



DRAINAGE REPORT

**5102 N Wilkinson Road,
Paradise Valley, Arizona 85253**

LDG PROJECT #2412385

Prepared for:

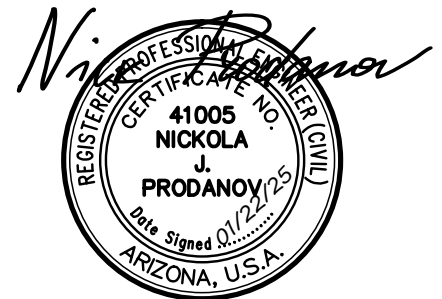
Alex Meruelo
9550 Firestone Blvd. Ste 105,
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Submitted to:

Town of Paradise Valley
Engineering Department
6401 E Lincoln Dr.
Paradise Valley, Arizona 85253

Prepared by:

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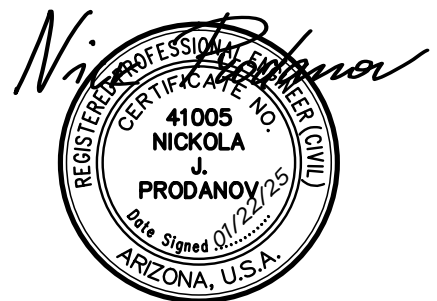
January 22nd, 2025

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January 22nd, 2025

1. INTRODUCTION

This drainage report and related design have been developed in accordance with the current Maricopa County and Town of Paradise Valley drainage ordinances, standards and policies. It provides engineering analysis and assessment of the current drainage conditions that affect parcel 173-20-007, located at 5102 N Wilkinson Road, Paradise Valley, AZ 85253 and also being Lot 63, Camelback Lands, a subdivision recorded in Book 31 of Maps, Page 26 MCR, being a portion of the SW ¼ of the SW 1/4 of the SW 1/4 of Section 15, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Appendix A-1 – Vicinity Map.

The project site is zoned R-43. The property is fully developed residential lot with a main residence in the middle of the property, a guest house at the southwest corner and a sport court along the west building envelope. The lot is approximately 2.256 acres. Access to the property is from Wilkinson Road at the east property line, through an existing concrete driveway. The site is surrounded by large residential lots to the West, North and South. The project will consist of splitting the existing lot into two separate residential lots for two new single-family residences.

A field survey and inspection were conducted in December, 2024 to collect important information regarding the existing topographic characteristics, drainage conditions, and to verify and confirm the extent of the tributary areas, local disturbances to the historic flows, and location and condition of existing storm drainage structures. A topographic map was developed with a one-foot contour interval for the site and adjacent streets. The elevation contours and survey spot elevations are tied to the GDACS monuments and are based on the Town of Paradise Valley vertical datum (NAVD 88).

Aerial and topographic maps were collected from the Maricopa County GIS and USGS web sites to facilitate further and clearly delineate the limits of each drainage tributary area and conveyance corridors for historic and current conditions. Maricopa County, FCDMC and USGS maps, aerial photography and surveyed topographic map for the site were reviewed and used to establish the tributary areas.

The analysis presented herein focuses on evaluating existing and proposed drainage conditions, as well as stormwater runoff resulting from a statistical evaluation of storm events of particular frequency, up to and including 100-year event as required by the Governing Agency. A storm event exceeding the 100-year will probably cause or create the risk of a greater storm impact than is presented and addressed herein.

As a part of the project development process, a plat map subject to the Town of Paradise Valley review and approval is prepared. The owner is proposing to split the property into two lots. The proposed plat map defines the new property divider lines, new tract for public roadway, location and distances of new building setback lines. The zoning for the newly created lots is R-43 as previously zoned.

2. DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

The site is currently fully developed. The overall terrain is sloping southeasterly at an average slope of 3%.

There are no offsite flows impacting the site. Water run off runs in southerly direction along the right-of-way of Wilkinson Road without impacting the subject project.

Hydrologic and hydraulic analysis and modeling were performed in accordance with the procedures presented in the Standards and the Drainage Design Manual of Maricopa County, Volumes 1 & 2. 100-year storm design peak discharge was calculated for the designated contributing tributary area in order to verify the capacity of the existing streets' cross section to convey the flow and verify the water spread.

Precipitation data was derived from NOAA Atlas 14, Volume 1, Version 5. See Drainage Map - Appendix A-2 and Appendix Drainage Calculations A-6. Runoff coefficients are based on the Drainage Design Manual for Maricopa County.

Street cross-section was evaluated for flow hydraulics to determine its capacity and to verify the flow depths from 100-year. The capacity for Wilkinson Road was calculated to be 22.08 cfs. The flows are contained within the street's public right of way. See Drainage Map - Appendix A-2 and Appendix Drainage Calculations A-6.

3. FEMA FLOOD ZONE CLASSIFICATION

Site is located in FEMA Flood Zone "X" according to Flood Insurance Rate Map (FIRM) #: 04013C, Panel 1765 of 4425, Suffix L, dated October 16th, 2013, as published by FEMA. The FIRM Panel defines Zone "X" as follows: *"Areas determined to be outside the 0.2% annual chance floodplain"*.

See Appendix A-3 for FEMA Flood Insurance Rate Map exhibit.

4. PROPOSED DRAINAGE PLAN

The future project will consist of the construction of two single family residences in accordance with the Town of Paradise Valley Codes and Regulations.

The finish floor elevation of all structures shall be set at 1.0' min. above the adjacent grade at a 10' distance from the building footprint.

Preliminary grading and drainage plan has been prepared to facilitate the demolition permit. Two separate temporary retention basins were proposed for each site to retained the 100-year 2-hr

storm event. Each lot will have a separate grading and drainage plan done during the building permitting process.

On-site retention shall be provided through surface retention basins and underground storm drain systems. There will be no adverse drainage impact to the adjacent downstream properties by the proposed construction on this property.

Summary printouts of the drainage calculations are enclosed in Appendix A-7.

5. CONCLUSIONS AND RECOMMENDATIONS

The Preliminary Grading and Drainage plan has been designed in conformance with the recommendations and results presented in this report as well as the Town of Paradise Valley, Maricopa County, Arizona State and Federal requirements and standards.

