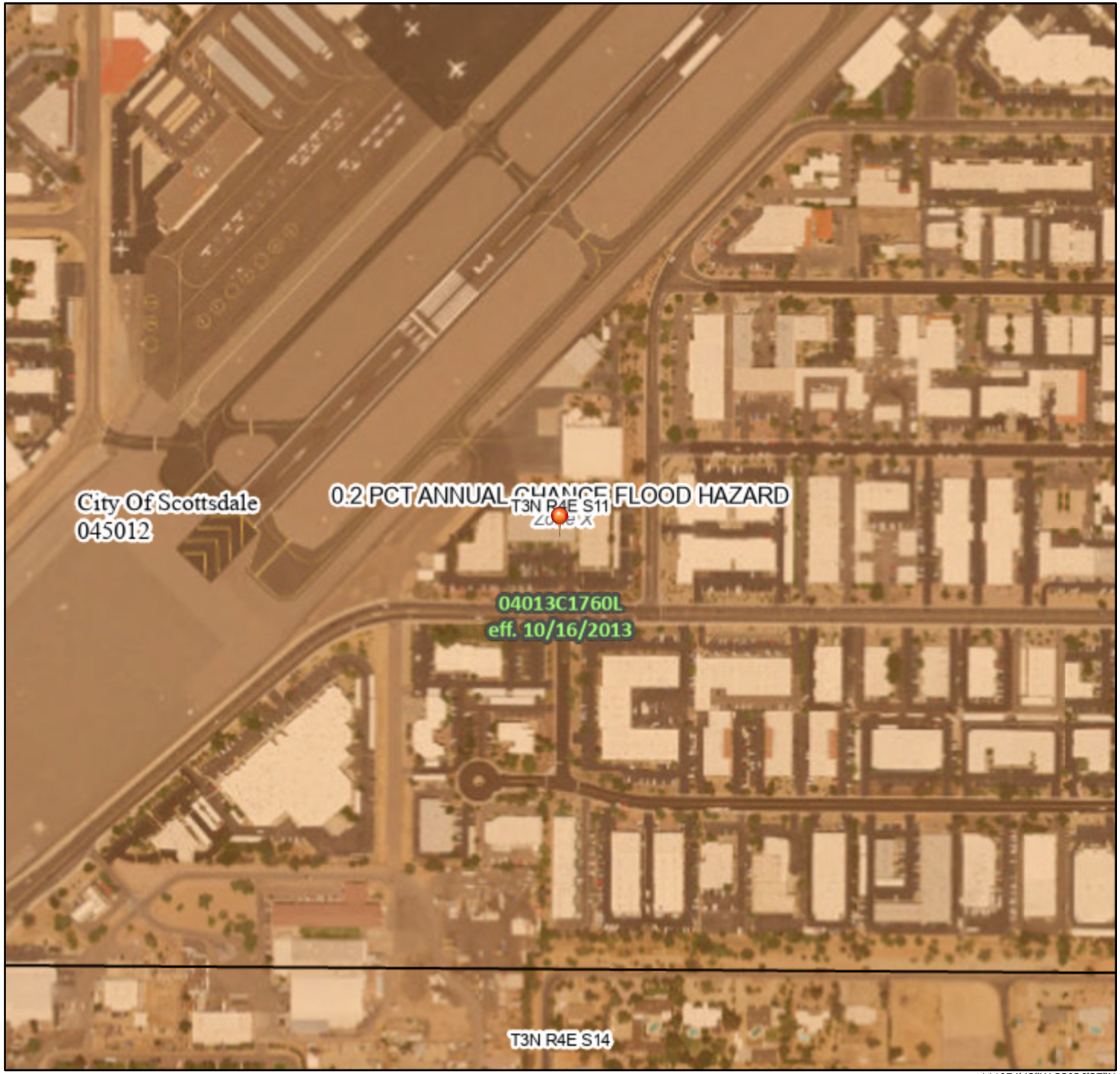
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

National Flood Hazard Layer FIRMette

FEMA

111°55'20"W 33°37'7"N



111°54'42"W 33°36'37"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

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
- 513 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.

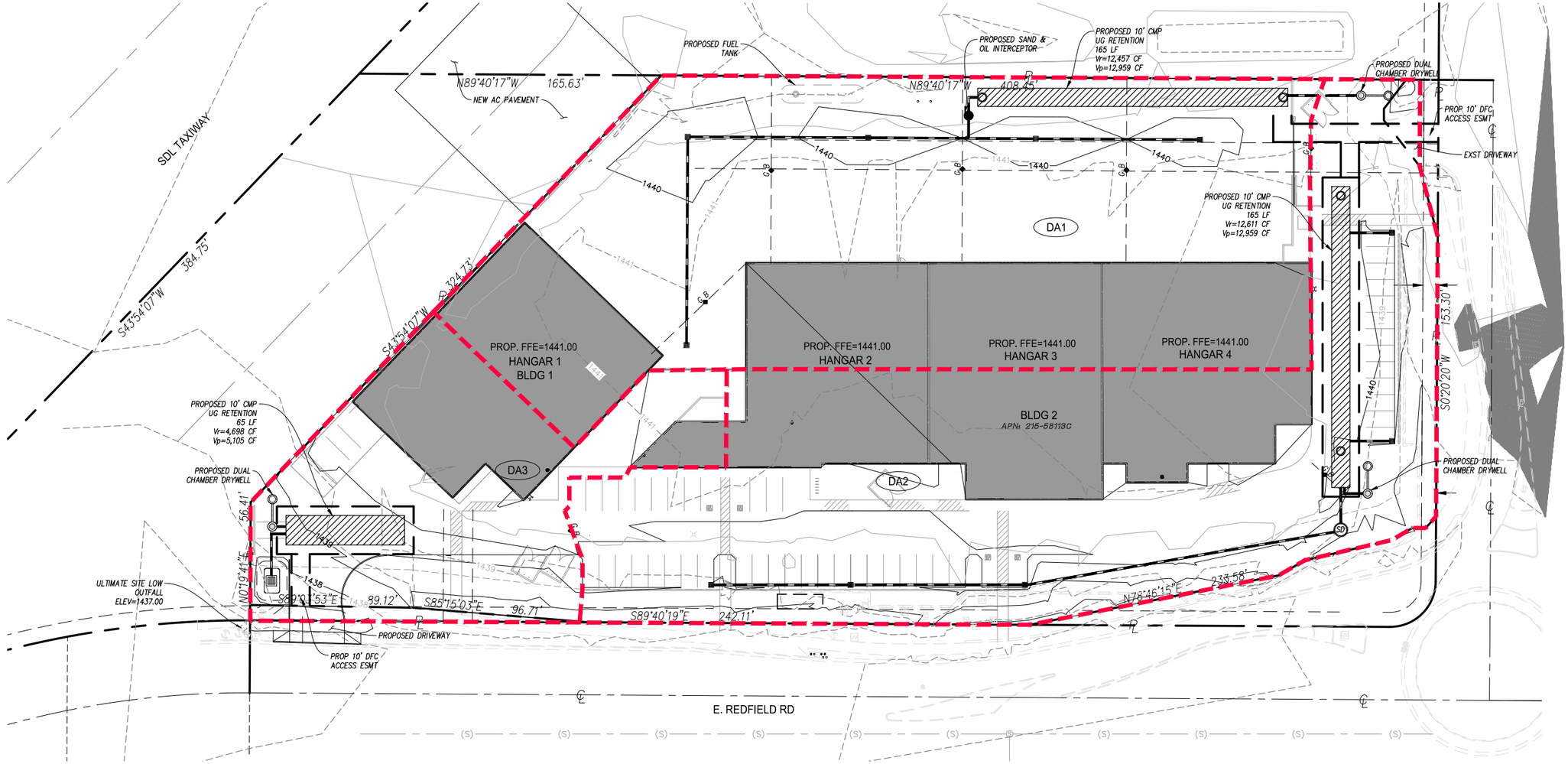
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/1/2024 at 12:42 PM 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.