Regular inspections and maintenance of the wall openings, inlets and subsurface drainage systems after every major storm must be performed. Any obstructions of flow need to be promptly cleared out in order to keep the performance of the storm drain system functioning as designed. It is the Owner's responsibility to inspect and properly maintain all drainage structures and wash crossings.

Off-site flows shall be allowed to pass through the site and to exit the property in a manner similar to the existing conditions. Grading around the residence shall provide for positive drainage away from the structures as shown on the Grading and Drainage plan.

Storm Water Pollution Prevention Plan and AZDEQ Notice of Intent will be required as a part of the building permitting process. All specified BMPs shall be installed on site, inspected and approved by the Town prior to commencing any grading activities.

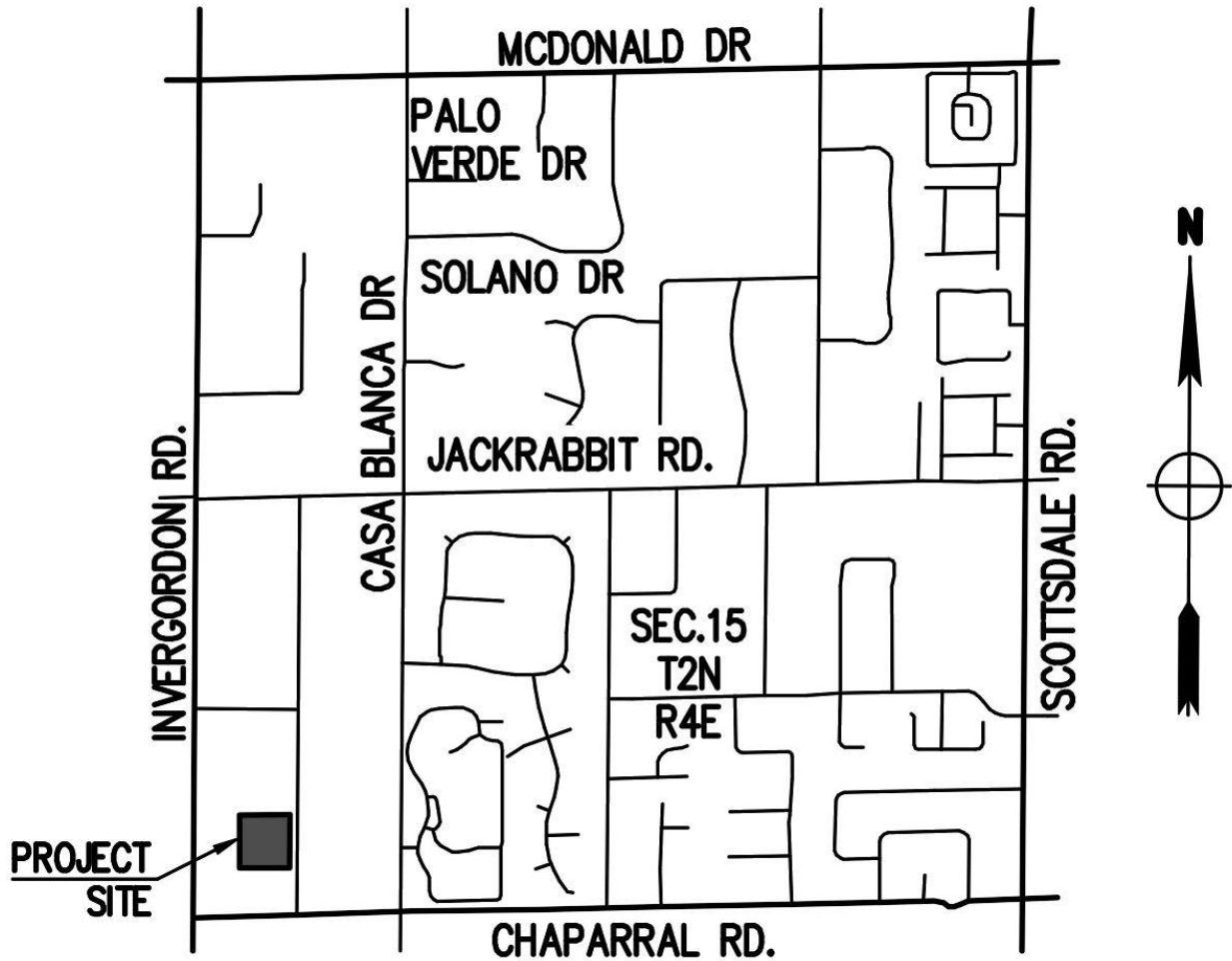
In conclusion the project has the potential to collect, convey and discharge storm water generated from the 100-year storm event runoff safely and effectively. The proposed improvements do not impact the existing drainage conditions of neighboring lots and will not result in significant changes to the existing drainage patterns or magnitudes.

6. REFERENCES

- Drainage Design Manual for Maricopa County, Arizona – Volume I Hydrology, Flood Control District of Maricopa County
- Drainage Design Manual for Maricopa County, Arizona – Volume II Hydraulics, Flood Control District of Maricopa County
- Drainage Policies and Standards Manual for Maricopa County, Arizona, Flood Control District of Maricopa County
- Hydraulic Design of Energy Dissipaters for Culverts and Channels, HEC 14, FHWA