Appendix B

Drainage Exhibit



RETENTION CALCULATIONS

METHOD [RATIONAL - Vr=D/12*C*A]
C= 0.95
D= 2.23
A= Area, SF [AREA]

DRAINAGE AREA I.D.	AREA (Ac)	AREA (sf)	VOLUME REQUIRED (cf)	VOLUME PROVIDED (cf)	EXCESS/ SHORT (cf)	SHORTAGE TO DA
DA1	**1.62**	70,562	**12,457**	12,959	**502**	N/A
DA2	**1.64**	71,432	**12,611**	12,959	**348**	N/A
DA2	**0.61**	26,614	**4,698**	5,105	**407**	N/A
Total	**3.87**	**168,608**	**29,766**	**31,023**	**1,257**	

PROPOSED UNDERGROUND RETENTION CALCS

1 LF OF 10' DIAM. CMP UG TANK = 78.54 CF

TANK ID	LENGTH (LF)	VOLUME PROVIDED (CF)
UG 1	165	**12,959**
UG 2	165	**12,959**
UG 3	65	**5,105**
	TOTAL:	**31,023**

PROPOSED UNDERGROUND DRY-UP CALCS

0.1 CFS Assumed Infiltration Rate

TANK ID	VOLMUME (CF)	HOURS TO DRAIN 36 HOUR MAX	DRYWELLS NEEDED
UG 1	12959	**36**	**1**
UG 2	12959	**36**	**1**
UG 3	5105	**14**	**1**
	TOTAL:		3

NOTE:
A DRAINAGE AND FLOOD CONTROL EASEMENT (DFC) SHALL BE PROVIDED AROUND THE UNDERGROUND STORM WATER TANKS. THE EASEMENT SHALL BE 5' HORIZONTALLY SURROUNDING THE TANKS AND PROJECT VERTICALLY TO THE GROUND SURFACE. A 10' MINIMUM WIDTH DFC ACCESS EASEMENT SHALL BE PROVIDED FROM THE NEAREST RIGHT OF WAY.

N

30 15 0 30 60 90
SCALE IN FEET
GRAPHIC SCALE

Call at least two full working days before you begin excavation
ARIZONA BLUE STAKE, INC.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
in Maricopa County: (602) 263-1100

PRELIMINARY NOT FOR CONSTRUCTION

SWS ENGINEERING, INC.
Civil Engineering • Land Planning • Surveying
4001 North 3rd Street, Suite 165
Phoenix, AZ 85012
P: 623-551-4005
PHOENIX • NASHVILLE • SAN DIEGO

DATE: Aug 01, 24 1:25pm by:ddam.m
FILE:C:\Users\ddam.m\DC\ACCDocs\SWS Engineering\2024\Project Files\24-162A\PROD\Planning\DRC\24-162A_DRAINAGE EXHIBIT.dwg