APPENDIX A-1

Vicinity Map

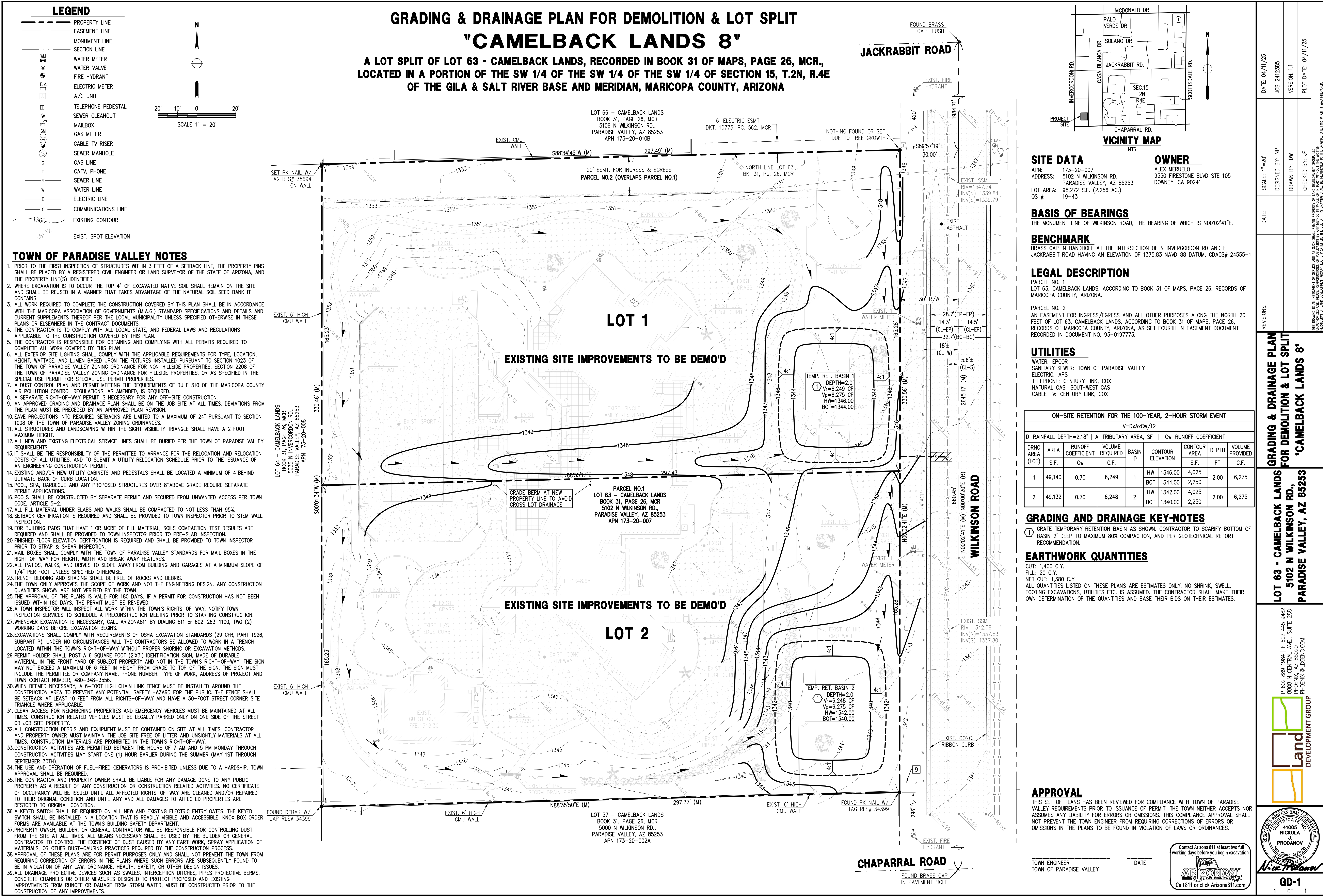


APPENDIX A-2

Drainage Maps

DRAINAGE MAP





APPENDIX A-3

FEMA FIRM Exhibit

NFIP**PANEL 1765L****NATIONAL FLOOD INSURANCE PROGRAM**

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 1765 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
MARICOPA COUNTY	040037	1765	L
PARADISE VALLEY, TOWN OF	040049	1765	L
PHOENIX, CITY OF	040051	1765	L
SCOTTSDALE, CITY OF	045012	1765	L

Notice: This map was reissued on July 31, 2015 to make a correction. This version replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

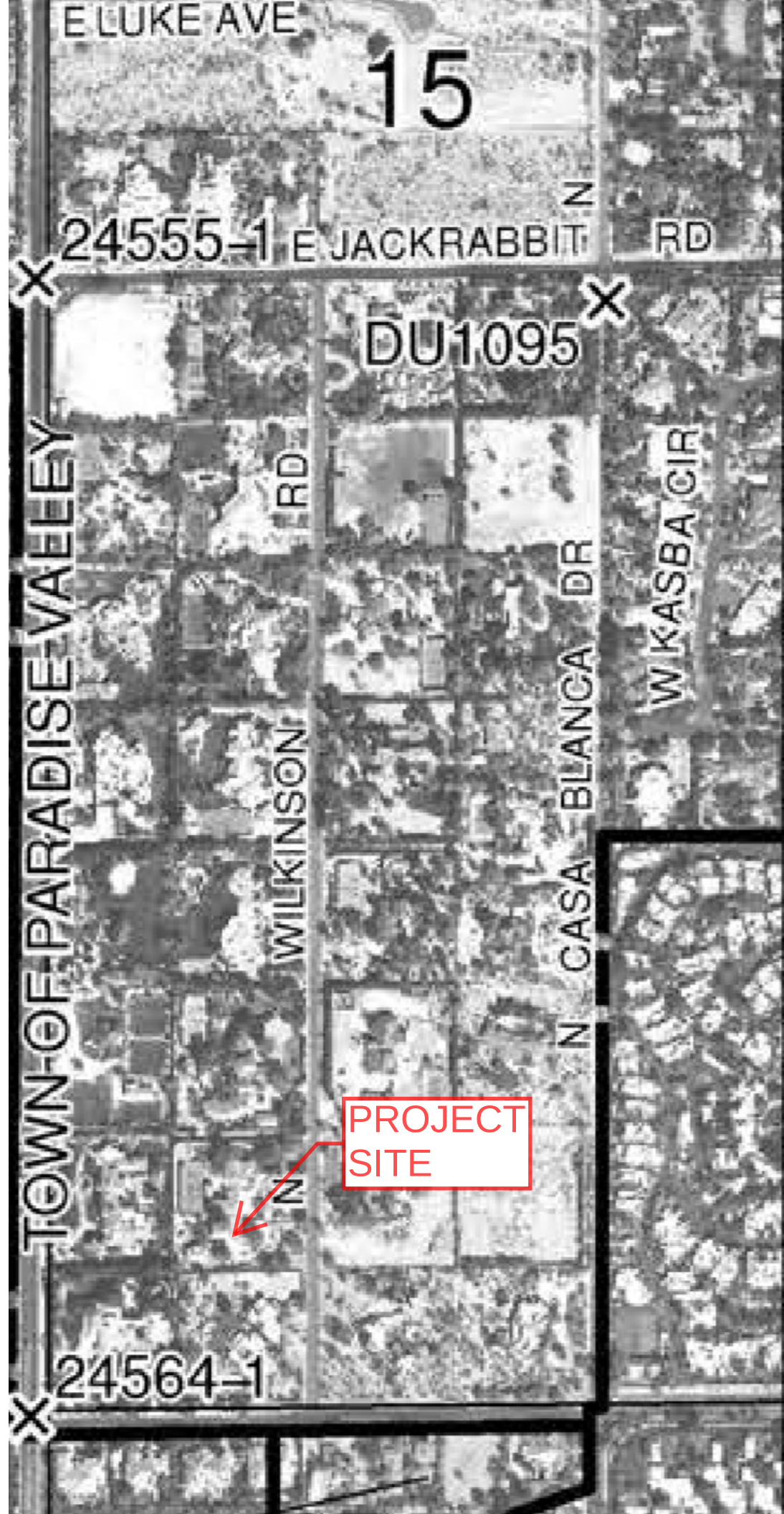
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
04013C1765L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency



PROJECT
SITE

N

APPENDIX A-4

Aerial Map Exhibit



PROJECT
SITE

WILKINSON RD

N

APPENDIX A-5

FCDMC Floodplain Viewer

Floodplain and Elevation Certificate Map



- Search for Parcel by APN or Owner Name _Query result
- Elevation Certificate
- Local
- Arterial
- Highway
 - Interstate Highway
 - State\US\Other Highway
 - Interchange\Ramp
- Parcel
- Floodplain (Pending FEMA Approval)
 - Floodway
 - 100-Year Flood Zone
- Floodplain (FEMA Effective)
 - Floodway
 - 100-Year Flood Zone

Data Source: Maricopa County Flood Control District (FCD) GIS. Data Owner: Maricopa County Flood Control District (FCD). Contact: <https://www.maricopa.gov/959/Floodplain-Information>.

Exported January 24, 2025 at 01:55 AM Esri, HERE | Data Source: Maricopa County Flood Control District (FCD) GIS. Data Owner: Maricopa County Flood Control District (FCD). Contact: <https://www.maricopa.gov/959/Floodplain-Information>.



Flood Control District of Maricopa County
2801 W Durango St
Phoenix, AZ 85009
<http://www.fcd.maricopa.gov>

Unofficial Document
This document cannot be used for floodplain determinations. Current studies, erosion setbacks and other factors may also affect the floodplain status of the property. The information shown for pending floodplains are the best technical information available at this time to determine the 1% chance flood and are subject to change.



APPENDIX A-7

Drainage Calculations

Hydraulic Analysis Report

Project Data

Project Title: 2412385 5102 N Wilkinson Rd

Designer:

Project Date: Friday, January 24, 2025

Project Units: U.S. Customary Units

Notes:

Channel Analysis: Wilkinson Road

Notes:

Input Parameters

Channel Type: Custom Cross Section

Cross Section Data

Station (ft)	Elevation (ft)	Manning's n
0.00	45.70	0.0150
13.75	45.18	0.0150
15.75	45.15	0.0150
30.00	45.05	0.0150
44.50	44.64	0.0150
46.50	44.67	0.0150
60.00	45.10	-----

Longitudinal Slope: 0.0200 ft/ft

Flow 22.0800 cfs

Result Parameters

Depth 0.3639 ft

Area of Flow 4.7885 ft^2

Wetted Perimeter 25.3604 ft

Hydraulic Radius 0.1888 ft

Average Velocity 4.6111 ft/s

Top Width 25.3497 ft

Froude Number: 1.8697

Critical Depth 0.4807 ft

Critical Velocity 2.6083 ft/s

Critical Slope: 0.0055 ft/ft

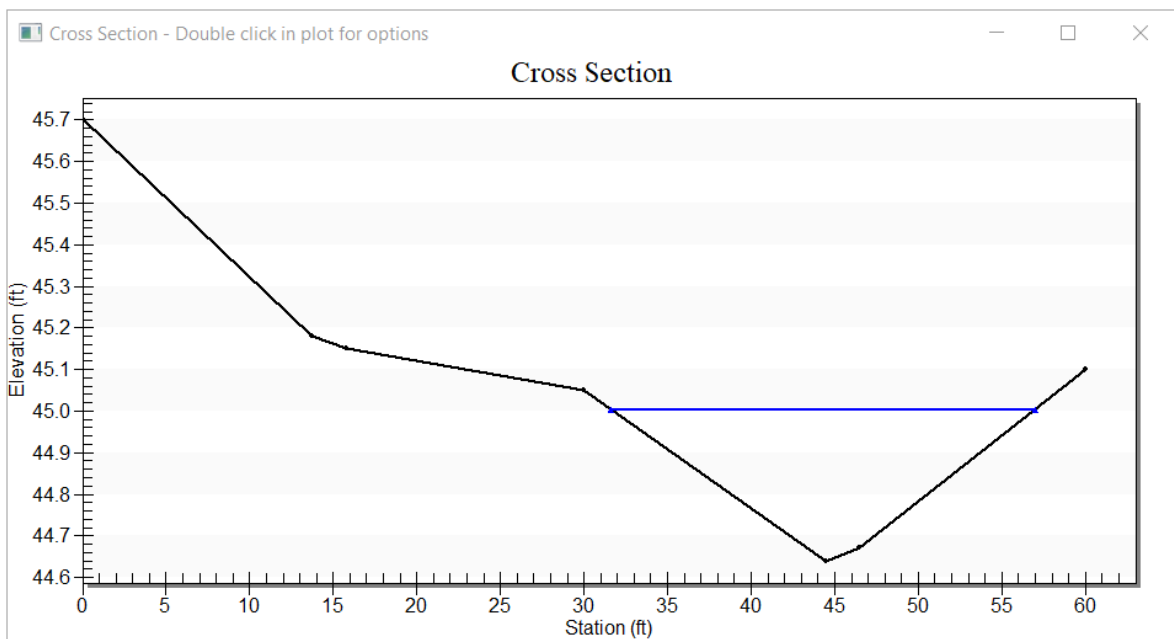
Critical Top Width 40.07 ft

Calculated Max Shear Stress 0.4541 lb/ft²

Calculated Avg Shear Stress 0.2356 lb/ft²

Composite Manning's n Equation: Lotter method

Manning's n: 0.0150





NOAA Atlas 14, Volume 1, Version 5
Location name: Paradise Valley, Arizona, USA*
Latitude: 33.5106°, Longitude: -111.9417°
Elevation: m/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