DRAINAGE EXHIBIT

SKYPORT AT REDFIELD HANGARS
7600 E. REDFIELD RD
SCOTTSDALE, ARIZONA 85260

DATE	REMARKS

PA / PM:	ASM
DRAWN BY:	DL
JOB NO.:	24-162A

XXXXX

DX

Thu, 01 Aug 2024

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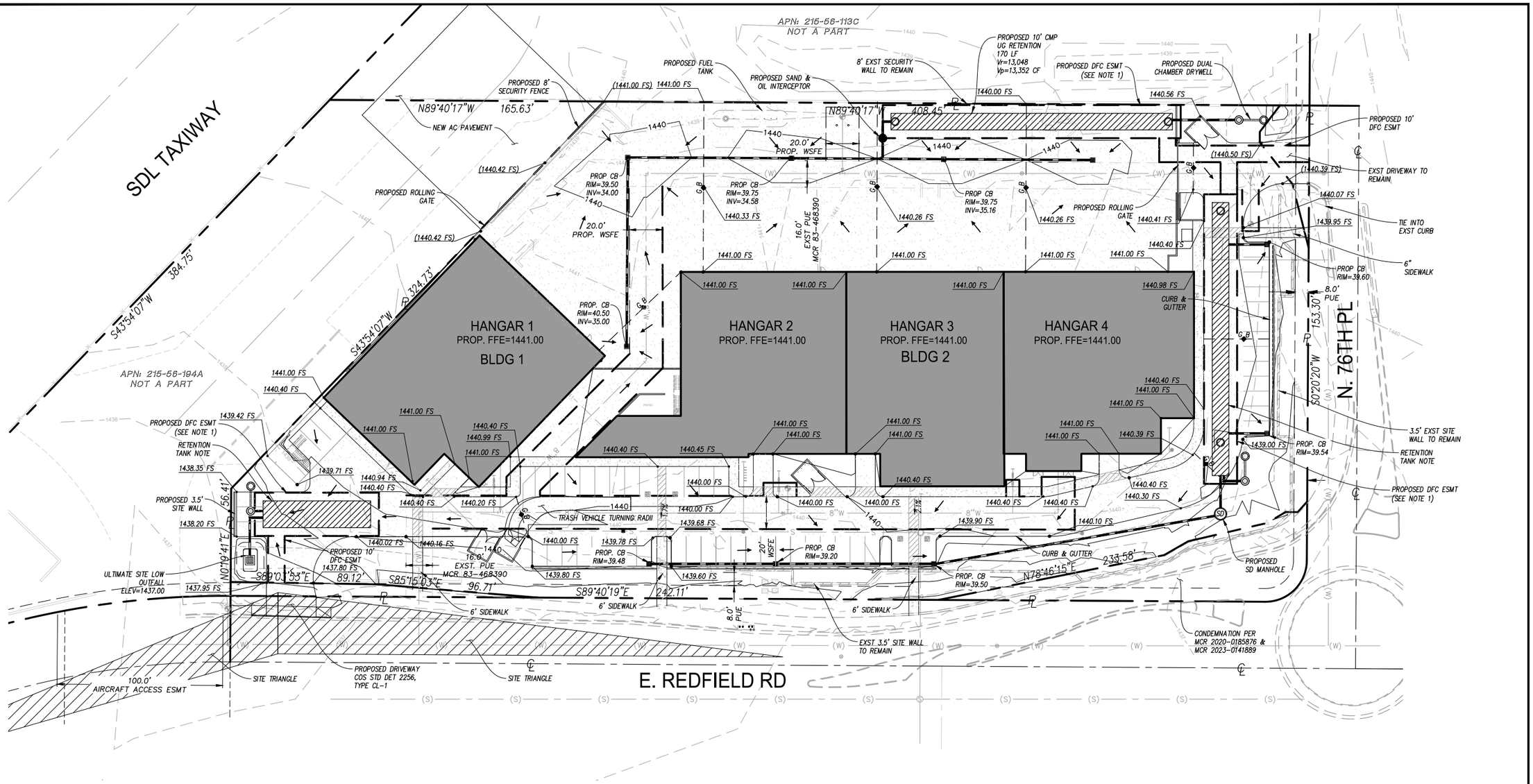
Appendix C

Conceptual Grading & Drainage Plan



NOTES:

1. A DRAINAGE AND FLOOD CONTROL (DFC) EASEMENT SHALL BE PROVIDED AROUND THE PROPOSED UNDERGROUND STORM WATER TANKS. THE EASEMENT SHALL BE 5' HORIZONTALLY SURROUNDING THE TANKS AND PROJECT VERTICALLY TO THE GROUND SURFACE. A 10' MINIMUM WIDTH DFC ACCESS EASEMENT SHALL BE PROVIDED FROM THE NEAREST RIGHT OF WAY.
2. PROPOSED SIDEWALK CONNECTIONS SHALL BE 6' MINIMUM WIDTH.
3. SUPPLEMENTAL SURVEY SHOTS WILL BE TAKEN PRIOR TO FIRST CONSTRUCTION DOCUMENT SUBMITTAL.

SITE TRIANGLE
Ds=40 MPH
SSD=305'

NOTE:
DRAINAGE EASEMENT TO BE 5' MIN. CLEARANCE AROUND UNDERGROUND RETENTION STRUCTURES.

30 15 0 30 60 90
SCALE IN FEET
GRAPHIC SCALE

Call at least two full working days before you begin excavation
ARIZONA811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

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NOT FOR CONSTRUCTION

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4001 North 3rd Street, Suite 165
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DATE: Aug 06, 24 11:11am by:Danielle.Lozzo
FILE:C:\Users\danielle.lozzo\DC\ACCDocs\SWS Engineering\2024\Project Files\24-162A\PROD\Planning\DRC\24-162A_DRC_GP01.dwg

CONCEPTUAL
GRADING & DRAINAGE PLAN

SKYPORT AT REDFIELD HANGARS
7600 E. REDFIELD RD
SCOTTSDALE, ARIZONA 85260

DATE	REMARKS

PA / PM:	ASM
DRAWN BY:	DL
JOB NO.:	24-162A

XXXXX

SHEET 2 of 4
C-2

Tue, 06 Aug 2024 -

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