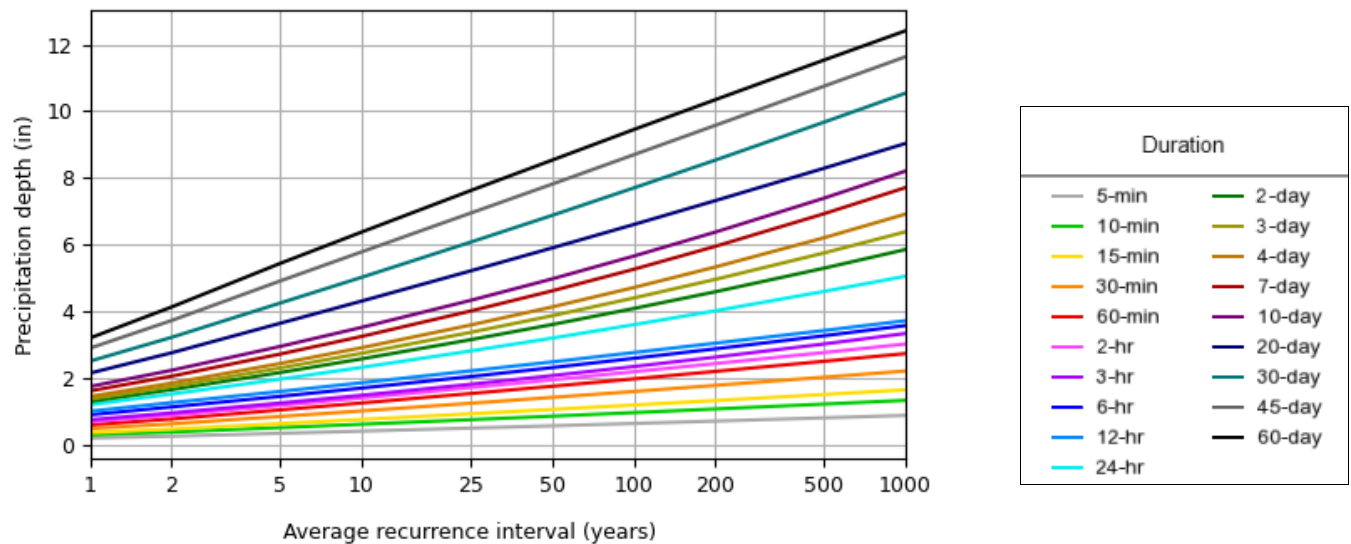
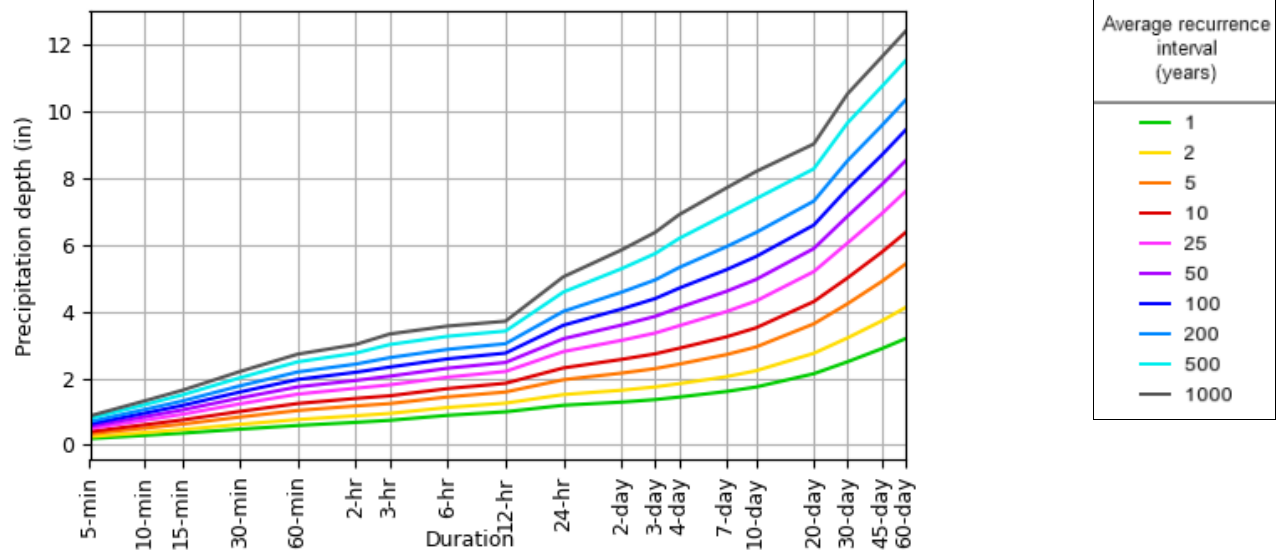
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.185 (0.155-0.225)	0.241 (0.203-0.294)	0.328 (0.274-0.398)	0.394 (0.328-0.477)	0.484 (0.396-0.582)	0.553 (0.446-0.662)	0.623 (0.494-0.744)	0.696 (0.542-0.829)	0.792 (0.600-0.946)	0.866 (0.643-1.04)
10-min	0.281 (0.236-0.342)	0.367 (0.309-0.448)	0.499 (0.417-0.606)	0.600 (0.499-0.725)	0.736 (0.602-0.886)	0.842 (0.679-1.01)	0.949 (0.751-1.13)	1.06 (0.824-1.26)	1.20 (0.914-1.44)	1.32 (0.979-1.58)
15-min	0.348 (0.292-0.424)	0.455 (0.383-0.555)	0.618 (0.516-0.751)	0.744 (0.618-0.899)	0.913 (0.746-1.10)	1.04 (0.842-1.25)	1.18 (0.932-1.40)	1.31 (1.02-1.56)	1.49 (1.13-1.78)	1.63 (1.21-1.95)
30-min	0.468 (0.393-0.571)	0.613 (0.516-0.747)	0.833 (0.696-1.01)	1.00 (0.832-1.21)	1.23 (1.00-1.48)	1.40 (1.13-1.68)	1.58 (1.25-1.89)	1.77 (1.38-2.11)	2.01 (1.53-2.40)	2.20 (1.63-2.63)
60-min	0.580 (0.486-0.707)	0.758 (0.638-0.925)	1.03 (0.861-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.673 (0.573-0.803)	0.871 (0.742-1.04)	1.17 (0.989-1.39)	1.39 (1.17-1.65)	1.70 (1.41-2.00)	1.93 (1.58-2.28)	2.18 (1.76-2.56)	2.42 (1.92-2.85)	2.75 (2.13-3.24)	3.01 (2.28-3.56)
3-hr	0.734 (0.622-0.884)	0.941 (0.801-1.14)	1.24 (1.05-1.49)	1.47 (1.23-1.76)	1.80 (1.48-2.14)	2.06 (1.68-2.44)	2.33 (1.86-2.76)	2.62 (2.06-3.10)	3.01 (2.29-3.56)	3.33 (2.47-3.95)
6-hr	0.884 (0.764-1.04)	1.12 (0.971-1.32)	1.44 (1.24-1.68)	1.69 (1.44-1.97)	2.03 (1.71-2.36)	2.30 (1.91-2.66)	2.58 (2.11-2.99)	2.86 (2.30-3.32)	3.26 (2.55-3.78)	3.56 (2.73-4.15)
12-hr	0.990 (0.865-1.15)	1.25 (1.09-1.46)	1.58 (1.38-1.84)	1.85 (1.59-2.14)	2.20 (1.88-2.54)	2.47 (2.09-2.84)	2.75 (2.29-3.17)	3.04 (2.49-3.50)	3.41 (2.73-3.96)	3.71 (2.91-4.33)
24-hr	1.19 (1.05-1.35)	1.51 (1.34-1.72)	1.95 (1.73-2.22)	2.31 (2.04-2.62)	2.80 (2.45-3.17)	3.18 (2.77-3.60)	3.59 (3.10-4.06)	4.01 (3.44-4.53)	4.59 (3.88-5.19)	5.04 (4.23-5.72)
2-day	1.28 (1.14-1.45)	1.64 (1.46-1.86)	2.15 (1.91-2.44)	2.56 (2.26-2.90)	3.14 (2.76-3.54)	3.59 (3.14-4.06)	4.08 (3.54-4.61)	4.58 (3.94-5.18)	5.28 (4.50-5.99)	5.85 (4.93-6.65)
3-day	1.36 (1.20-1.54)	1.74 (1.54-1.97)	2.29 (2.02-2.59)	2.73 (2.41-3.09)	3.36 (2.94-3.79)	3.86 (3.36-4.35)	4.39 (3.80-4.96)	4.95 (4.25-5.60)	5.74 (4.87-6.49)	6.38 (5.35-7.23)
4-day	1.43 (1.27-1.63)	1.84 (1.62-2.08)	2.42 (2.14-2.74)	2.90 (2.55-3.28)	3.58 (3.12-4.04)	4.12 (3.58-4.65)	4.70 (4.06-5.30)	5.32 (4.55-6.01)	6.20 (5.24-7.00)	6.91 (5.78-7.82)
7-day	1.60 (1.41-1.82)	2.04 (1.81-2.32)	2.70 (2.38-3.07)	3.24 (2.84-3.67)	4.00 (3.49-4.52)	4.60 (4.00-5.20)	5.25 (4.53-5.94)	5.94 (5.08-6.72)	6.92 (5.84-7.83)	7.71 (6.43-8.74)
10-day	1.73 (1.53-1.97)	2.22 (1.96-2.52)	2.93 (2.58-3.32)	3.51 (3.08-3.96)	4.31 (3.77-4.86)	4.96 (4.31-5.58)	5.65 (4.87-6.35)	6.37 (5.46-7.18)	7.38 (6.24-8.32)	8.20 (6.87-9.25)
20-day	2.13 (1.90-2.40)	2.75 (2.44-3.09)	3.63 (3.22-4.08)	4.30 (3.80-4.82)	5.20 (4.58-5.83)	5.89 (5.17-6.60)	6.60 (5.76-7.41)	7.32 (6.35-8.22)	8.28 (7.13-9.33)	9.03 (7.71-10.2)
30-day	2.49 (2.20-2.81)	3.21 (2.84-3.62)	4.24 (3.74-4.76)	5.01 (4.42-5.63)	6.06 (5.32-6.80)	6.87 (6.00-7.70)	7.69 (6.69-8.62)	8.53 (7.39-9.56)	9.67 (8.30-10.8)	10.5 (8.99-11.8)
45-day	2.88 (2.57-3.24)	3.72 (3.31-4.18)	4.90 (4.36-5.51)	5.78 (5.12-6.49)	6.93 (6.12-7.78)	7.81 (6.87-8.77)	8.69 (7.62-9.76)	9.58 (8.36-10.8)	10.7 (9.31-12.1)	11.6 (10.0-13.2)
60-day	3.19 (2.84-3.57)	4.12 (3.68-4.61)	5.43 (4.83-6.07)	6.37 (5.66-7.13)	7.61 (6.74-8.51)	8.53 (7.52-9.54)	9.45 (8.30-10.6)	10.3 (9.06-11.6)	11.5 (10.0-13.0)	12.4 (10.7-14.0)
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.										

[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 33.5106°, Longitude: -111.9417°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed Jan 22 11:41:33 2025

[Back to Top](#)**Maps & aerials****Small scale terrain**



NOAA Atlas 14, Volume 1, Version 5
Location name: Paradise Valley, Arizona, USA*
Latitude: 33.5106°, Longitude: -111.9417°
Elevation: 1349 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

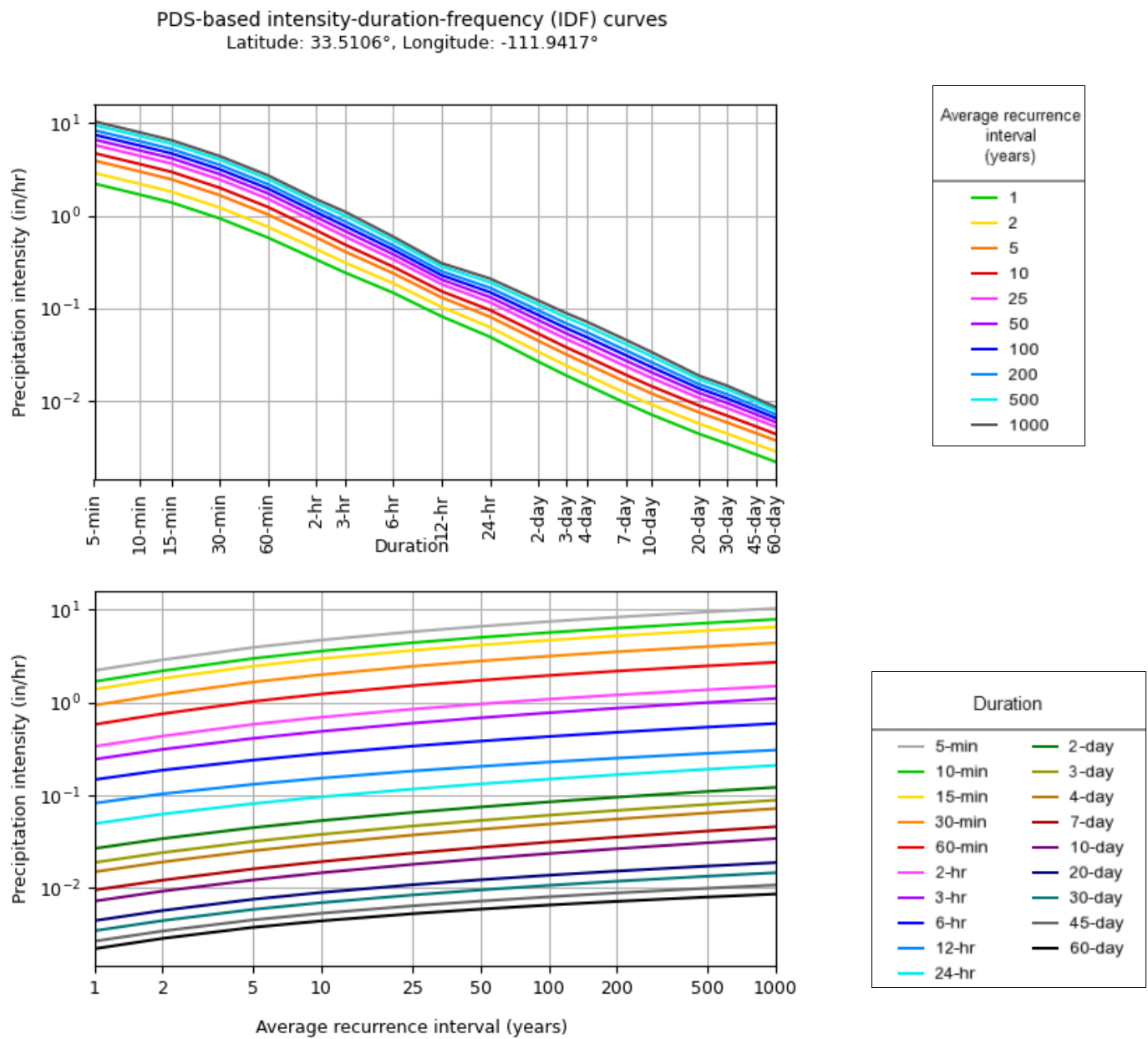
[PF_tabular](#) | [PF_graphical](#) | [Maps & _aerials](#)

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	2.22 (1.86-2.70)	2.89 (2.44-3.53)	3.94 (3.29-4.78)	4.73 (3.94-5.72)	5.81 (4.75-6.98)	6.64 (5.35-7.94)	7.48 (5.93-8.93)	8.35 (6.50-9.95)	9.50 (7.20-11.4)	10.4 (7.72-12.4)
10-min	1.69 (1.42-2.05)	2.20 (1.85-2.69)	2.99 (2.50-3.64)	3.60 (2.99-4.35)	4.42 (3.61-5.32)	5.05 (4.07-6.04)	5.69 (4.51-6.80)	6.35 (4.94-7.57)	7.23 (5.48-8.63)	7.91 (5.87-9.46)
15-min	1.39 (1.17-1.70)	1.82 (1.53-2.22)	2.47 (2.06-3.00)	2.98 (2.47-3.60)	3.65 (2.98-4.39)	4.18 (3.37-5.00)	4.71 (3.73-5.62)	5.25 (4.09-6.26)	5.98 (4.53-7.14)	6.53 (4.86-7.81)
30-min	0.936 (0.786-1.14)	1.23 (1.03-1.49)	1.67 (1.39-2.02)	2.00 (1.66-2.42)	2.46 (2.01-2.96)	2.81 (2.27-3.36)	3.17 (2.51-3.78)	3.54 (2.75-4.21)	4.02 (3.05-4.80)	4.40 (3.27-5.26)
60-min	0.580 (0.486-0.707)	0.758 (0.638-0.925)	1.03 (0.861-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.336 (0.286-0.401)	0.435 (0.371-0.521)	0.583 (0.494-0.694)	0.695 (0.584-0.826)	0.849 (0.704-1.00)	0.966 (0.791-1.14)	1.09 (0.877-1.28)	1.21 (0.958-1.42)	1.38 (1.06-1.62)	1.50 (1.14-1.78)
3-hr	0.244 (0.207-0.294)	0.313 (0.266-0.378)	0.411 (0.348-0.495)	0.489 (0.410-0.586)	0.598 (0.494-0.711)	0.685 (0.558-0.812)	0.776 (0.621-0.920)	0.871 (0.684-1.03)	1.00 (0.763-1.19)	1.11 (0.823-1.31)
6-hr	0.147 (0.127-0.174)	0.186 (0.162-0.220)	0.239 (0.206-0.281)	0.281 (0.241-0.329)	0.339 (0.286-0.394)	0.383 (0.319-0.444)	0.430 (0.352-0.498)	0.478 (0.384-0.555)	0.543 (0.425-0.631)	0.595 (0.455-0.693)
12-hr	0.082 (0.071-0.095)	0.103 (0.090-0.120)	0.131 (0.114-0.152)	0.153 (0.132-0.177)	0.182 (0.155-0.210)	0.205 (0.173-0.236)	0.228 (0.189-0.263)	0.251 (0.206-0.290)	0.283 (0.226-0.328)	0.307 (0.241-0.359)
24-hr	0.049 (0.043-0.056)	0.062 (0.055-0.071)	0.081 (0.072-0.092)	0.096 (0.084-0.109)	0.116 (0.102-0.132)	0.132 (0.115-0.150)	0.149 (0.129-0.169)	0.166 (0.143-0.188)	0.191 (0.161-0.216)	0.210 (0.176-0.238)
2-day	0.026 (0.023-0.030)	0.034 (0.030-0.038)	0.044 (0.039-0.050)	0.053 (0.047-0.060)	0.065 (0.057-0.073)	0.074 (0.065-0.084)	0.084 (0.073-0.095)	0.095 (0.082-0.107)	0.110 (0.093-0.124)	0.121 (0.102-0.138)
3-day	0.018 (0.016-0.021)	0.024 (0.021-0.027)	0.031 (0.028-0.035)	0.037 (0.033-0.042)	0.046 (0.040-0.052)	0.053 (0.046-0.060)	0.060 (0.052-0.068)	0.068 (0.059-0.077)	0.079 (0.067-0.090)	0.088 (0.074-0.100)
4-day	0.014 (0.013-0.016)	0.019 (0.016-0.021)	0.025 (0.022-0.028)	0.030 (0.026-0.034)	0.037 (0.032-0.042)	0.042 (0.037-0.048)	0.049 (0.042-0.055)	0.055 (0.047-0.062)	0.064 (0.054-0.072)	0.071 (0.060-0.081)
7-day	0.009 (0.008-0.010)	0.012 (0.010-0.013)	0.016 (0.014-0.018)	0.019 (0.016-0.021)	0.023 (0.020-0.026)	0.027 (0.023-0.030)	0.031 (0.026-0.035)	0.035 (0.030-0.040)	0.041 (0.034-0.046)	0.045 (0.038-0.052)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.010-0.013)	0.014 (0.012-0.016)	0.017 (0.015-0.020)	0.020 (0.017-0.023)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.030 (0.026-0.034)	0.034 (0.028-0.038)
20-day	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.015 (0.013-0.017)	0.017 (0.014-0.019)	0.018 (0.016-0.021)
30-day	0.003 (0.003-0.003)	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)
45-day	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.004-0.005)	0.005 (0.004-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.010 (0.009-0.012)
60-day	0.002 (0.001-0.002)	0.002 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.006-0.008)	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



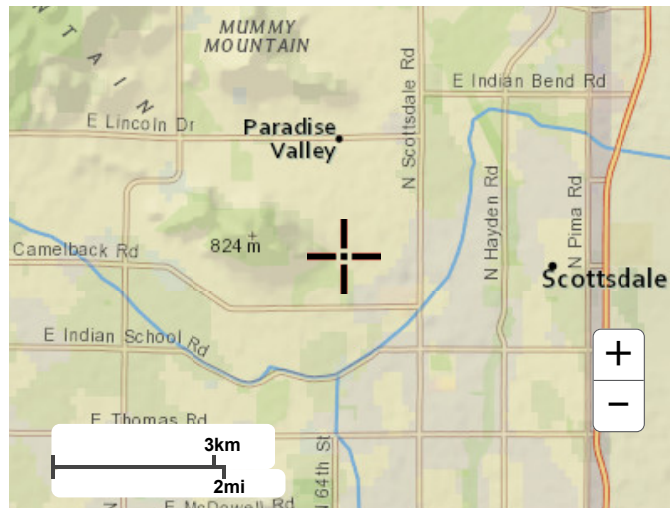
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Maps & aerals

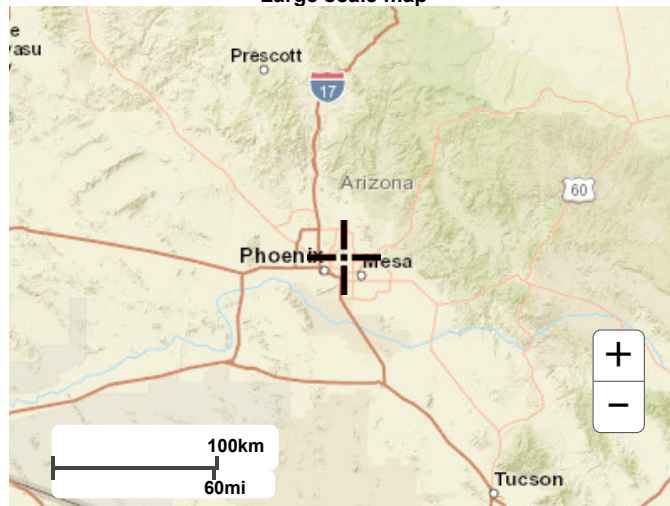
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial