Drainage Reports

Abbreveated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

PRELIMINARY DRAINAGE REPORT

Scottsdale Heights, a Residential Duplex Development
SEC Dove Valley Road and Scottsdale Road
Scottsdale, AZ

Prepared For:

KJ Jovnanian® Homes

20830 N. Tatum Blvd., Suite 250
Phoenix, AZ 85050
Phone: 480.824.4188

Plan # _____
Case # 1-PP-2018
Q-S # _____
☑ Accepted
☐ Corrections
N. Barbnas 5-7-18
Reviewed By Date
SEE STIPS.

Prepared by:

Registered Professional Engineer (Civil)
CERTIFICATE NO.
45621
ALI SAMIH
FAKIH
Date Signed 04-19-18
ARIZONA, U.S.A.

EXPIRES 12-31-18

SEG

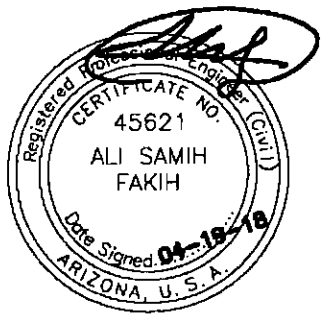
Sustainability Engineering Group
8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 www.azSEG.com

Project Number: 171113
Submittal Date: January 12, 2018
Resubmittal Date: March 7, 2018
Resubmittal Date: April 19, 2018

1-PP-2018
04/19/18

Case No.: 1-PP-2018 **Plan Check No.: TBD**

TABLE OF CONTENTS:



EXPIRES 12-31-18

COVER SHEET 1

TABLE OF CONTENTS 2

1. INTRODUCTION 4

2. LOCATION AND PROJECT DESCRIPTION

2.1. LOCATION: 4

2.2. EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE: 4

2.3. EXISTING SITE DESCRIPTION: 4

2.4. PROPOSED SITE DEVELOPMENT: 5

2.5. FLOOD HAZARD ZONE: 5

3. EXISTING DRAINAGE CONDITIONS

3.1. OFF-SITE DRAINAGE: 5

3.1.1 Drainage Areas P-1E to P-4E): 5

3.1.2 Adjacent parcels with by-pass flows: 5

3.2. ON-SITE DRAINAGE: 6

3.2.1 Drainage Area 3 (DA-3) to Historical Outlet 2 (HO-2) 6

3.2.2 Drainage Area 4 (DA-4) to Historical Outlet 2 (HO-2) 6

4. PROPOSED STORM WATER MANAGEMENT

4.1. DESIGN INTENT: 6

4.2. DESIGN STORM REQUIREMENTS: 7

4.3. CHARACTERISTICS OF BASINS: 7

4.4. STORMWATER RETENTION: 8

4.4.1 Required Storage: 8

4.4.2 Proposed Storage: 9

4.4.3 Storage Discharge: 9

4.4.4 Runoff at Historical Outlets: 10

4.4.5 First Flush and Sediment Control Considerations: 10

4.5. PIPE CAPACITY CALCULATIONS: 10

4.6. STREET CAPACITY CALCULATIONS: 10

4.7. STORM DRAIN INLET CALCULATIONS: 11

4.8. HEADWALL FLOW CALCULATIONS: 11

5. FLOOD SAFETY FOR DWELLING UNITS

5.1 FINISHED FLOOR ELEVATIONS: 12

6. ADEQ WATER QUALITY REQUIREMENTS

6.1 NOTICE OF INTENT: 12

7. CONCLUSIONS

7.1 OVERALL PROJECT: 12

7.2 PROJECT PHASING: 12

8. WARNING AND DISCLAIMER OF LIABILITY

9. REFERENCES

LIST OF FIGURES:

FIGURE 1 - Vicinity Map
FIGURE 2 - Aerial
FIGURE 3 - FIRM
FIGURE 4 - COS Contour Map
FIGURE 5 - COS 50 cfs Wash
FIGURE 6 - COS ESL Landforms
FIGURE 7 - COS NAOS Map

APPENDIX:

APPENDIX I – Rainfall Data
APPENDIX II - Calculations
APPENDIX III - Preliminary Grading & Drainage Plan
APPENDIX IV - ALTA
APPENDIX V - Paloma Drainage Exhibits

1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for the Khovnanian Residential Duplex development proposed in Scottsdale, Arizona. The purpose of this report is to provide the hydrologic and hydraulic analyses, required by the City of Scottsdale, to support the proposed site plan for said subdivision. This report includes discussions and calculations defining the storm water management concepts for collection, conveyance, and retention systems 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) 2010 [1], and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I[2] and Volume II[3].

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The project property consists of one (1) parcel of land located at the SEC of N. Scottsdale Road and E. Dove Valley Road in a portion of the NW ¼ of Section 14, Township 5 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Scottsdale, Arizona; Parcel ID number is APN: 216-51-298. 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:

The site is bounded by E. Dove Valley Road to the north with R-4R ESL (HD) zoned residential across (Winfield), N. Scottsdale Road to the west with R1-10 ESL zoned residential across (Terravita), C-2 ESL zoned commercial (Summit at Scottsdale) to the south and south east, and R-3 ESL (Proposed Paloma) to the east.

2.3 EXISTING SITE DESCRIPTION:

Land ownership, as defined by ALTA/ACSM Land Title Survey by AW Land Surveying, Inc. dated 12/18/17 includes net parcel area of 12.660+/- acres (13.313+/- gross acres) of land designated R-3 ESL with a portion south of the proposed residential development designated as commercial C-2 ESL (Central Business District). The site was part of the Dick Van Dyke movie studio which has been demolished and is now vacant desert landscape.

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

Two washes identified on the COS GIS Interactive Maps as greater than 50 CFS cross the site generally from east to west. See **FIGURE 5.** As noted in the referenced Paloma Final Drainage Report, due to the development of Dove Valley Road and Winfield Plat 1, Phase 1 residential subdivision to the north flows were redirected away for the north wash. The Sevano Village, Parcel 3 to the east, redirected a portion of the flows away from the southern wash. These washes are no longer greater than 50 cfs washes.

The site is zoned R-3 ESL/C-2 ESL (Environmentally Sensitive Lands). In the City's Environmentally Sensitive Lands Ordinance, there are requirements for providing open space on each developed parcel.

The amount of Natural Area Open Space (NAOS) to be set aside with each development is based upon the landform area and the land slopes. The City's ESL Landforms and Protected Peaks and Ridges show the site to be located within the "Lower Desert" Landforms. See **FIGURE 6.** The City's High Priority NAOS Map designates a narrow portion of the site corresponding to the natural drainage crossing the site from east to west at its south end as a Priority Zone 0.5-1. See **FIGURE 7.**

2.4 PROPOSED SITE DEVELOPMENT:

The property is proposed to be developed with new lot configurations for 54 residential duplex units. Development will include a 28' wide road with circulation throughout entering from Dove Valley Road. An emergency access drive is proposed from Scottsdale Road. Refer to **Sheet C3.00 in Appendix IV** for proposed site layout.

2.5 FLOOD HAZARD ZONE:

As defined by the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona, and Incorporated Areas, Panel number 895 of 4425, as shown on Map Number 04013C0895L dated October 16, 2013, this site is designated as **Zone "X"**. As such, it is defined as areas of minimal flood hazard (higher than the elevation of the 0.2-percent annual-chance flood (500 year). Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINGE CONDITIONS

3.1 OFF-SITE DRAINAGE: (Drainage ID's are from Rick Engineering Latest Exhibits for "Paloma")

3.1.1 - Drainage Areas P-1E through P-4E:

This site receives storm water from the combined runoff of the undeveloped "Paloma" lot directly to the east, and a portion of the Sevano Village subdivision east of Paloma. The latest plans by Rick Engineering indicates a predevelopment flow onto the subject parcels Drainage Area 2 of **68 cfs** from four drainage areas (P-1E=37cfs, P-2E=14 cfs, P-3E=13cfs, P-4E=4cfs). Paloma drainage area P-5E(56cfs) discharges to the southerly commercial site and therefore, does not affect the subject parcel.

Refer to **APPENDIX V** for Paloma Drainage exhibits.

3.1.2 – Adjacent parcels with by-pass flows:

- Dove Valley Road to the north of the site has an elevated southern shoulder and verge that sheds to the north (towards the roadway). The roadway itself has a crown with the north portion of the roadway shedding north and the south portion of the road shedding to the south. The runoff from the south portion of the roadway is contained within the shoulder and verge area and is conveyed to the west where they then flow south along the sites west boundary. Therefore, Dove Valley Road does not contribute flow into the site.
- Scottsdale Road to the west of the site drains from the roadway crown to the east and west where it is conveyed south along the right-of-way providing no contribution to the site.
- The developed commercial properties to the south of the site slope south-westerly, away from the subject parcels, providing no contribution to the subject site.

Refer to **FIGURE 4** for COS contours beyond the property.

3.2 ON-SITE DRAINAGE:

The site is vacant desert landscape sloping from north-east to south-west with variable slopes from approximately two (2) to four (4) percent. The project parcel contains two defined drainage basins described as follows:

3.2.1 – Drainage Area 1 (DA-1) to Historical Outlet 1 (HO-1):

DA-1 does not have off-site contributions. It conveys approximately 2.99 Ac to an existing low flow road crossing Scottsdale Road. The approximate runoff contribution of DA-1 as calculated by Rick Engineering is approximately **6 cfs**.

Refer to **APPENDIX V** for Paloma Drainage Report exhibits

3.2.2 – Drainage Area 2 (DA-2) to Historical Outlet (HO-2) :

Naturally formed channels convey off-site drainage areas (P-1E through P-4E) flow into the site where the runoff, combined with on-site DA-2 flows, then meanders through the site in naturally formed channels and outlets at the property's south-west corner into the Scottsdale Road verge (HO-2). The approximate runoff contribution to HO-2 as calculated by Rick Engineering is approximately **82 cfs**:

Refer to **APPENDIX V** for Paloma Drainage exhibits

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be handled within street sections, onsite channels, or retention basins as necessary. This is a new development, therefore, the City of Scottsdale specifies that on-site retention shall be provided to store runoff from rainfall events up to and including the 100-year, two hour duration event.

On-site retention will be provided as allowed by site configuration within open space with three (3) foot maximum depth basins and/or underground retention and have total discharge of the storm water within thirty-six hours.

Adjusted offsite post-development flows from the northeast of **29 cfs** (P-1E) per Paloma report, enter the site and will be routed through the site and allowed to discharge to its historical outlet (HO-2).

- This project is anticipated to be constructed prior to Paloma. Therefore, the on-site storm system will be designed to convey the Paloma existing conditions flow of 37 cfs through a storm pipe and open drainage path swale to our retention basin and allowed to by-pass unrestricted to HO-2.

The Paloma post-development flow of **9 cfs** entering the site from Paloma at the southeast corner will be routed through the site in a proposed 15" storm pipe (constructed by others) and allowed to by-pass through to its historical outlet at Scottsdale Road (HO-2). This flow assumes all Paloma runoff directed westerly will be conveyed southerly into a retention basin on the Paloma parcel with the 9 cfs out-letting into the subject parcel.

- This project is anticipated to be constructed prior to Paloma. Therefore, the on-site storm system will be designed to convey the Paloma existing conditions flows as follows:
  - Runoff from P-2E (14 cfs) will be conveyed to a storm pipe system outletting into our proposed retention basin and allowed to by-pass unrestricted to HO-2.
  - Runoff from P-3E and P-4E (17 cfs) will be conveyed overland to our proposed retention basin and allowed to by-pass unrestricted.

Total existing flow by-passing the site is 68 cfs as determined in Section 3.1.1 above. A 60' weir will be provided outletting the flow in 0.56' depth at 2.03 fps. Refer to Appendix II for calculations.

DA-1 and DA-2 pre-development flow will be carried through the site via storm pipes or engineered and natural channels to maintain historical outflow crossings at the two low flow channels on Scottsdale Road.

Refer to **APPENDIX V** for Paloma Drainage exhibits

Refer to **Section 5** below for a discussion on proposed finished floor elevations.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event is required as a minimum.

4.3 CHARACTERISTICS OF BASINS:

A retention basin is proposed at the southwest corner of the development. This basin will be a combination of Open and Underground retention. Stormwater will be directed to this basin via proposed storm pipes located under the proposed roadway and/or curb cuts or scuppers from the roadway. Based on Figure 4.1-4 of the DS&PM, runoff coefficients for the 100 year storm event used are as follows:

- C=0.45 for undisturbed natural desert or desert landscape
- C=0.94 for the lots in R3 zones (will use 0.95)
- C=0.95 for R.O.W areas.

A summary of Cwt calculations is provided in Table 1 below:

Table 1 - Cwt Calculations

R-3	Landscape	Total Area	Cwt	Drainage
0.95	0.45			Area ID
0.45	1.47	1.92	0.57	1
0.00	0.20	0.20	0.45	2
0.00	0.03	0.03	0.45	3
0.52	0.00	0.52	0.95	4
0.63	0.00	0.63	0.95	5
0.58	0.00	0.58	0.95	6
1.03	0.40	1.43	0.81	7

0.47	0.00	0.47	0.95	8
0.58	0.00	0.58	0.95	9
0.61	0.00	0.61	0.95	10
0.56	0.00	0.56	0.95	11
0.41	0.00	0.41	0.95	12
1.27	0.00	1.27	0.95	13
1.00	0.00	1.00	0.95	14
0.42	2.20	2.62	0.53	15
0.00	0.48	0.48	0.45	16
8.53	**4.78**	**13.31**	**0.77**	

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. The Rational Method was utilized to compute the on-site peak discharges. The following established the Rational Method equation and the basic input data required:

$Q=C_{wt}IA$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall
I = Average rainfall intensity in inches/hour, lasting for Tc
Tc = The time of concentration (minutes)
A = The contributing drainage area in acres

4.4 STORMWATER RETENTION:

4.4.1 REQUIRED STORAGE:

Stormwater storage required is calculated In accordance with the COS – DS&PM. Required Retention (Acre-Feet) = $(P/12)*A*(C_{post})$

Where: P = 100 Yr. 2 Hr. Precipitation in Inches (Ref: Isopluvial from DS&PM, Appendix 4-1D, pg. 11 and NOAA Atlas 14 table)
A = Area (Acres)
$C = C_{post}$

Based on the C-values established in Section 4.3 above, and basin values provided on the post development Drainage Area Map in **Appendix II**, the following retention is required:

BASIN 1:

- Developed Site Area = 13.31 AC.
- C_{wt} = 0.77

V_r = 2.65/12*13.31 ac * 0.77 = **2.263 ac.ft. (98,577 c.f.) REQUIRED STORAGE**

4.4.2 PROPOSED STORAGE

- The volume for open basins is calculated using the area – sum volume method based on design contours
- Storage volume of underground piping is calculated using $V = \pi r^2 L$.

In accordance with COS design requirements, the open basin is limited to three (3) feet maximum depth with maximum side slopes of 4:1.

BASIN 1:

Runoff to Basin 1 will be stored in a combination open and underground retention basin. Table 1 below summarizes the available storage volume within the proposed open retention basin.

Table 2: Provided Storgae Volume (Basin 1)

BASIN 1				
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME
(FT)	(SF)	(FT)	(CF)	(CF)
2237	24,149			
		1.00	25,082.50	
2238	26,016			25,082.50
		1.00	26,937.00	
2239	27,858			52,019.50
		1.00	26,578.50	
2240	25,299			78,598.00

The above volume summary indicates the available open retention volume is approximately **78,598 cf** < 98,577 cf required. Additional storage will be provided in 10' diameter CSP pipe. Storage volume required is 98,577 cf – 78,598 cf = 19,979 cf.

Two rows 130 l.f. long are proposed. Volume provided = 260' x 5^2 x 3.1415 = **20,420 cf.**
Total volume provided = 78,598 cf + 20,420 cf = 99,018 cf > 98,577 required.

4.4.3 STORAGE DISCHARGE:

BASIN 1:

This retention system will provide storm water disposal through infiltration as-well-as drywells. The calculation for dry-well requirements 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

Provided open basin storage = 78,598 cf

78,598 cf / 12,960 cf per drywell = 6.09 = 6 drywells proposed.

Provided underground storage = 20,420 cf
20,420 cf / 12,960 cf per drywell = 1.58 = 2 drywells proposed.

Geotechnical testing for percolation rates of the native soils will be completed to verify if adequate infiltration is available for proposed discharge assumptions. The number of proposed drywells will be adjusted as required to meet design requirements.

4.4.4 RUNOFF AT HISTORICAL OUTLETS

HO-1 Outflow:

Drainage Areas 1 located along the northerly and westerly property lines will continue to flow overland to its historical outfall (HO-1). Using a Tc+ 10 min., Q_{100} = 0.45 x 6.83 in/hr x 1.92 Ac = 5.90 cfs.

5.90 cfs < 6.0 cfs calculated as existing conditions flow by Rick Engineering, therefore okay.

HO-2 Outflow:

The existing off-site flows from Paloma (68 cfs) will be allowed to by-pass the site and outfall at HO-2 in the current scenario. All on-site flows will be retained and discharged via dry-wells.

68 cfs proposed conditions < 82 cfs existing conditions; therefore, okay. Note that future conditions may outlet only 9 cfs post flow from Paloma and may pass through a 15" storm drain pipe to its historical point (HO-2). Final design and construction for the Paloma discharge pipe to be by others.

- Total future post-development runoff to Historical Outfall (HO-2) = 9 cfs
- **9** cfs post-development < **82** cfs pre-development.

4.4.5 FIRST FLUSH AND SEDIMENT CONTROL CONSIDERATIONS

- Protection from potential off-site sediment entering the on-site systems from P-1E and P-2E shall be provided using stone filter berms at the inlets and environmental structures such as StormCeptor at the first downstream manhole.
- Required First Flush storage for this site is calculated as follows:

  V_r = 0.5"/12 * 13.31 ac * 0.77 = 0.427 ac-ft or 18,602 cf.

  The proposed retention basin has an available storage volume of 12,308 cf with 0.5-foot depth. All rims within the basin will be set 0.5' above the bottom of pond.

4.5 PIPE CAPACITY CALCULATIONS:

Pipe calculations are provided based on the 100-yr storm event. These calculations indicate the 100-yr HGL remains below grate elevations for the entire system. Refer to Appendix II for the calculations.

4.6 STREET CAPACITY CALCULATIONS:

The City of Scottsdale DS&PM, Section 4-1 requires that runoff for a 10-year storm be contained within the curbs and that the 100-year storm has a maximum depth confined within the right-of-way.

Flowmaster was used to verify these conditions were met. The worst-case scenario is the maximum flow (to CB-3A from DA-5) of 5.37 cfs and the minimum longitudinal gutter slope of 1.00%. The cross section maximum depth used is 0.5' from gutter to property line. The maximum north depth was calculated to be 0.25'. Therefore, all flows are confined below the top of curb elevations for the 100-year event.

4.7 STORM DRAIN INLET CALCULATIONS

Onsite Inlet grates are sized to limit water surface elevation to 0.5-foot depth, considering a clogging factor of 1.5. Based on the largest drainage areas (DA-14), the following is the maximum required runoff rate for a 100-yr storm event to a catch basin:

Q_{100} = CIA = 0.95*8.98 in/hr * 1.00 ac = 8.53 cfs.

Limiting the water depth within the road ROW to 0.5' depth, a MAG-535 grate, with a 50% clogging factor has a capacity of 10.30 cfs, therefore the specified catch basin is adequate at all locations. Refer to Appendix II for grate capacity calculation.

DI-6: Q100 = 14.0 cfs; Allowing 1' depth of water at grate a MAG-535 structure (2' x'3' grate) provides a capacity of 14.57 cfs with a 50% clogging factor.

DI-8: Q100 = 78.92 cfs; Allowing 1' depth of water at grate, a 6' x 6' structure will be required (6 x 14.57 = 87.42 cfs with a 50% clogging factor.

WO-1: 14.0 cfs, assuming 8" block opening, L = 10. Use 15' opening (Equivalent 10.05 sq. ft) with a 50% clogging factor. Refer to FlowMaster calculation in Appendix II.

4.8 HEADWALL FLOW CALCULATIONS

- HW-1: Outfall for north storm system *76.99 cfs
- HW-2: Inlet for DA-7 *10.40 cfs
- HW-3: Inlet for DA-2 *0.81 cfs
- HW-4: Inlet for P-1E **37.00 cfs existing
- HW-5: Outfall for south storm system *30.81 cfs
- DI-6: Inlet for P-2E **14.00 cfs existing
- HW-7: Outfall from DI-8 into retention 78.92 cfs
- DI-8: Culvert crossing emergency access drive;
  DA-16 = (0.45*8.98 in/hr*0.48 ac) = 1.94 cfs
  HW-1 flow + DA-16 flow =
  76.99 cfs + 1.94 cfs = 78.92 cfs

  Culvert proposed to be 48" Dia. Assuming Headwater 1' above top of pipe and tailwater = retention HWE, the pipe is capable of 85.53 cfs. Refer to Flowmaster calculation in Appendix II.

* Refer to pipe calculations data in Appendix II

** Refer to Paloma data in Appendix V

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

All proposed building finished floor elevations will be set a minimum of 14 inches above emergency overflow points, and a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths. This will ensure that each building will be well above the 100-year water level.

6. ADEQ WATER QUALITY REQUIREMENTS

6.1 NOTICE OF INTENT

The total disturbed area of this site is approximately 22.25 acres. The Arizona Department of Environmental Quality requires that any site over an acre is required to submit an NOI. An 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.

7. CONCLUSIONS

7.1 OVERALL PROJECT:

1. Predevelopment conditions will be maintained for off-site storm water runoff management facilities to safely manage off-site storm water discharges resulting from the 100-year frequency storm event. Paloma existing flows will be treated for sediment removal via environmental structures or first flush retention. The existing flow rate is allowed to discharge to the historical outfall location over a weir control structure.
2. The finish floor elevations will be designed a minimum of 12 inches above the 100-year water surface in adjacent streets and drainage paths and a minimum of 14 inches above the low top of curb of the lot.
3. Storm water storage will be provided based on the 100-year, 2-hour duration event and shall discharge within 36 hours in accordance with City of Scottsdale requirements. On-site flow from the developed area is stored in the retention basin (open and underground), reducing flows from existing conditions. Higher intensity storm events can discharge excess runoff over the weir control structure. First Flush treatment is provided in the retention basin.

7.2 PROJECT PHASING:

As a residential development the infrastructure will be constructed in a single phase to accommodate dwelling unit growth. The dwelling units will be phased based on consumer demand.

8. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

9. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2010*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, November 18, 2009 amended through February 10, 2011*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, January 28, 1996*
4. *Paloma Drainage Exhibits prepared by Rick engineering.*

WARNING & DISCLAIMER OF LIABILITY

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

As defined in S.R.C. §37-17, a flood plain or "*Special flood hazard* area means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22
"The degree of flood protection provided by the requirements in this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by man-made or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

Plan Check No.	Owner or Agent	Date

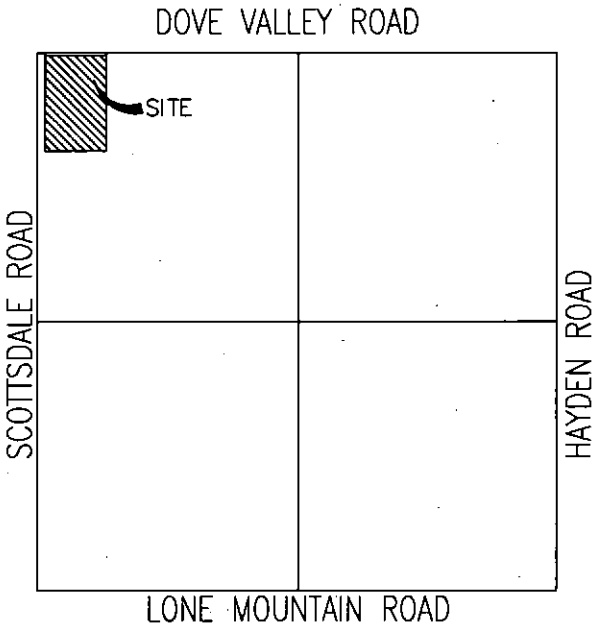


FIGURE 1

VICINITY MAP

NTS


E Dove Valley Rd
E Dove Valley Rd
N Winfield Dr
N 71st St
N 71st St
N SCOTTSDALE RD
N SCOTTSDALE RD
E Calle

FIGURE 2

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

PANEL 0895L

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 895 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

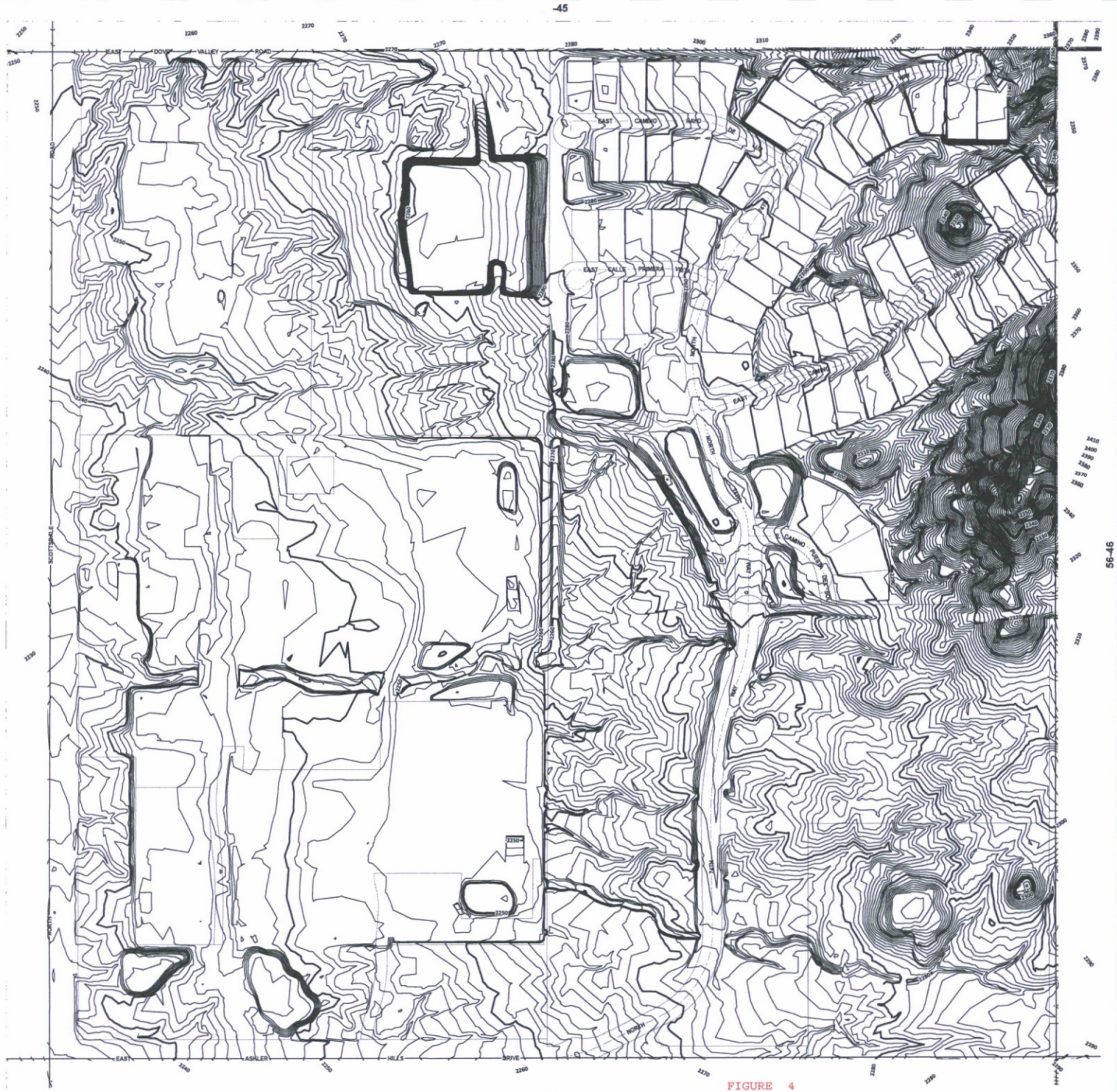
COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	0895	L
CAREFREE, TOWN OF	040125	0895	L
SCOTTSDALE, CITY OF	045012	0895	L

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
04013C0895L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

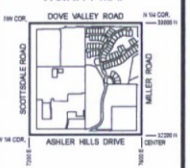


GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

VICINITY MAP



NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

CONTOUR

QUARTER SECTION MAP

56-45

NW 1/4 SEC. 14 T5N R4E

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

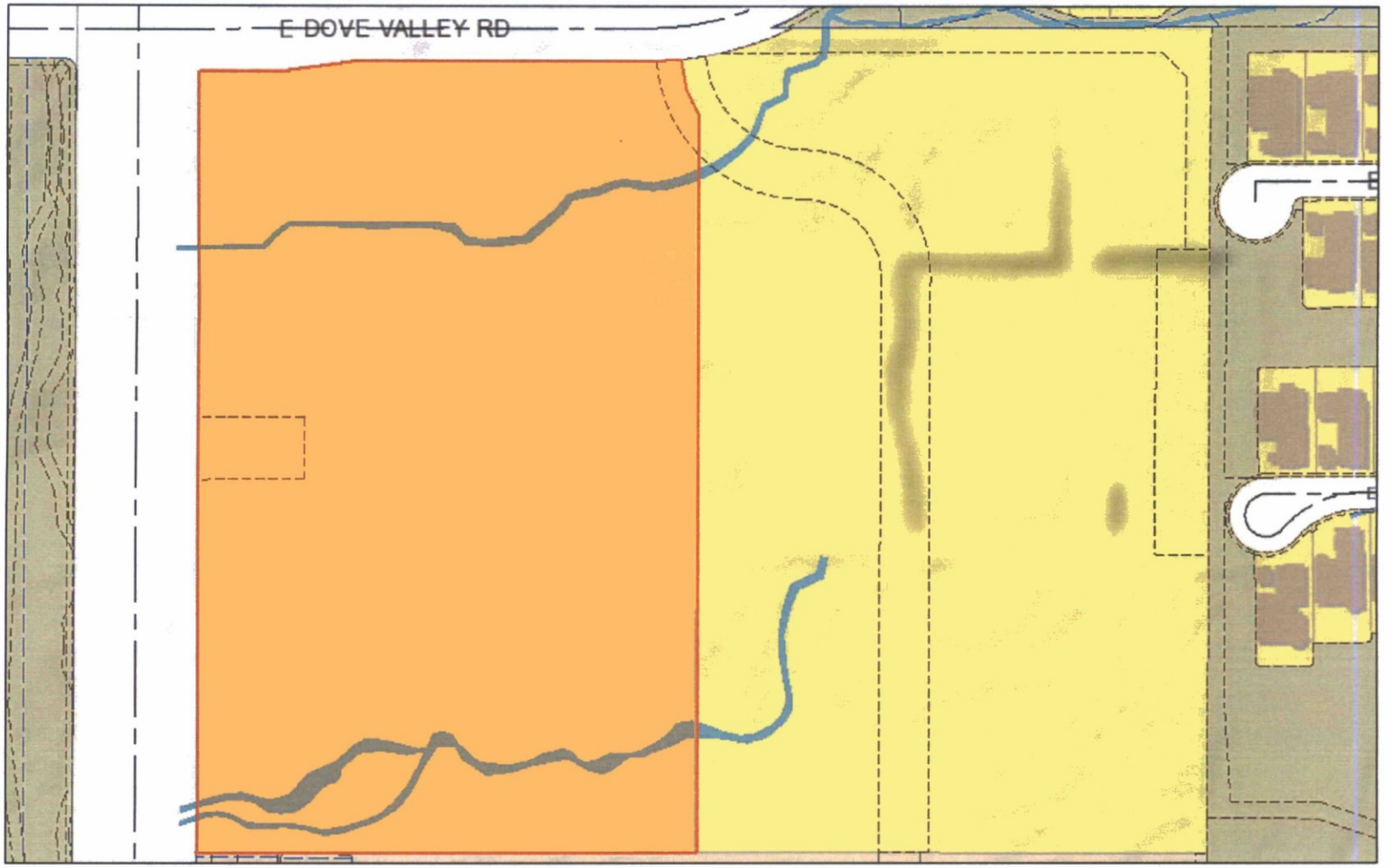
28-APR-14

N O T I C E

THIS DOCUMENT IS PROVIDED AS A GENERAL REFERENCE ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.

THE CITY OF SCOTTSDALE

FIGURE 4



November 10, 2015

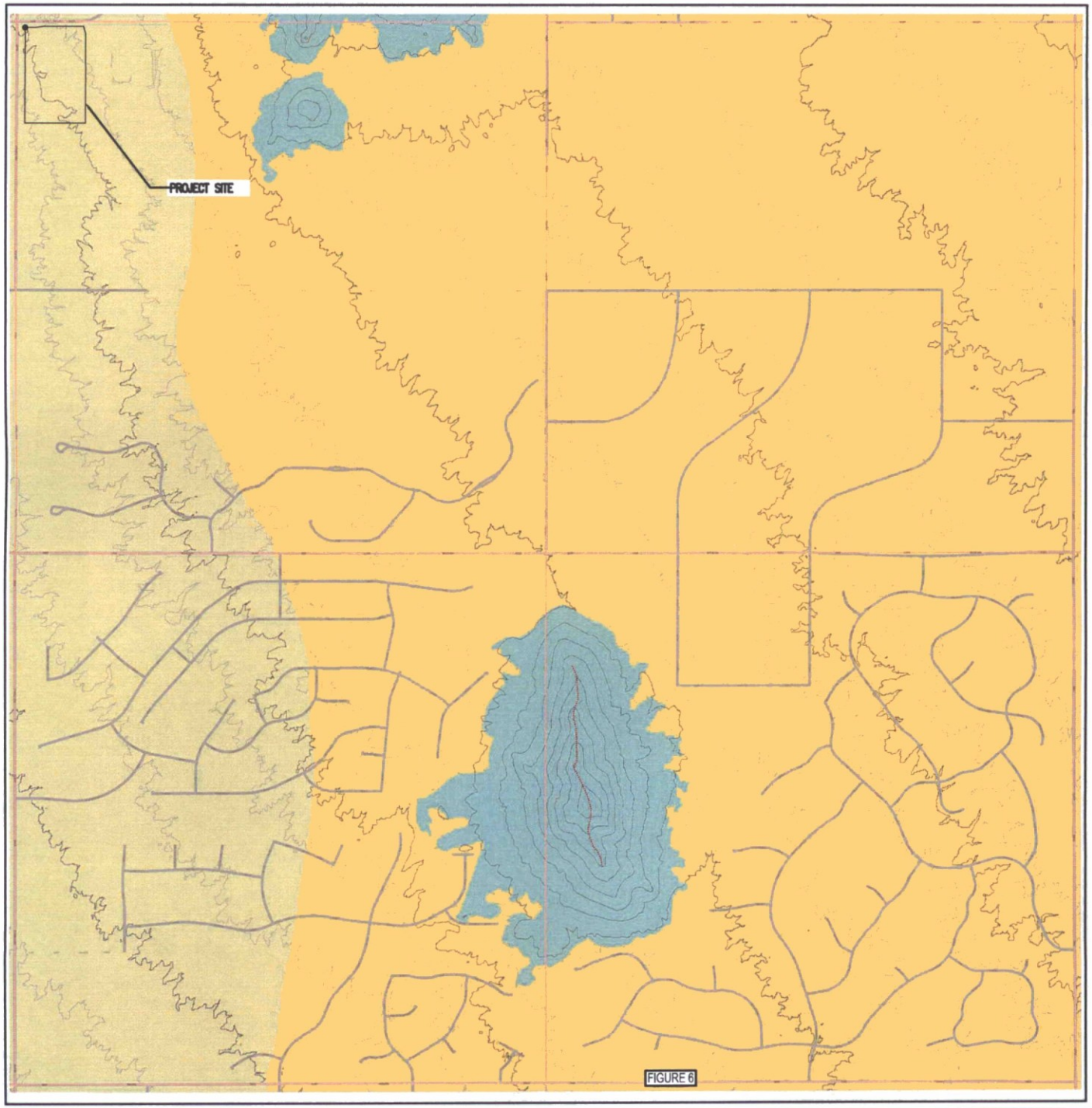
Override 1
GLO
NAOS
Easement
Street Centerlines
Parcel Boundary
Zoning
Large Washes - 50cfs

1:2,000

0 0.015 0.03 0.06 mi

0 0.0275 0.055 0.11 km

FIGURE 5
COS 50CFS WASH EXHIBIT



ESL Landforms and Protected Peaks and Ridges

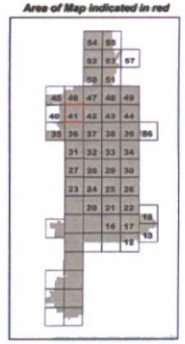
City Limits
Section Boundary
Streets

Landforms
Lower Desert
Upper Desert
Hillside

Elevation
50' Contour
20' Contour

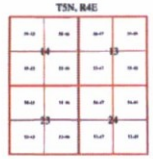
Protected Peaks and Ridges
Peak or Ridge Line

Area of Map indicated in red



Official Detail Map

Map 41



Data Source: City of Scottsdale

0 400 800 1200 1600
Scale in Feet

Map Produced By:
City of Scottsdale
Planning Systems/
Geographic Information Systems

Adopted: December 11, 2001
Per Resolution Number 5868

Ordinance Number 3395
Effective Date: January 31, 2002

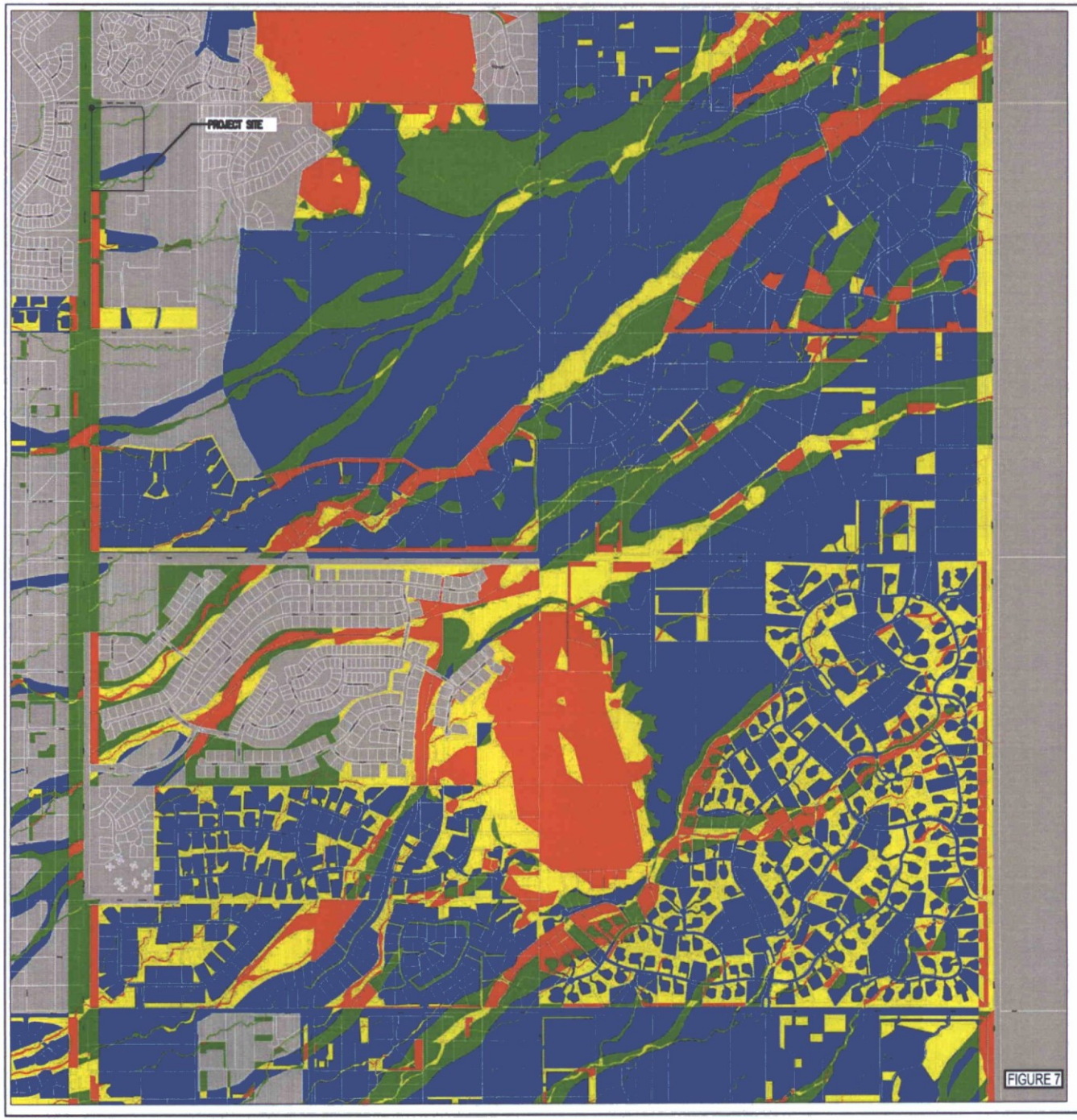


FIGURE 7

High Priority NAOS Location Maps

Zone 41

Legend

- City Limits
- Parcels

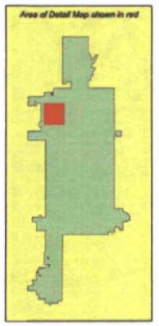
Priority Zones

- 0
- 0.5 - 1
- 2 - 3
- 3.5 - 4.5
- 5 - 12

Refer to City Ordinance 3540

Map Produced By
City of Scottsdale
Geographic Information Systems

Map Date: April 7, 2004



Scale in Feet

0 750 1,500 2,250 3,000

N
W E
S

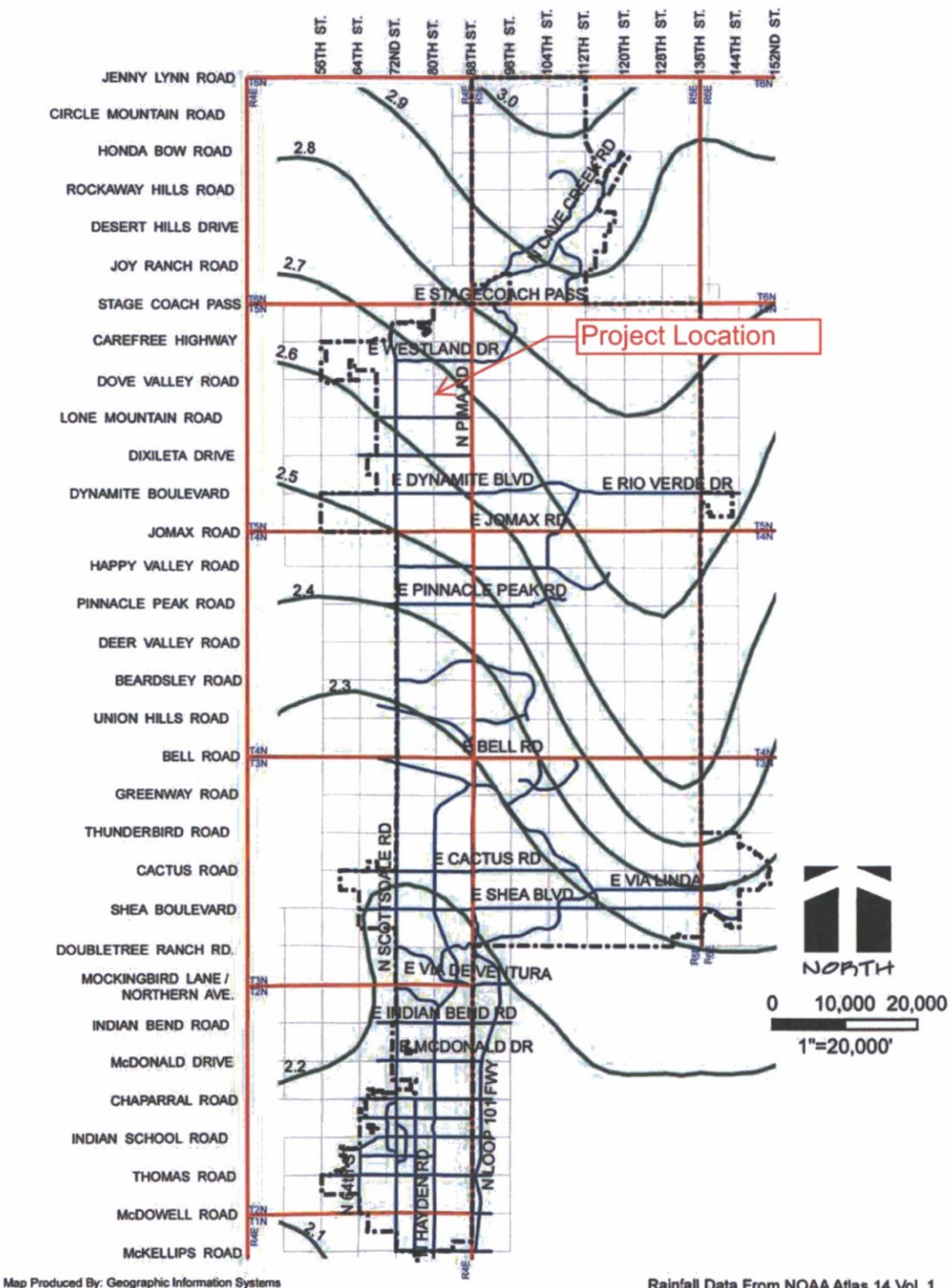
CITY OF SCOTTSDALE

APPENDIX I

Rainfall Data

ISOPLUVIALS

100 Year 2 Hour Precipitation in Inches



Map Produced By: Geographic Information Systems
04/03/2009

Rainfall Data From NOAA Atlas 14 Vol. 1

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, US*
Latitude: 33.7819°, Longitude: -111.9222°
Elevation: 2257 ft*
* source: Google Maps

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	0.228 (0.190–0.279)	0.297 (0.248–0.363)	0.400 (0.331–0.488)	0.480 (0.394–0.583)	0.585 (0.475–0.708)	0.666 (0.534–0.801)	0.748 (0.591–0.898)	0.832 (0.648–0.998)	0.944 (0.718–1.13)	1.03 (0.770–1.25)
10-min	0.347 (0.289–0.424)	0.451 (0.378–0.553)	0.609 (0.504–0.743)	0.730 (0.600–0.887)	0.890 (0.723–1.08)	1.01 (0.813–1.22)	1.14 (0.900–1.37)	1.27 (0.987–1.52)	1.44 (1.09–1.73)	1.57 (1.17–1.90)
15-min	0.430 (0.358–0.526)	0.559 (0.468–0.685)	0.755 (0.625–0.921)	0.905 (0.744–1.10)	1.10 (0.896–1.34)	1.26 (1.01–1.51)	1.41 (1.12–1.69)	1.57 (1.22–1.88)	1.78 (1.36–2.14)	1.95 (1.45–2.35)
30-min	0.579 (0.482–0.708)	0.754 (0.630–0.923)	1.02 (0.842–1.24)	1.22 (1.00–1.48)	1.49 (1.21–1.80)	1.69 (1.36–2.04)	1.90 (1.50–2.28)	2.11 (1.65–2.54)	2.40 (1.83–2.88)	2.62 (1.96–3.16)
60-min	0.717 (0.596–0.876)	0.933 (0.780–1.14)	1.26 (1.04–1.54)	1.51 (1.24–1.83)	1.84 (1.49–2.23)	2.09 (1.68–2.52)	2.35 (1.86–2.82)	2.62 (2.04–3.14)	2.97 (2.26–3.57)	3.25 (2.42–3.92)
2-hr	0.834 (0.705–1.00)	1.08 (0.909–1.29)	1.43 (1.20–1.71)	1.70 (1.42–2.03)	2.07 (1.71–2.47)	2.35 (1.92–2.80)	2.65 (2.13–3.14)	2.94 (2.33–3.49)	3.34 (2.59–3.96)	3.66 (2.78–4.36)
3-hr	0.897 (0.758–1.09)	1.15 (0.973–1.39)	1.49 (1.26–1.81)	1.77 (1.48–2.13)	2.16 (1.78–2.58)	2.47 (2.01–2.94)	2.79 (2.23–3.32)	3.12 (2.46–3.71)	3.59 (2.75–4.26)	3.96 (2.97–4.72)
6-hr	1.06 (0.923–1.25)	1.34 (1.17–1.58)	1.70 (1.47–1.99)	1.99 (1.71–2.32)	2.39 (2.02–2.78)	2.71 (2.26–3.13)	3.04 (2.50–3.51)	3.37 (2.72–3.90)	3.82 (3.01–4.43)	4.18 (3.22–4.84)
12-hr	1.26 (1.10–1.46)	1.58 (1.38–1.84)	1.99 (1.73–2.30)	2.31 (1.99–2.67)	2.74 (2.34–3.16)	3.08 (2.60–3.54)	3.42 (2.85–3.94)	3.77 (3.10–4.34)	4.23 (3.40–4.89)	4.59 (3.63–5.34)
24-hr	1.43 (1.27–1.63)	1.81 (1.60–2.08)	2.37 (2.09–2.70)	2.82 (2.47–3.21)	3.46 (3.00–3.95)	3.98 (3.40–4.56)	4.54 (3.81–5.25)	5.13 (4.23–5.98)	5.97 (4.79–7.07)	6.66 (5.23–7.99)
2-day	1.63 (1.42–1.87)	2.07 (1.81–2.38)	2.72 (2.37–3.11)	3.25 (2.82–3.71)	3.99 (3.42–4.57)	4.59 (3.89–5.28)	5.23 (4.37–6.07)	5.90 (4.86–6.93)	6.85 (5.49–8.16)	7.62 (5.99–9.21)
3-day	1.71 (1.50–1.96)	2.19 (1.92–2.50)	2.89 (2.53–3.29)	3.47 (3.02–3.94)	4.30 (3.70–4.90)	4.97 (4.23–5.70)	5.70 (4.78–6.61)	6.48 (5.35–7.60)	7.60 (6.11–9.05)	8.52 (6.70–10.3)
4-day	1.80 (1.58–2.06)	2.30 (2.03–2.63)	3.06 (2.69–3.47)	3.69 (3.23–4.17)	4.60 (3.98–5.22)	5.35 (4.58–6.13)	6.18 (5.20–7.15)	7.07 (5.84–8.28)	8.36 (6.73–9.95)	9.43 (7.42–11.4)
7-day	2.07 (1.81–2.38)	2.64 (2.31–3.02)	3.51 (3.07–4.01)	4.24 (3.69–4.83)	5.30 (4.56–6.06)	6.19 (5.26–7.12)	7.16 (5.98–8.32)	8.22 (6.75–9.71)	9.76 (7.80–11.7)	11.1 (8.63–13.5)
10-day	2.27 (1.99–2.59)	2.90 (2.55–3.31)	3.85 (3.37–4.38)	4.63 (4.04–5.26)	5.78 (4.98–6.59)	6.73 (5.73–7.72)	7.76 (6.51–8.99)	8.88 (7.33–10.4)	10.5 (8.44–12.6)	11.9 (9.31–14.5)
20-day	2.88 (2.54–3.29)	3.70 (3.26–4.22)	4.89 (4.29–5.56)	5.83 (5.08–6.62)	7.14 (6.18–8.15)	8.19 (7.01–9.39)	9.30 (7.87–10.8)	10.5 (8.73–12.2)	12.1 (9.87–14.4)	13.4 (10.7–16.2)
30-day	3.43 (3.01–3.91)	4.40 (3.87–5.01)	5.81 (5.10–6.60)	6.91 (6.04–7.82)	8.42 (7.30–9.57)	9.60 (8.25–11.0)	10.8 (9.22–12.5)	12.1 (10.2–14.0)	13.9 (11.4–16.4)	15.3 (12.4–18.3)
45-day	4.07 (3.59–4.62)	5.23 (4.63–5.94)	6.90 (6.09–7.80)	8.19 (7.19–9.26)	9.95 (8.67–11.3)	11.3 (9.78–12.9)	12.7 (10.9–14.6)	14.2 (12.0–16.5)	16.2 (13.4–19.2)	17.8 (14.5–21.3)
60-day	4.52 (4.01–5.12)	5.82 (5.16–6.57)	7.64 (6.76–8.61)	9.02 (7.95–10.1)	10.9 (9.51–12.3)	12.3 (10.7–14.0)	13.8 (11.8–15.7)	15.3 (13.0–17.6)	17.3 (14.4–20.4)	18.8 (15.5–22.5)

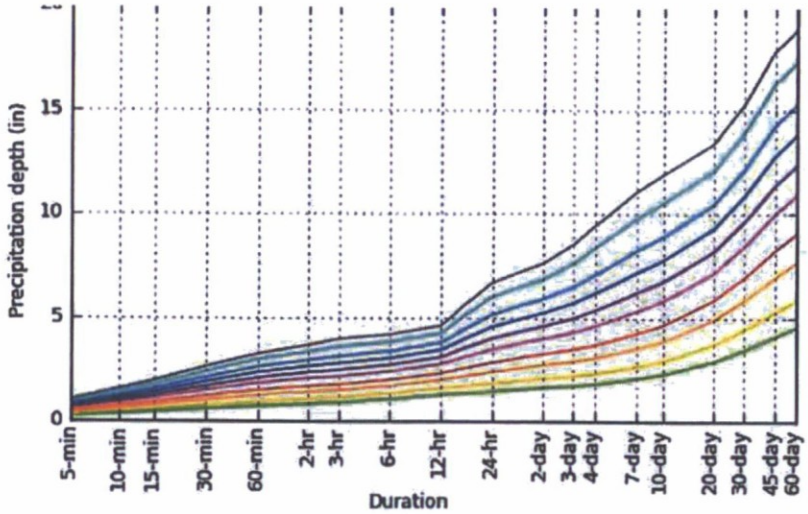
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

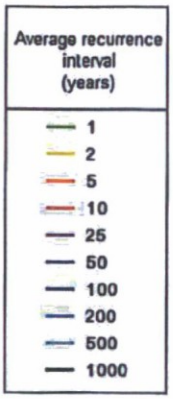
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

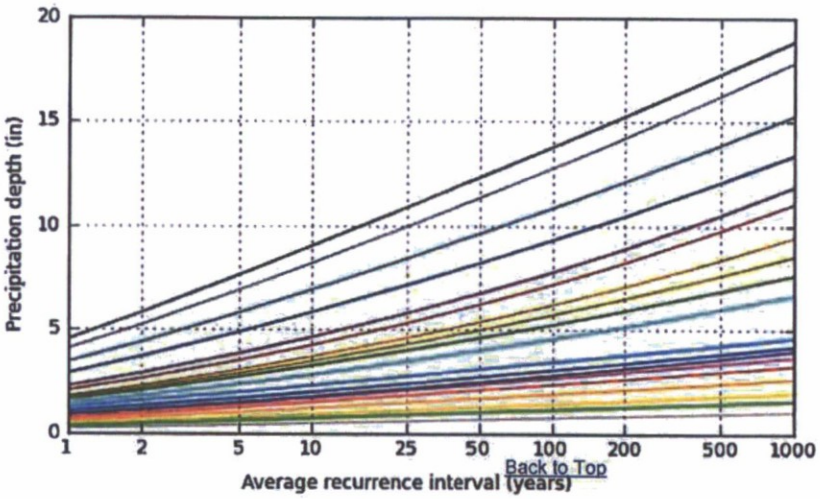
Please refer to NOAA Atlas 14 document for more information.

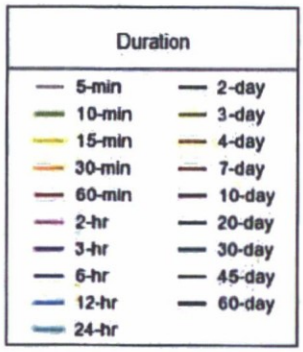
Back to Top

PF graphical









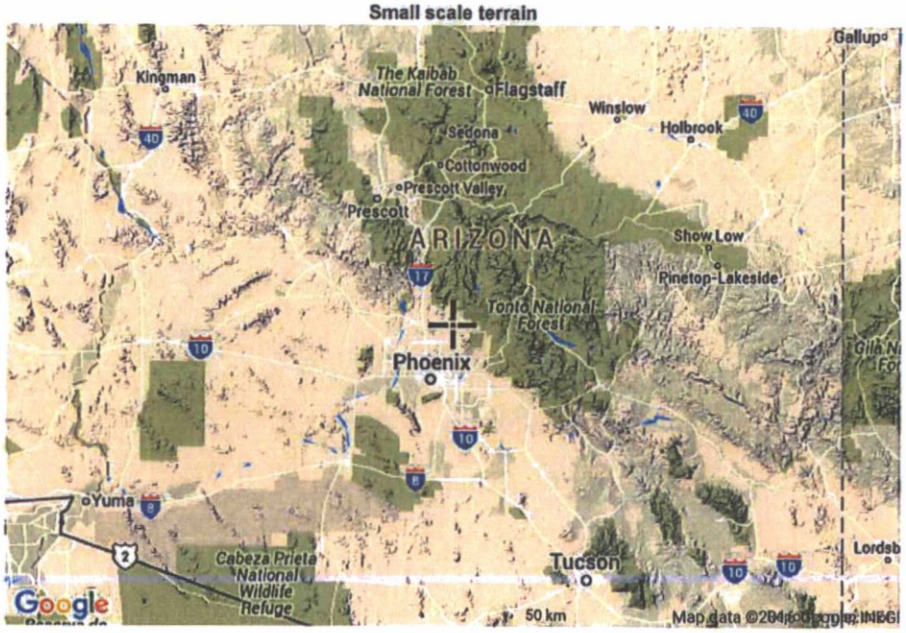
Back to Top

Maps & aerials

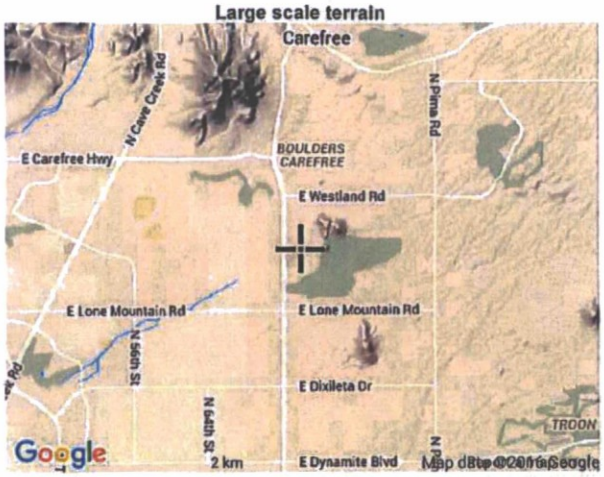
NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Jul 14 15:59:49 2016

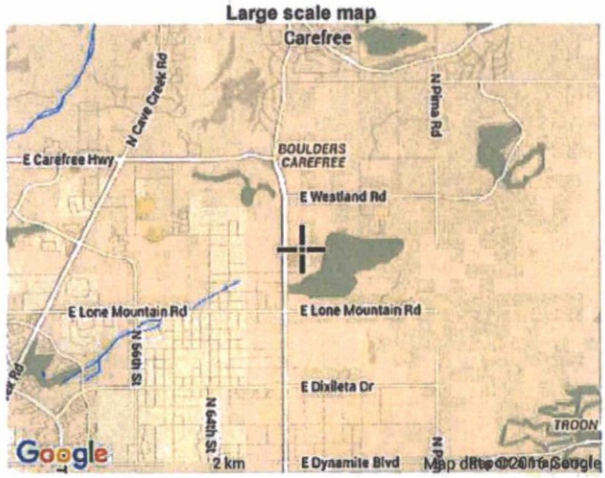
Small scale terrain



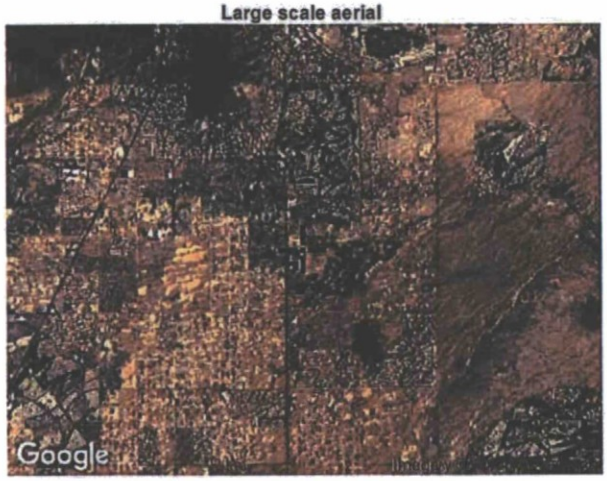
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, US*
Latitude: 33.7838°, Longitude: -111.9250°
Elevation: 2255 ft*
* source: Google Maps

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	2.74 (2.28–3.35)	3.56 (2.98–4.36)	4.80 (3.97–5.86)	5.76 (4.73–7.00)	7.02 (5.70–8.50)	7.99 (6.41–9.61)	8.98 (7.09–10.8)	9.98 (7.78–12.0)	11.3 (8.62–13.6)	12.4 (9.24–14.9)
10-min	2.08 (1.73–2.54)	2.71 (2.27–3.32)	3.65 (3.02–4.46)	4.38 (3.60–5.32)	5.34 (4.34–6.47)	6.08 (4.88–7.31)	6.83 (5.40–8.20)	7.60 (5.92–9.11)	8.62 (6.56–10.4)	9.43 (7.03–11.4)
15-min	1.72 (1.43–2.10)	2.24 (1.87–2.74)	3.02 (2.50–3.68)	3.62 (2.98–4.40)	4.42 (3.58–5.34)	5.03 (4.03–6.04)	5.65 (4.46–6.77)	6.28 (4.89–7.53)	7.12 (5.42–8.56)	7.79 (5.81–9.40)
30-min	1.16 (0.964–1.42)	1.51 (1.26–1.85)	2.03 (1.68–2.48)	2.44 (2.00–2.96)	2.97 (2.41–3.60)	3.38 (2.72–4.07)	3.80 (3.00–4.56)	4.23 (3.29–5.07)	4.80 (3.65–5.77)	5.25 (3.91–6.33)
60-min	0.717 (0.596–0.876)	0.933 (0.780–1.14)	1.26 (1.04–1.54)	1.51 (1.24–1.83)	1.84 (1.49–2.23)	2.09 (1.68–2.52)	2.35 (1.86–2.82)	2.62 (2.04–3.14)	2.97 (2.26–3.57)	3.25 (2.42–3.92)
2-hr	0.417 (0.352–0.500)	0.538 (0.454–0.647)	0.714 (0.601–0.856)	0.850 (0.709–1.02)	1.04 (0.854–1.23)	1.18 (0.958–1.40)	1.32 (1.06–1.57)	1.47 (1.16–1.74)	1.67 (1.29–1.98)	1.83 (1.39–2.18)
3-hr	0.299 (0.252–0.361)	0.382 (0.324–0.463)	0.498 (0.420–0.602)	0.590 (0.494–0.710)	0.719 (0.593–0.860)	0.821 (0.668–0.978)	0.928 (0.743–1.10)	1.04 (0.820–1.24)	1.19 (0.916–1.42)	1.32 (0.990–1.57)
6-hr	0.178 (0.154–0.208)	0.224 (0.195–0.263)	0.284 (0.246–0.333)	0.333 (0.285–0.388)	0.400 (0.338–0.464)	0.452 (0.377–0.523)	0.507 (0.417–0.586)	0.563 (0.455–0.652)	0.638 (0.503–0.739)	0.698 (0.538–0.809)
12-hr	0.104 (0.091–0.121)	0.131 (0.114–0.153)	0.165 (0.143–0.191)	0.192 (0.165–0.221)	0.228 (0.194–0.262)	0.255 (0.216–0.294)	0.284 (0.237–0.327)	0.313 (0.258–0.360)	0.351 (0.282–0.406)	0.381 (0.301–0.443)
24-hr	0.060 (0.053–0.068)	0.076 (0.067–0.087)	0.099 (0.087–0.113)	0.117 (0.103–0.134)	0.144 (0.125–0.164)	0.166 (0.142–0.190)	0.189 (0.159–0.219)	0.214 (0.176–0.249)	0.249 (0.200–0.295)	0.277 (0.218–0.333)
2-day	0.034 (0.030–0.039)	0.043 (0.038–0.050)	0.057 (0.049–0.065)	0.068 (0.059–0.077)	0.083 (0.071–0.095)	0.096 (0.081–0.110)	0.109 (0.091–0.126)	0.123 (0.101–0.144)	0.143 (0.114–0.170)	0.159 (0.125–0.192)
3-day	0.024 (0.021–0.027)	0.030 (0.027–0.035)	0.040 (0.035–0.046)	0.048 (0.042–0.055)	0.060 (0.051–0.068)	0.069 (0.059–0.079)	0.079 (0.066–0.092)	0.090 (0.074–0.106)	0.106 (0.085–0.126)	0.118 (0.093–0.143)
4-day	0.019 (0.016–0.021)	0.024 (0.021–0.027)	0.032 (0.028–0.036)	0.038 (0.034–0.043)	0.048 (0.041–0.054)	0.056 (0.048–0.064)	0.064 (0.054–0.074)	0.074 (0.061–0.086)	0.087 (0.070–0.104)	0.098 (0.077–0.119)
7-day	0.012 (0.011–0.014)	0.016 (0.014–0.018)	0.021 (0.018–0.024)	0.025 (0.022–0.029)	0.032 (0.027–0.036)	0.037 (0.031–0.042)	0.043 (0.036–0.049)	0.049 (0.040–0.058)	0.058 (0.046–0.070)	0.066 (0.051–0.080)
10-day	0.009 (0.008–0.011)	0.012 (0.011–0.014)	0.016 (0.014–0.018)	0.019 (0.017–0.022)	0.024 (0.021–0.027)	0.028 (0.024–0.032)	0.032 (0.027–0.037)	0.037 (0.031–0.043)	0.044 (0.035–0.052)	0.049 (0.039–0.060)
20-day	0.006 (0.005–0.007)	0.008 (0.007–0.009)	0.010 (0.009–0.012)	0.012 (0.011–0.014)	0.015 (0.013–0.017)	0.017 (0.015–0.020)	0.019 (0.016–0.022)	0.022 (0.018–0.026)	0.025 (0.021–0.030)	0.028 (0.022–0.034)
30-day	0.005 (0.004–0.005)	0.006 (0.005–0.007)	0.008 (0.007–0.009)	0.010 (0.008–0.011)	0.012 (0.010–0.013)	0.013 (0.011–0.015)	0.015 (0.013–0.017)	0.017 (0.014–0.019)	0.019 (0.016–0.023)	0.021 (0.017–0.025)
45-day	0.004 (0.003–0.004)	0.005 (0.004–0.005)	0.006 (0.006–0.007)	0.008 (0.007–0.009)	0.009 (0.008–0.010)	0.010 (0.009–0.012)	0.012 (0.010–0.014)	0.013 (0.011–0.015)	0.015 (0.012–0.018)	0.016 (0.013–0.020)
60-day	0.003 (0.003–0.004)	0.004 (0.004–0.005)	0.005 (0.005–0.006)	0.006 (0.006–0.007)	0.008 (0.007–0.009)	0.009 (0.007–0.010)	0.010 (0.008–0.011)	0.011 (0.009–0.012)	0.012 (0.010–0.014)	0.013 (0.011–0.016)

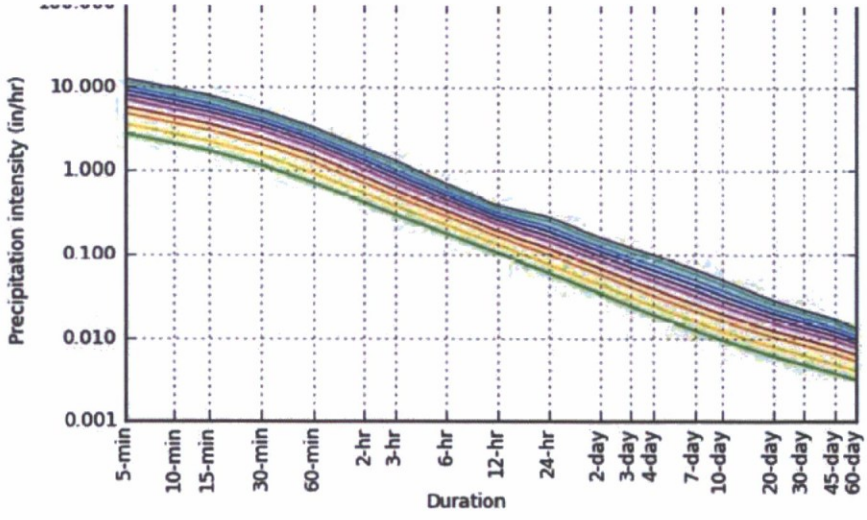
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

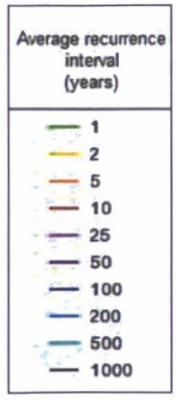
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

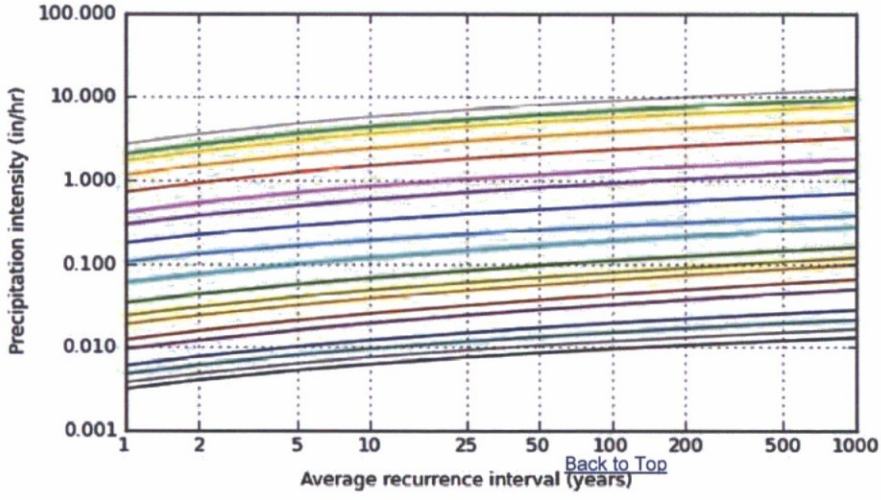
Please refer to NOAA Atlas 14 document for more information.

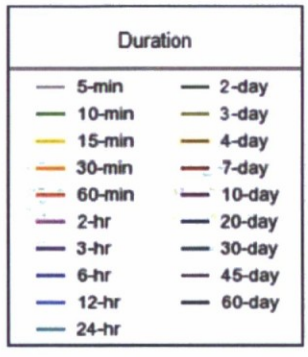
Back to Top

PF graphical









Back to Top

Maps & aerials

NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed Nov 18 20:08:09 2015

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Hydrologic Development
1325 East West Highway
Silver Spring, MD 20910

APPENDIX II

Calculations

2. Time of Concentration

Time of concentration "**Tc**" is the total time of travel from the most hydraulically remote part of the watershed to the concentration point of interest. The calculation of "Tc" must follow FCDMC Hydrology Manual procedures.

***Note:** **Do not add a standard set amount of time to the estimated "Tc" for lot runoff delay (such as 5 or 10 minutes).** Natural land slopes are too variable in Scottsdale to add a set amount of time for lot runoff.

3. Runoff Coefficients

Use Figure 4.1-4 or equivalent to obtain the runoff coefficients or "**C**" values. Composite "**C**" values for the appropriate zoning category or weighted average values calculated for the specific site are both acceptable approaches.

RUNOFF COEFFICIENTS - "C" VALUE			
Land Use	Storm Frequency		
Composite Area-wide Values	2-25 Year	50 Year	100 Year
Commercial & Industrial Areas	0.80	0.83	0.86
Residential Areas-Single Family (average lot size)			
R1-1-1901	0.33	0.50	0.53
R1-130	0.35	0.51	0.59
R1-70	0.37	0.52	0.60
R1-43	0.38	0.55	0.61
R1-35 (35,000 square feet/lot)	0.40	0.56	0.62
R1-18 (18,000 square feet/lot)	0.43	0.58	0.64
R1-10 (10,000 square feet/lot)	0.47	0.62	0.67
R1-7 (7,000 square feet/lot)	0.51	0.64	0.94
Townhouses (R-2, R-4)	0.63	0.74	0.94
Apartments & Condominiums (R-3, R-5)	0.76	0.83	0.94
Specific Surface Type Values			
Paved streets, parking lots (concrete or asphalt), roofs, drive-ways, etc.	0.90	0.93	0.95
Lawns, golf courses, & parks (grassed areas)	0.20	0.25	0.30
Undisturbed natural desert or desert landscaping (no impervious weed barrier)	0.37	0.42	045
Desert landscaping (with impervious weed barrier)	0.63	0.73	0.83
Mountain terrain – slopes greater than 10%	0.60	0.70	0.80
Agricultural areas (flood-irrigated fields)	0.16	0.18	0.20

FIGURE 4.1-4 RUNOFF COEFFICIENTS FOR USE WITH RATIONAL METHOD

Worksheet for Broad Crested Weir - 1

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		68.00	ft³/s
Crest Elevation		2240.00	ft
Tailwater Elevation		2240.00	ft
Crest Surface Type	Gravel		
Crest Breadth		4.00	ft
Crest Length		60.00	ft

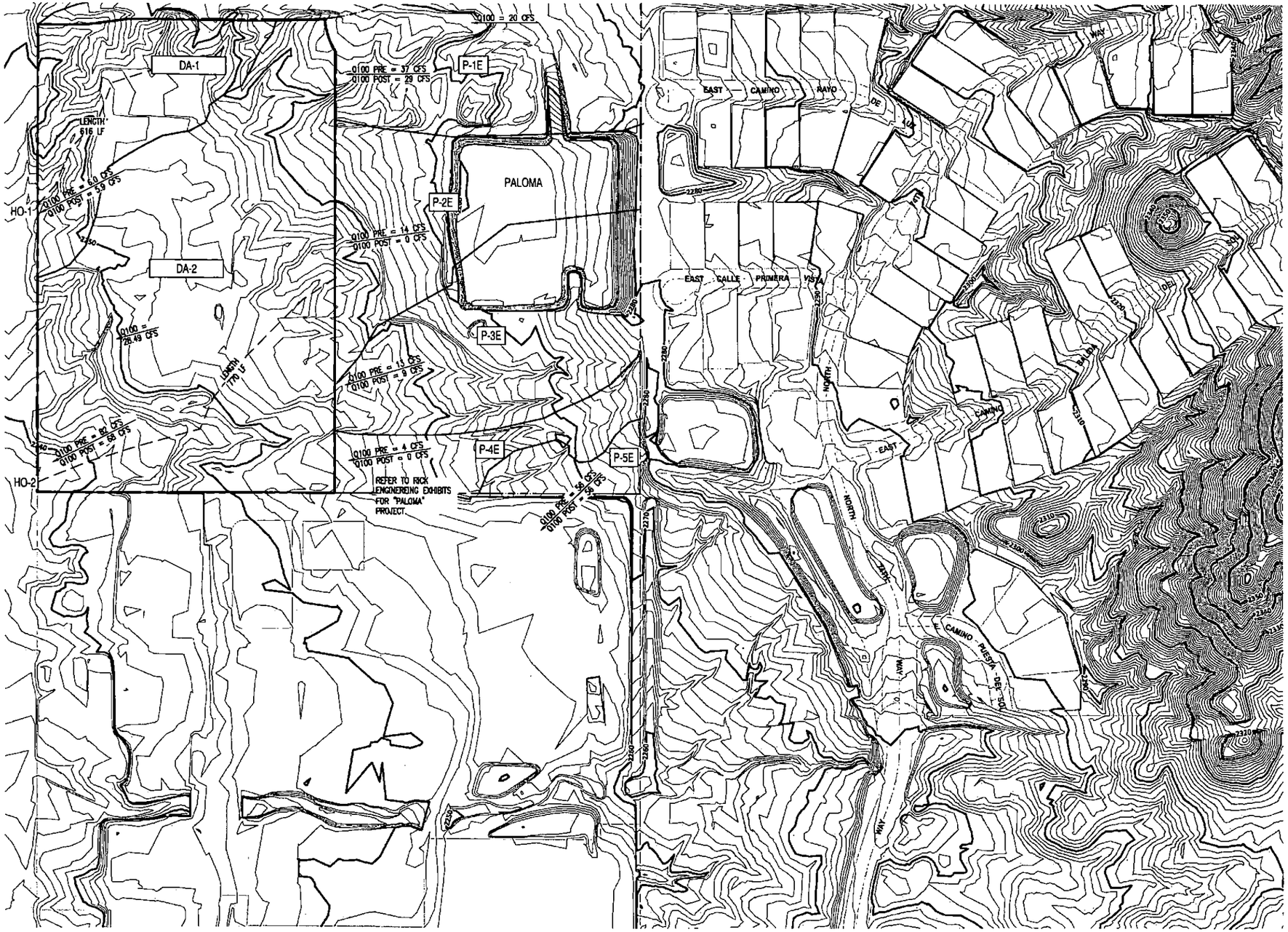
Results

Headwater Elevation	2240.56	ft
Headwater Height Above Crest	0.56	ft
Tailwater Height Above Crest	0.00	ft
Weir Coefficient	2.71	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.71	US
Flow Area	33.54	ft²
Velocity	2.03	ft/s
Wetted Perimeter	61.12	ft
Top Width	60.00	ft

EXISTING CONDITIONS
DRAINAGE AREA MAP

SCOTTSDALE HEIGHTS

SEC DOVE VALLEY RD. AND SCOTTSDALE RD.



0 100' 200' 300'

45621
ALI SAMIN FAKIH
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.
EXPIRES 12-31-18

SEG
8280 E GELDING DR #101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL: 480.588.7228

Hovnanian Homes

PROJECT	SCOTTSDALE HEIGHTS
LOCATION	SEC SCOTTSDALE AND DOVE VALLEY ROAD
DRAWN	SANTIAGO
DESIGNED	CULVER
CHECKED	COUNSELL
APPROV. MGR.	FAKIH
DATE:	03/05/18
ISSUED FOR:	DRB / PP

REVISION NO.:	DATED
1	
2	
3	
4	

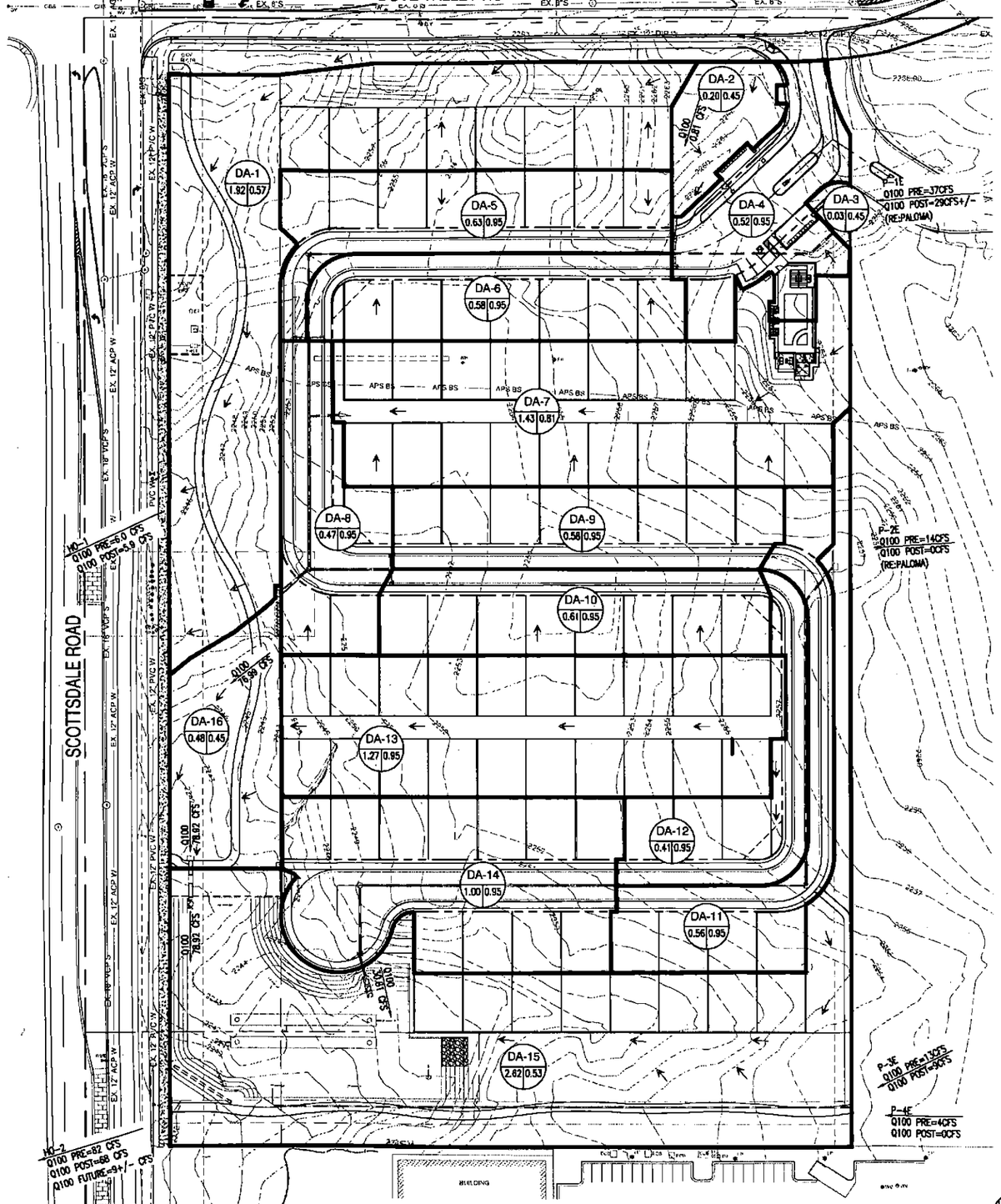
JOB NO.: 150701

SHEET TITLE:

EXISTING CONDITIONS
DRAINAGE AREA MAP

PROPOSED CONDITION
DRAINAGE AREA MAP

SCOTTSDALE HEIGHTS
SEC DOVE VALLEY RD. AND SCOTTSDALE RD.



DRAINAGE AREA
AREA IN ACRES — RUNOFF COEFFICIENT

DRAINAGE AREA KEY

45621
AU SAMIH FAKIH
EXPIRES 12-31-18
PREPARED UNDER THE DIRECT SUPERVISION OF: AU SAMIH FAKIH, P.E. CERTIFICATE NO. 45621 FOR AND ON BEHALF OF SUSTAINABILITY ENGINEERING GROUP, LLC.

SEG
SUSTAINABILITY ENGINEERING GROUP
8280 E GELDING DR #101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226

Lennar Homes

PROJECT: SCOTTSDALE HEIGHTS
LOCATION: SEC SCOTTSDALE AND DOVE VALLEY ROAD

DRAWN: SANTIAGO
DESIGNED: CULVER
CHECKED: COUNSELL
PROJ. MGR.: FAKIH

DATE: 03/05/18
ISSUED FOR: DRB / PP

REVISION NO.	DATED
1	
2	
3	
4	

JOB NO: 150701

SHEET TITLE: PROPOSED CONDITION DRAINAGE AREA MAP

STORM DESIGN

Project: Scottsdale Heights — 100 Year
Job No: 171113 — 0.013
Date: 03/04/18
Location Scottsdale, AZ

Drainage Area	Runoff Entering Structure	To Downstream Structure	A Area contributing to structure (ACRES)	C Imperviousness	(AxC) Equivalent Area	(AxC)t Accumulative Totals of Equivalent Areas	L Length of travel in pipe (ft)	t Time of Concentration (min)	I Rainfall Intensity 100 Year Storm (in/hr)	 Quantity of Rainfall at Grate 100 Year Storm (cfs)	Qt Cumulative Quantity of Rainfall 100 Year Storm (cfs)	 Number of Pipes	D Standard pipe size needed	V Volume in pipe (storage - cf)	S Slope (%) of Individual Gradient	v Velocity (ft/s) Flowing Full	Tt Time (min) of Flow to Next M.H.	A Area (ft^2)	P Perimeter (ft)	R hyd rad (ft)	Q Discharge Capactiy (cfs)	
P1E											37.00											
DA3	HW4	MH6	0.03	0.45	0.01	0.01	27.0	5.00	8.98	37.12	37.12	1	30.0	132.5	1.00%	7.56	0.06	4.91	7.85	0.63	41.13	
	MH6	MH5	0.00	0.00	0.00	0.01	120.0	5.06	8.98		37.12	1	30.0	589.0	1.00%	7.56	0.26	4.91	7.85	0.63	41.13	
DA2	HW3	CB5A	0.20	0.45	0.09	0.09	18.0	5.00	8.98	0.81	0.81	1	18.0	31.8	2.22%	0.46	0.66	1.77	4.71	0.38	15.69	
	CB5A	MH5	0.00	0.00	0.00	0.09	14.0	5.66	8.98	2.22	3.03	1	18.0	24.7	0.50%	1.71	0.14	1.77	4.71	0.38	7.45	
DA4	CB5B	MH5	0.52	0.95	0.49	0.49	14.0	5.00	8.98	2.22	2.22	1	18.0	24.7	0.50%	1.26	0.19	1.77	4.71	0.38	7.45	
	MH5	MH4	0.00	0.00	0.00	0.60	326.0	5.79	8.98		42.37	1	30.0	1600.2	1.90%	8.63	0.63	4.91	7.85	0.63	56.69	
	MH4	MH3	0.00	0.00	0.00	0.60	75.0	6.42	8.98		42.37	1	36.0	530.1	0.53%	5.99	0.21	7.07	9.42	0.75	48.69	
DA5	CB3A	MH3	0.63	0.95	0.60	0.60	14.0	5.00	8.98	5.37	5.37	1	18.0	24.7	0.50%	3.04	0.08	1.77	4.71	0.38	7.45	
DA6	CB3B	MH3	0.58	0.90	0.52	0.52	14.0	5.00	8.98	4.69	4.69	1	18.0	24.7	0.50%	2.65	0.09	1.77	4.71	0.38	7.45	
	MH3	MH2	0.00	0.00	0.00	1.72	69.0	6.63	8.98		52.43	1	36.0	487.7	1.01%	7.42	0.16	7.07	9.42	0.75	67.21	
DA7	HW2	MH2	1.43	0.81	1.16	1.16	30.0	5.00	8.98	10.40	10.40	1	18.0	53.0	1.67%	5.89	0.08	1.77	4.71	0.38	13.61	
	MH2	CB1	0.00	0.00	0.00	2.88	135.0	6.79	8.98		62.83	1	36.0	954.3	0.96%	8.89	0.25	7.07	9.42	0.75	65.53	
DA9	CB7A	MH7	0.58	0.95	0.55	0.55	14.0	5.00	8.98	4.95	4.95	1	18.0	24.7	0.50%	2.80	0.08	1.77	4.71	0.38	7.45	
DA10	CB7B	MH7	0.61	0.95	0.58	0.58	14.0	5.00	8.98	5.20	5.20	1	18.0	24.7	0.50%	2.94	0.08	1.77	4.71	0.38	7.45	
	MH7	CB1	0.00	0.00	0.00	1.13	73.0	5.08	8.98		10.15	1	18.0	129.0	1.00%	5.74	0.21	1.77	4.71	0.38	10.53	
DA8	CB1	HW1	0.47	0.95	0.45	4.45	30.0	7.04	8.98	4.01	76.99	1	42.0	288.6	1.33%	8.00	0.06	9.62	11.00	0.88	116.34	
PE2	HW6	MH12			0.00	0.00	40.0	5.00		14.00	14.00	1	24.0	125.7	1.25%	4.46	0.15	3.14	6.28	0.50	25.36	
	MH12	MH11	0.00	0.00	0.00	0.00	251.0	5.15	8.98		14.00	1	24.0	788.5	1.12%	4.46	0.94	3.14	6.28	0.50	24.01	
	MH11	MH10	0.00	0.00	0.00	0.00	168.0	6.09	8.98		14.00	1	24.0	527.8	1.67%	4.46	0.63	3.14	6.28	0.50	29.31	
DA12	CB10A	MH10	0.41	0.95	0.39	0.39	14.0	5.00	8.98	3.50	3.50	1	18.0	24.7	0.50%	1.98	0.12	1.77	4.71	0.38	7.45	
DA11	CB10B	MH10	0.56	0.95	0.53	0.53	14.0	5.00	8.98	4.78	4.78	1	18.0	24.7	0.50%	2.70	0.09	1.77	4.71	0.38	7.45	
	MH10	MH9	0.00	0.00	0.00	0.92	227.0	6.72	8.98		22.28	1	24.0	713.1	1.89%	7.09	0.53	3.14	6.28	0.50	31.18	
	MH9	CB8	0.00	0.00	0.00	0.92	63.0	7.25	8.98		22.28	1	24.0	197.9	2.86%	7.09	0.15	3.14	6.28	0.50	38.36	
DA14	CB8	HW5	1.00	0.95	0.95	1.87	15.0	7.40	8.98	8.53	30.81	1	24.0	47.1	6.67%	9.81	0.03	3.14	6.28	0.50	58.58	

Quantity of Rainfall (Q-100)= **C*I*A (cfs)**
Where: C= Imperviousness
I=Rainfall Intensity (In/hr)
A= Area contributing to Structure (Acres)

Velocity of Stormwater in Pipe (v)= **(1.49/n)*(((3.14*(D/24)^2)/(3.14*D/12))^0.66)*((S)^0.5) (fps)**
Where: D=Pipe diameter (in)
S= Pipe slope (ft/ft)
n= Mannings "n" value

Discharge Capacity (Q)=**(1.49/n)*Ap*(R^0.66)*S^0.5 (cfs)**
Where: Ap= Area of pipe (sq.ft.)
R= Hydraulic Radius (ft) = Ap/P
P=Perimeter of Pipe (ft) = 3.14*D/12
S= Pipe slope (ft/ft)
n= Mannings "n" value

STORM DESIGN

Runoff Entering Structure	To Downstream Structure	IE INVERT UPSTREAM (ft)	IE INVERT DOWNSTREAM (ft)	HEADLOSS DOWNSTREAM JUNCTION MINOR LOSS COEFFICIENT	HEADLOSS JUNCTION MINOR LOSS (ft) **JUNCTION loss=KJ*(Q^2/A^2*2g)**	HEADLOSS Friction Loss	HGL Hydraulic Grade Line Elevation UPSTREAM	HGL Hydraulic Grade Line Elevation DOWNSTREAM	Rim Rim Elevation (UPSTREAM)	 Cover over Pipe - upstream (feet)	 RIM - HGL at upstream Structure (feet)
0	0										
HW4	MH6	59.00	58.73	0.60	0.53	0.22	62.27	62.05	63.50	2.00	1.45
MH6	MH5	58.50	57.30	1.00	0.89	0.98	61.07	60.10	63.25	2.25	3.15
HW3	CB5A	57.50	57.10	0.50	0.00	0.00	60.12	60.12	61.00	2.00	0.88
CB5A	MH5	57.00	56.93	1.00	0.05	0.01	60.11	60.10	60.70	2.20	0.60
CB5B	MH5	57.00	56.93	1.00	0.02	0.01	60.10	60.10	60.70	2.20	0.60
MH5	MH4	56.50	50.31	0.80	0.93	3.46	56.64	53.18	61.00	2.00	7.82
MH4	MH3	50.00	49.60	1.00	0.56	0.30	52.88	52.58	55.00	2.00	2.42
CB3A	MH3	50.75	50.68	1.00	0.14	0.04	52.62	52.58	54.37	2.12	1.79
CB3B	MH3	50.75	50.68	1.00	0.11	0.03	52.61	52.58	54.37	2.12	1.79
MH3	MH2	49.60	48.90	0.60	0.51	0.42	52.16	51.73	54.67	2.07	2.94
HW2	MH2	49.50	49.00	0.60	0.32	0.29	52.02	51.73	53.50	2.50	1.77
MH2	CB1	48.90	47.60	0.90	1.10	1.19	50.54	49.35	53.98	2.08	4.63
CB7A	MH7	49.25	49.18	0.60	0.07	0.03	50.74	50.71	53.03	2.28	2.32
CB7B	MH7	49.25	49.18	0.60	0.08	0.03	50.74	50.71	53.03	2.28	2.32
MH7	CB1	49.08	48.35	0.90	0.46	0.68	50.03	49.35	53.33	2.75	3.98
CB1	HW1	47.40	47.00		0.00	0.17	49.17	49.00	52.60	1.70	3.60
HW6	MH12	52.50	52.00	0.60	0.19	0.15	52.91	52.76	57.00	2.50	4.24
MH12	MH11	51.80	48.99	0.80	0.25	0.96	51.80	49.44	56.07	2.27	6.63
MH11	MH10	48.80	45.99	1.00	0.31	0.64	48.80	47.99	53.00	2.20	5.01
CB10A	MH10	46.25	46.18	1.00	0.06	0.02	48.00	47.99	49.84	2.09	1.85
CB10B	MH10	46.25	46.18	1.00	0.11	0.03	48.02	47.99	49.84	2.09	1.85
MH10	MH9	45.80	41.51	0.80	0.62	2.19	45.80	42.77	50.14	2.34	7.37
MH9	CB8	41.30	39.50	0.50	0.39	0.61	42.16	41.55	45.60	2.30	4.05
CB8	HW5	39.00	38.00		0.00	0.28	41.28	41.00	43.80	2.80	2.80

Friction Headloss **(Hf) = $KV^2/2gR^{4/3}L$**
Where: Ap= Area of pipe (sq.ft.)
R= Hydraulic Radius (ft) = Ap/P
P=Perimeter of Pipe (ft) = 3.14*D/12
D=Pipe diameter (in)
L = Pipe Length
K = $2gn^2/2.21$ = 0.0049

Junction Minor Loss = **Kin*(Q^2/A^2*2*g)**
Where: Kin = Bend Loss Coefficient
Q = Cumulative Quantitiy of Rainfall (cfs)
A = Area (ft^2)
g = Acceleration due to gravity, 32.2 ft/s^2

Inlet Capacity - Sump Locations

Description: Calculation of Inlet Capacity for Single MAG 535 Catch Basin
Date: March 2, 2018
Location: Fry's 681
Reference: Drainage Design Manual for Maricopa County, Vol. II, Hydraulics, pg. 3-27

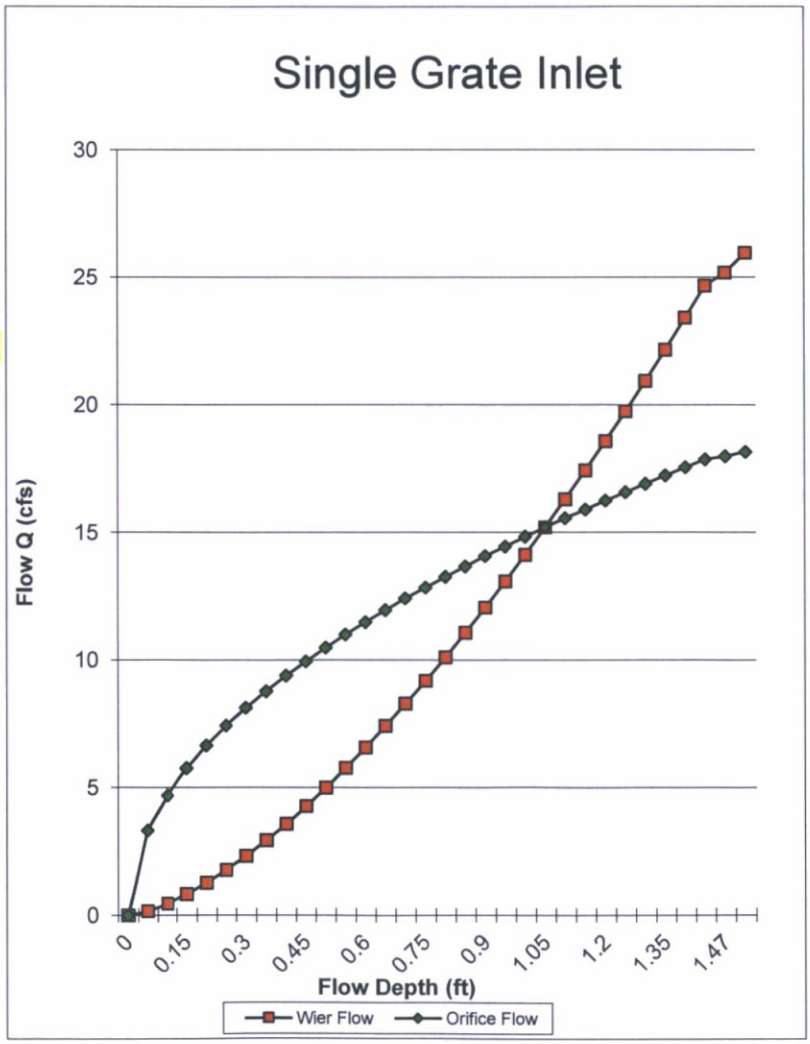
Weir EQ. $Q_i = C_w P d^{1.5} (C_f)$ **Orifice EQ.** $Q_i = C_o A (2gd)^{0.5} (C_f)$

Where: $C_w = 3.0$, $C_o = 0.67$, and C_f = clogging factor = 0.5

P =	**9.33**	**ft**
A =	**5.42**	**sq.ft.**

where,
P = Perimeter of Catchbasin minus area of longitudinal & lateral bars
A = Total area of grate minus area of longitudinal & lateral bars

Depth (ft)	Weir Qi (cfs)	Orifice Qi (cfs)
0.00	0.00	0.00
0.05	0.16	3.26
0.10	0.44	4.61
0.15	0.81	5.64
0.20	1.25	6.52
0.25	1.75	7.29
0.30	2.30	7.98
0.35	2.90	8.62
0.40	3.54	9.22
0.45	4.22	9.77
0.50	4.95	**10.30**
0.55	5.71	10.81
0.60	6.50	11.29
0.65	7.33	11.75
0.70	8.20	12.19
0.75	9.09	12.62
0.80	10.01	13.03
0.85	10.97	13.43
0.90	11.95	13.82
0.95	12.96	14.20
1.00	14.00	14.57
1.05	15.06	14.93
1.10	16.15	15.28
1.15	17.26	15.63
1.20	18.40	15.96
1.25	19.56	16.29
1.30	20.74	16.61
1.35	21.95	16.93
1.40	23.18	17.24
1.45	24.44	17.55
1.47	24.94	17.67
1.50	25.71	17.85



Gutter Flow Calculation - worst case

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	5.37	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.24
0+13	0.00
0+14	0.33
0+20	0.42
0+23	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.24)	(0+23, 0.50)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.25	ft
Elevation Range	0.00 to 0.50 ft	
Flow Area	1.82	ft²
Wetted Perimeter	13.82	ft
Hydraulic Radius	0.13	ft
Top Width	13.76	ft
Normal Depth	0.25	ft
Critical Depth	0.29	ft

Gutter Flow Calculation - worst case

Results

Critical Slope		0.00451	ft/ft
Velocity		2.96	ft/s
Velocity Head		0.14	ft
Specific Energy		0.39	ft
Froude Number		1.44	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.25	ft
Critical Depth	0.29	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00451	ft/ft

Street cross-section

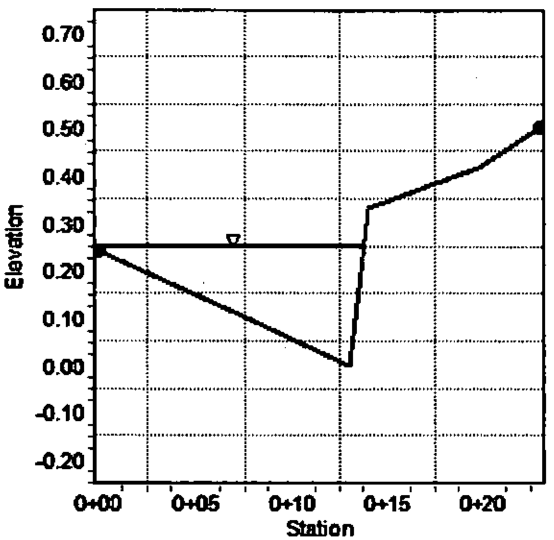
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Normal Depth	0.25	ft
Discharge	5.37	ft³/s

Cross Section Image



Culvert - emergency access 4' dia

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	42.00	ft
Centroid Elevation	39.00	ft
Tailwater Elevation	40.00	ft
Discharge Coefficient	0.60	
Diameter	4.00	ft

Results

Discharge	85.53	ft^3/s
Headwater Height Above Centroid	3.00	ft
Tailwater Height Above Centroid	1.00	ft
Flow Area	12.57	ft^2
Velocity	6.81	ft/s

Wall Opening to DI6, 14 cfs

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	58.00	ft
Centroid Elevation	56.33	ft
Tailwater Elevation	57.00	ft
Discharge Coefficient	0.26	
Opening Width	10.00	ft
Opening Height	0.67	ft

Results

Discharge	14.00	ft^3/s
Headwater Height Above Centroid	1.67	ft
Tailwater Height Above Centroid	0.67	ft
Flow Area	6.70	ft^2
Velocity	2.09	ft/s

Wall opening to DI6 - cross section

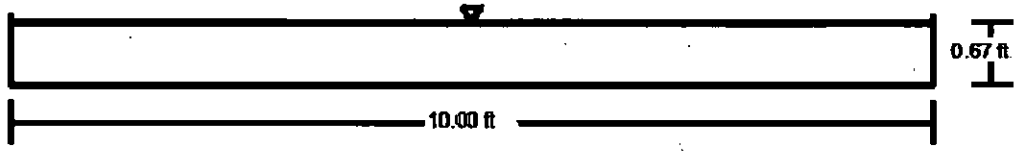
Project Description

Solve For	Discharge

Input Data

Discharge	14.00	ft³/s
Headwater Elevation	58.00	ft
Centroid Elevation	56.33	ft
Tailwater Elevation	57.00	ft
Discharge Coefficient	0.26	
Opening Width	10.00	ft
Opening Height	0.67	ft

Cross Section Image



V: 1
H: 1

APPENDIX III

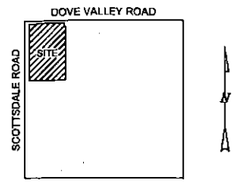
Preliminary Grading & Drainage Plan

APPENDIX IV

ALTA

ALTA/NSPS LAND TITLE SURVEY

OF
PARCEL 1
LAND DIVISION MAP FOR
DOVE VALLEY AND SCOTTSDALE ROAD
BOOK 983, PAGE 8, MARICOPA COUNTY RECORDS
BEING
A PORTION OF THE NORTHWEST QUARTER OF
SECTION 14, TOWNSHIP 5 NORTH, RANGE 4 EAST,
OF THE GILA AND SALT RIVER BASE AND MERIDIAN,
MARICOPA COUNTY, ARIZONA.



VICINITY MAP
N.T.S.

PARCEL DESCRIPTION

PARCEL 1 OF LAND DIVISION MAP FOR DOVE VALLEY AND SCOTTSDALE ROAD, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE COUNTY RECORDER OF MARICOPA COUNTY, ARIZONA, RECORDED IN BOOK 983 OF MAPS, PAGE 8.

NOTES: (Table "A" Items)

1. SET A 1/2" REBAR W/CAP "AWLS 45377" AT PROPERTY CORNERS AS SHOWN HEREON UNLESS OTHERWISE NOTED.
2. SUBJECT PROPERTY ADDRESS: 7225 E DOVE VALLEY ROAD, SCOTTSDALE, 85266.
3. PARCEL 1 (GROSS) AREA:
   579,934.3 SQUARE FEET OR 13.313 ACRES, MORE OR LESS.

   NET AREA = GROSS AREA MINUS
   EASEMENT FOR ROAD/HIGHWAY RECORDED IN DOCKET 7132, PAGE 539
   551,469.1 SQUARE FEET OR 12.660 ACRES, MORE OR LESS.
4. THIS SURVEY SHOWS ABOVE GROUND UTILITIES, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITY LINES SHOWN HEREON ARE IN THE EXACT LOCATION INDICATED. ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION MADE AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CLIENT IS HEREBY ADVISED THAT EXCAVATION MAY BE NECESSARY TO EXPOSE UNDERGROUND UTILITIES TO CONFIRM EXACT LOCATION.
5. ADJOINER INFORMATION IS PER MARICOPA COUNTY ASSESSOR WEBSITE.

SCHEDULE "B" ITEMS

1. Reservations contained in the Patent from the United States of America recorded in Docket 1238, Page 565, reading as follows:
   Subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights as may be recognized and acknowledged by the local customs, laws and decisions of courts; and there is reserved from the lands hereby granted, a right of way thereon for ditches or canals constructed by the authority of the United States of America.
2. Water rights, claims or title to water, whether or not shown by the public records.
3. Second Installment of 2017 taxes, a lien, payable on or before March 1, 2018, and delinquent May 1, 2018.
4. An easement for road or highway and incidental purposes, recorded as Docket 7132, Page 539.
5. An easement for underground electric lines and incidental purposes, recorded as Docket 7326, Page 507.
6. An easement for ingress and egress and incidental purposes, recorded as Docket 9137, Page 603.
7. Covenants, conditions and restrictions in the document recorded as 99-0807249, re-recorded as 99-1027318 and Amendment recorded as 2007-0989778, and Second Amendment recorded as 2015-0775626, all of Official Records, but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status, or national origin, to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes.
8. An easement for utilities and slope and incidental purposes, recorded as 2002-1233781, of Official Records.
9. Easements, restrictions, reservations, conditions and set-back lines as set forth on the plat recorded as Book 983 of Maps, Page 08, but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin to the extent such covenants, conditions or restrictions violate 42 USC 3604(c).
10. All matters as set forth in Reciprocal Easement Agreement, recorded October 28, 2015 as 2015-0775628 of Official Records.
11. All matters as set forth in Sanitary Sewer Easement Agreement, recorded October 28, 2015 as 2015-0775629 of Official Records.
12. All matters as set forth in Landscape, Irrigation, Slope and Temporary Construction Easement Agreement, recorded October 28, 2015 as 2015-0775630 of Official Records.
13. All matters as set forth in Memorandum of Agreement, recorded October 28, 2015 as 2015-0775631 of Official Records.
14. All matters as set forth in Agreement for the Waiver of Claims for Diminution in Value of Property, recorded March 28, 2017 as 2017-0214748 of Official Records.
15. The rights of parties in possession by reason of any unrecorded lease or leases or month to month tenancies affecting any portion of the within described property.
    NOTE: This matter will be more fully set forth or deleted upon compliance with the applicable requirement(s) set forth herein.
16. The following matters disclosed by an ALTA/ACSM survey made by ___ on ___, designated Job No. ___:

BASIS OF BEARING

THE BASIS OF BEARING AND ALL MONUMENTATION SHOWN HEREON IS BASED ON THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 5 NORTH, RANGE 4 EAST, USING A BEARING OF NORTH 00°01'33" EAST AS SHOWN ON THE LAND DIVISION MAP, RECORDED IN BOOK 983, PAGE 8, MARICOPA COUNTY RECORDS.

BENCHMARK

BENCHMARK IS A GLO BRASS CAP IN HANDHOLE, LOCATED AT THE INTERSECTION OF SCOTTSDALE ROAD AND DOVE VALLEY ROAD, BEING THE NORTHWEST CORNER OF SECTION 14, T.5N., R.4E.
ELEVATION = 2252.243' NAVD 88.

FLOOD ZONE DESIGNATION

SUBJECT PROPERTY IS LOCATED WITHIN ZONE "X" (DOTTED) AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP NO. 04013C0895L, DATED OCTOBER 16, 2013. ZONE "X" IS DEFINED AS AREAS OF 0.2% ANNUAL FLOOD; AREAS OF 1% ANNUAL CHANCE 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.

GENERAL NOTES

1. ALL TITLE INFORMATION IS BASED ON A COMMITMENT FOR TITLE INSURANCE PREPARED BY CLEAR TITLE AGENCY OF ARIZONA, LLC, NO: 10-530292, WITH AN EFFECTIVE DATE OF NOVEMBER 6, 2017.
2. A.R.S. 32-151 STATES THAT THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A PERSON OR FIRM THAT IS REGISTERED OR CERTIFIED BY THE BOARD IS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OR FINDINGS THAT ARE SUBJECT TO THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE.
3. SURVEY FIELD WORK WAS COMPLETED ON MAY 20, 2016.
4. THIS SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP, TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.
5. SUBJECT PROPERTY CONTAINS VEGETATION, TRAILS AND WASHES CONSISTENT WITH DESERT TERRAIN.
6. SCHEDULE "B" ITEM #8, UTILITY AND SLOPE EASEMENT RECORDED IN DOCUMENT NO. 2002-1233781, DOES NOT AFFECT SUBJECT PROPERTY.

CERTIFICATION

TO: Shea 124 Investments, LLC, an Arizona limited liability company as to an undivided 72.95% interest and HV & Canal, LLC, a Delaware limited liability company as to an undivided 27.05% interest

K. Hovnanian Great Western Homes, LLC, an Arizona limited liability company

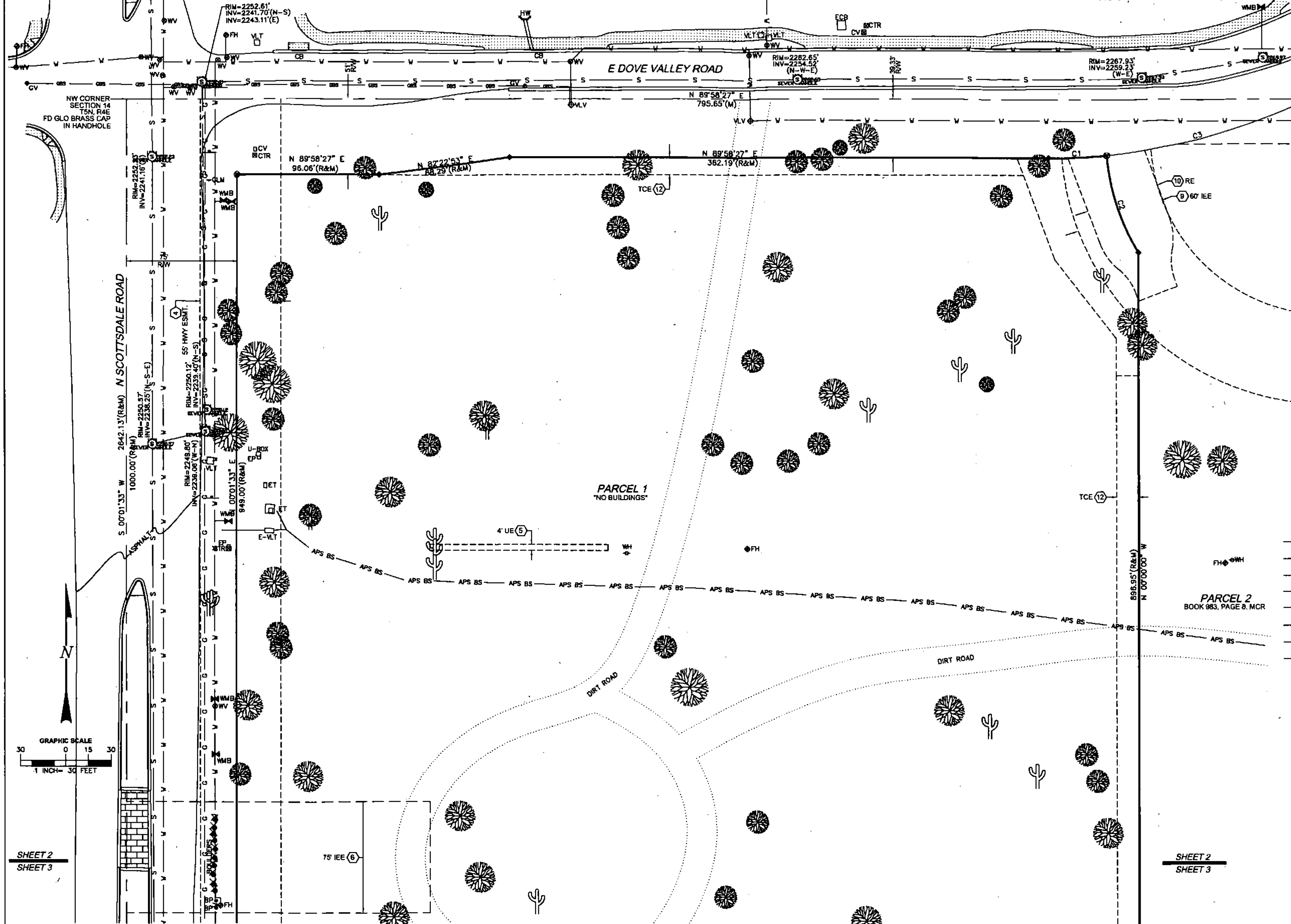
The City of Scottsdale

Clear Title Agency of Arizona, LLC

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 8, 11, 16, 17 AND 19 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON MAY 20, 2016.

ALTA/NSPS LAND TITLE SURVEY
SECTION 14
TOWNSHIP 5 NORTH, RANGE 4 EAST
OF THE G.S.R.B. & M.
MARICOPA COUNTY, ARIZONA

AW LAND SURVEYING, LLC
P.O. BOX 2170, CHANDLER, AZ 85244
(480) 244-7630 (480) 243-4287



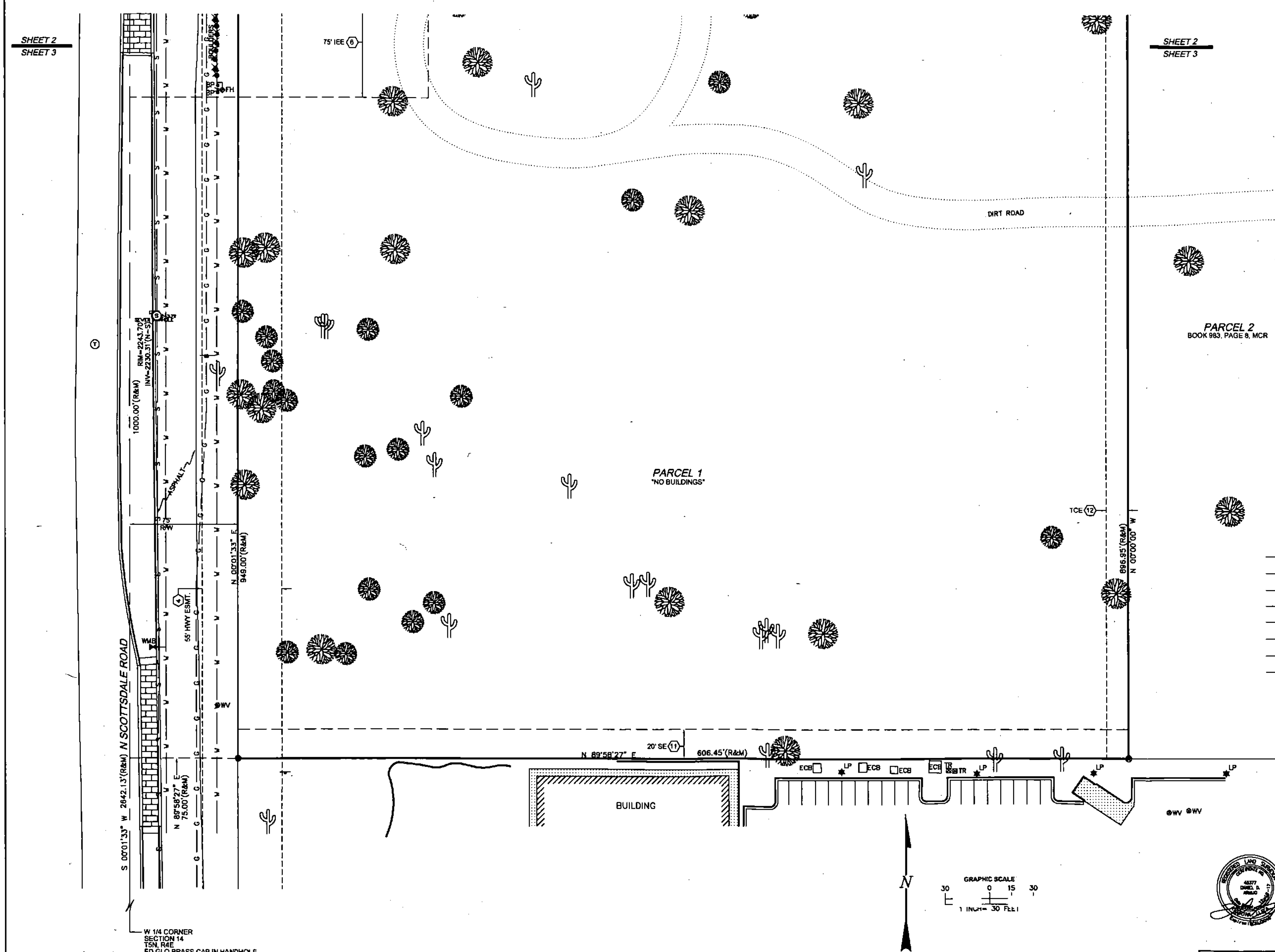
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE
C1	407.00'	38.96'	5°29'07"
C2	150.00'	69.55'	26°33'53"
C3	407.00'	141.82'	19°57'52"

LEGEND

MCR	MARICOPA COUNTY RECORDS
R/W	RIGHT OF WAY
SE	SEWER EASEMENT
UE	UTILITY EASEMENT
RE	RECIPROCAL EASEMENT
IEE	INGRESS/EGRESS EASEMENT
TCE	TEMPORARY CONSTRUCTION EASEMENT
HWY ESMT.	HIGHWAY EASEMENT
CTR	CABLE TV RISER
CV	CABLE J-BOX
ECB	ELECTRIC CABINET
VLT	VAULT (UTILITY UNKNOWN)
WV	WATER VALVE
CB	CATCH BASIN
GV	GAS VALVE
HW	HEADWALL
VLV	VALVE
FH	FIRE HYDRANT
U-BOX	UTILITY BOX
EP	ELECTRIC PANEL
ET	ELECTRIC TRANSFORMER
E-VLT	ELECTRIC VAULT
WMB	WATER METER BOX
BP	BARRIER POST
TR	TELEPHONE RISER
LP	LIGHT POLE
(M)	MEASURED DATA
(R)	RECORD DATA (BOOK 983, PAGE 8)
Ⓢ	SEWER MANHOLE
Ⓤ	UTILITY MANHOLE
⊗	FOUND 1/2" REBAR W/CAP 22762
◆	FOUND 1/2" REBAR W/CAP ILLEGIBLE SET CAP "AWLS 45377"
	CONCRETE
	BRICK PAVERS
	TREE OR BUSH
	SAGUARO CACTUS
	PROPERTY LINE
	ADJOINER LINE
	CENTER LINE
—S—	SEWER LINE
—W—	WATER LINE
—G—	GAS LINE
—GBS—	GAS BLUESTAKE
—APS—	APS BLUESTAKE

ALTA/NSPS LAND TITLE SURVEY
SECTION 14
TOWNSHIP 5 NORTH, RANGE 4 EAST
OF THE G.S.R.B. & M.
MARICOPA COUNTY, ARIZONA

AW LAND SURVEYING, LLC
P.O. BOX 2170, CHANDLER, AZ 85244
(480) 244-7630 (480) 243-4287



LEGEND

MCR	MARICOPA COUNTY RECORDS
R/W	RIGHT OF WAY
SE	SEWER EASEMENT
UE	UTILITY EASEMENT
RE	RECIPROCAL EASEMENT
IEE	INGRESS/EGRESS EASEMENT
TCE	TEMPORARY CONSTRUCTION EASEMENT
HWY ESMT.	HIGHWAY EASEMENT
CTR	CABLE TV RISER
CV	CABLE J-BOX
ECB	ELECTRIC CABINET
VLT	VAULT (UTILITY UNKNOWN)
WV	WATER VALVE
CB	CATCH BASIN
GV	GAS VALVE
HW	HEADWALL
VLV	VALVE
FH	FIRE HYDRANT
U-BOX	UTILITY BOX
EP	ELECTRIC PANEL
ET	ELECTRIC TRANSFORMER
E-VLT	ELECTRIC VAULT
WMB	WATER METER BOX
BP	BARRIER POST
TR	TELEPHONE RISER
LP	LIGHT POLE
(M)	MEASURED DATA
(R)	RECORD DATA (BOOK 983, PAGE 8)
Ⓢ	SEWER MANHOLE
Ⓜ	UTILITY MANHOLE
	FOUND 1/2" REBAR W/CAP 22782
	FOUND 1/2" REBAR W/CAP ILLEGIBLE SET CAP "AWLS 45377"
	CONCRETE
	BRICK PAVERS
	TREE OR BUSH
	SAGUARO CACTUS
	PROPERTY LINE
	ADJOINER LINE
	CENTER LINE
—S—	SEWER LINE
—W—	WATER LINE
—G—	GAS LINE
—GBS—	GAS BLUESTAKE
—APS—	APS BLUESTAKE

ALTA/NSPS LAND TITLE SURVEY
SECTION 14
TOWNSHIP 5 NORTH, RANGE 4 EAST
OF THE G.S.R.B. & M.
MARICOPA COUNTY, ARIZONA

AW LAND SURVEYING, LLC
P.O. BOX 2170, CHANDLER, AZ 85244
(480) 244-7630 (480) 243-4287

APPENDIX V

Paloma Drainage Exhibits

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260

LEGEND

- A — INDICATES DRAINAGE AREA
- A-1 — INDICATES DRAINAGE SUB-AREA
- SUBJECT PARCEL AND PALOMA SITE PROPERTY BOUNDARIES
- SUBJECT PARCEL AND PALOMA SITE DRAINAGE AREAS
- SUBJECT PARCEL AND PALOMA SITE DRAINAGE SUB-AREAS
- SUBJECT PARCEL AND PALOMA SITE DRAINAGE SUB-AREAS
- REACH LENGTH
- ROUTE LENGTH
- PROPOSED CULVERT
- A.1 — CONCENTRATION POINT

DOVE VALLEY RD

SCOTTSDALE RD

Q_{100}(EX)= 82 c.f.s.

Q_{100}(EX)= 6 c.f.s.

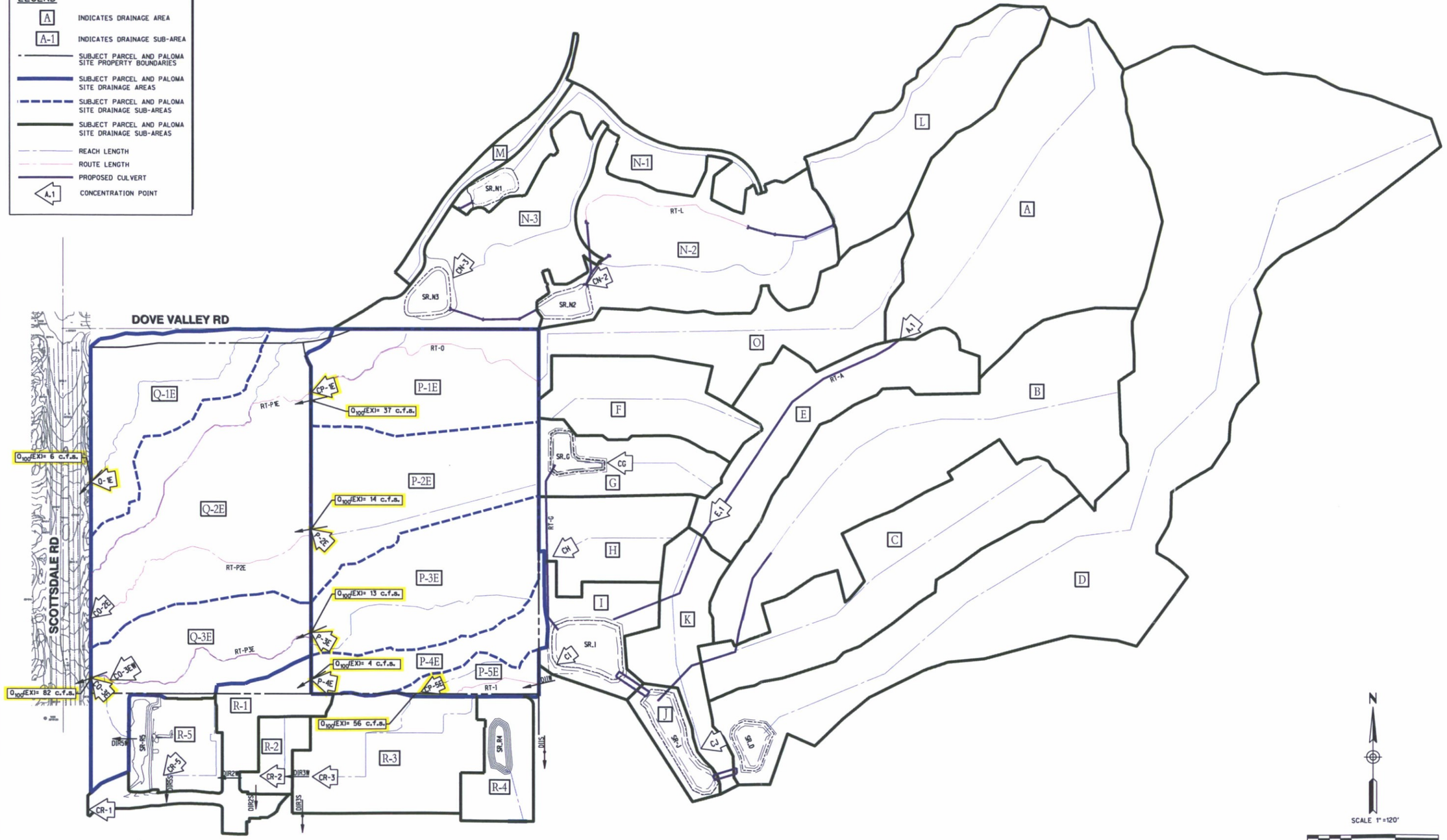
Q_{100}(EX)= 37 c.f.s.

Q_{100}(EX)= 14 c.f.s.

Q_{100}(EX)= 13 c.f.s.

Q_{100}(EX)= 4 c.f.s.

Q_{100}(EX)= 56 c.f.s.



N

SCALE 1" =120'

0 120 240 360

FIGURE NO. 2
Pre-Development Condition
Stormwater Routing Diagram
SEC Dove Valley Rd & Scottsdale Rd

Contact Arizona 811 at least two full working days before you begin excavation

RICK ENGINEERING COMPANY
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602-957-3350
(FAX) 602-285-2396
rickengineering.com
Phoenix
San Diego - Riverside - Orange - Sacramento - San Luis Obispo - Tucson - Denver

J-4275-B

A — INDICATES DRAINAGE AREA

A-1 — INDICATES DRAINAGE SUB-AREA

SUBJECT PARCEL AND PALOMA SITE PROPERTY BOUNDARIES

SUBJECT PARCEL AND PALOMA SITE DRAINAGE AREAS

SUBJECT PARCEL AND PALOMA SITE DRAINAGE SUB-AREAS

SUBJECT PARCEL AND PALOMA SITE DRAINAGE SUB-AREAS

REACH LENGTH

ROUTE LENGTH

CULVERT OR DRAINAGE STRUCTURE

A.1 — CONCENTRATION POINT

DOVE VALLEY RD ~~VALLEY~~ ROAD

SCOTTSDALE RD

Q_{100}(EX)= 6 c.f.s.
Q_{100}(PROP)= 6 c.f.s.

Q_{100}(EX)= 37 c.f.s.
Q_{100}(PROP)= 29 c.f.s.

Q_{100}(EX)= 14 c.f.s.
Q_{100}(PROP)= 0 c.f.s.

Q_{100}(EX)= 13 c.f.s.
Q_{100}(PROP)= 9 c.f.s.

Q_{100}(EX)= 82 c.f.s.
Q_{100}(PROP)= 65 c.f.s.

Q_{100}(EX)= 4 c.f.s.
Q_{100}(PROP)= 0 c.f.s.

Q_{100}(EX)= 56 c.f.s.
Q_{100}(PROP)= 51 c.f.s.

NOTE:

P-2E — PRE-DEVELOPMENT FLOW RE-ROUTED THROUGH PALOMA ONSITE DETENTION BASIN

P-4E — PRE-DEVELOPMENT FLOW RE-ROUTED TO SCOTTSDALE ROAD VIA PROPOSED 15" PIPE

N

SCALE 1"=120'

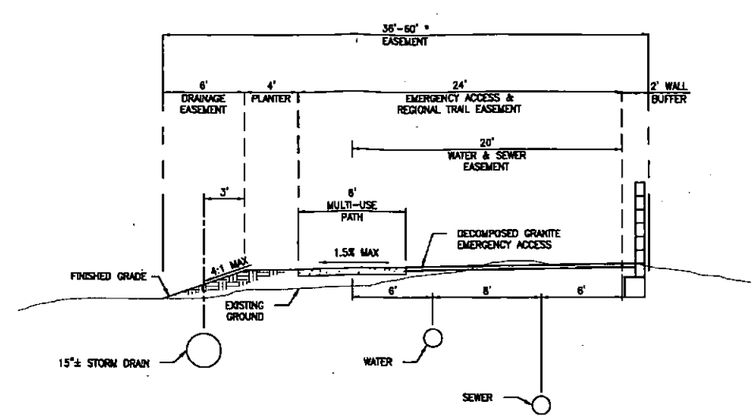
0 120 240 360

FIGURE NO. 3
Post-Development Condition
Stormwater Routing Diagram
SEC Dove Valley Rd & Scottsdale Rd

6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602-957-3350
(FAX) 602-285-2396
rickengineering.com
Phoenix - San Diego - Riverside - Orange - Sacramento - San Luis Obispo - Tucson - Denver

J-4275-B

Contact Arizona 811 at least two full working days before you begin excavation

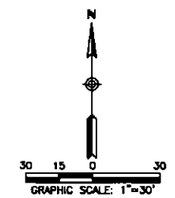


TYPICAL SECTION "A-A"

SCALE: 1"=5'

* 60' WIDE AT WEST END

SUMMIT AT SCOTTSDALE



LEGEND

PLANTER AREA

CONCRETE SIDEWALK

EASEMENT EXHIBIT
LIEB PARCEL - SOUTH BOUNDARY

RICK ENGINEERING COMPANY
6150 NORTH 167TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
rickengineering.com
Tucson · San Diego · Sacramento · Riverside · Orange · San Luis Obispo · Denver

Rip-rap Basin Design

All equations and procedures used for the design of this rip-rap basin are adopted from the HEC-14 publication: "Hydraulic Design of Energy Dissipators for Culverts and Channels," Third Edition, Chapter 10 - "Riprap Basins and Aprons," pages 10-1 through 10-5.

Step 1: **i) Compute the culvert outlet velocity, V_O, and depth, y_O.**

CulvertMaster Input Paramters		CulvertMaster Results		
100-Year Discharge:	10-cfs	Control Type:	Inlet	*Supercritical*
Storm Drain Diameter:	15-in	Depth, Downstream:	1.18-ft	$=y_O$
Max.Allowable HW	55.26 ft	Computed HW:	54.06-ft	
Manning's 'n' Coeff.:	0.012	Exit Velocity:	8.15-fps	$=V_O$

iii) Compute the Froude number, Fr, for brink conditions using equivalent depth for non-rectangular sections.

$$y_e = \left(\frac{A}{2}\right)^{1/2}$$

$$y_e = \left(\frac{1.22\,ft}{2}\right)^{1/2} = 0.78\,ft$$

Step 2: **i) Select D_{50} appropriate for locally available riprap.**

A D_{50} of 4-inches has been chosen through iterative calculation.

$$\therefore D_{50} = 4\,in$$

ii) Determine C_o from Equation 10.2 or 10.3 and obtain h_s/y_e from Equation 10.1.

A tailwater depth (TW) of 0.4D is used per Equation 10.4 within the HEC-14 Manual.

$$TW = 0.4D = 0.4(1.25\,ft) = 0.5\,ft$$

$$\frac{TW}{y_e} = \frac{0.5\,ft}{0.78\,ft} = 0.64 < 0.75$$

Equation 10.2

$$\therefore C_O = 1.4$$

Equation 10.1

$$\frac{h_s}{y_e} = 0.86\left(\frac{D_{50}}{y_e}\right)^{-0.55}\left(\frac{V_O}{\sqrt{g y_e}}\right) - C_O$$

Where:
- h_s = dissipator pool depth, (ft)
- y_e = equivalent brink (outlet) depth, (ft)
- D_{50} = median rock size by weight, (ft)
- C_O = tailwater parameter

$$\frac{h_s}{y_e} = 0.86\left(\frac{0.33\,ft}{0.78\,ft}\right)^{-0.55}\left(\frac{8.15\,fps}{\sqrt{(32.2)(0.78\,ft)}}\right) - (1.4) = 0.84$$

$$\therefore h_s = 0.66\,ft$$

iii) Check to see that $h_s/D_{50} \geq 2$ and $D_{50}/y_e \geq 0.1$. If h_s/D_{50} or D_{50}/y_e is out of this range, try a different riprap size. (Basins sized where h_s/D_{50} is greater than, but close to, 2 are often the most economical choice.)

Check 1:
$$\frac{h_s}{D_{50}} = \frac{0.66ft}{0.33\ ft} = 2 \geq 2 \quad \checkmark$$

Check 2:
$$\frac{D_{50}}{y_e} = \frac{0.33\ ft}{0.78\ ft} = 0.42 \geq 0.1 \quad \checkmark$$

Step 3: Determine the length of the dissipation pool (scour hole), L_s, total basin length, L_B, and basin width at the basin exit, W_B, as shown in Figures 10.1 and 10.2. The walls and apron of the basin should be warped (or transitioned) so that the cross section of the basin at the exit conforms to the cross section of the natural channel. Abrupt transition of surfaces should be avoided to minimize separation zones and resultant eddies.

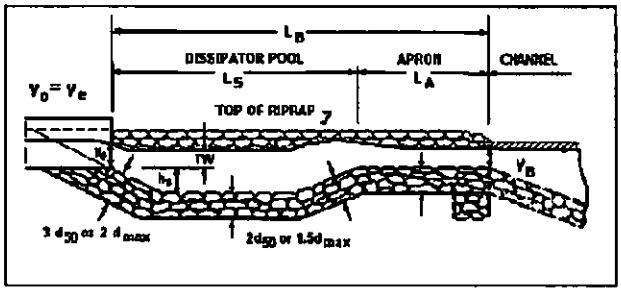


Figure 10.1. Profile of Riprap Basin

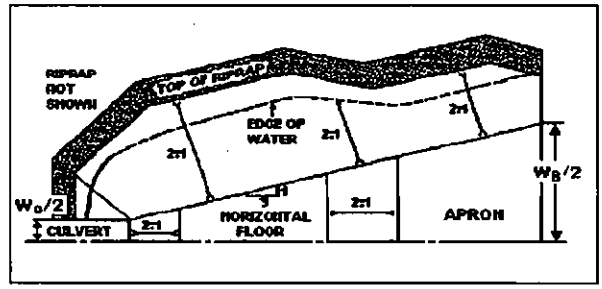


Figure 10.2. Half Plan of Riprap Basin

$$L_S = 10h_s = 10(0.66\ ft) = 6.6\ ft \approx 7\ ft$$
$$L_S\ min = 3W_O = 3(1.25\ ft) = 3.75\ ft$$

Use: $\boxed{L_S = 7\ ft}$

$$L_A = 5h_s = 5(0.66\ ft) = 3.3\ ft \approx 3\ ft$$
$$L_A\ min = W_O = 1.25\ ft$$

Use: $\boxed{L_A = 3\ ft}$

$$L_B = L_S + L_A = (7\ ft) + (3\ ft) = 10\ ft$$
$$L_B\ min = 4W_O = 4(1.25\ ft) = 5\ ft$$

Use: $\boxed{L_B = 10\ ft}$

$$W_B = W_O + 2\left(\frac{L_B}{3}\right) = (1.25\ ft) + 2\left(\frac{(10\ ft)}{3}\right) = \boxed{6.67\ ft}$$

Step 4: **Determine the basin exit depth, $y_B = y_c$, and exit velocity, $V_B = V_c$ and compare with the allowable exit velocity, V_{allow}. The allowable exit velocity may be taken as the estimated normal velocity in the tailwater channel or a velocity specified based on stability criteria, whichever is larger. Critical depth at the basin exit may be determined iteratively using Equation 7.14. If $V_c \leq V_{allow}$, the basin dimensions developed in Step 3 are acceptable.**

$$\frac{Q^2}{g} = \frac{(A_C)^3}{T_C} = \frac{[y_c(W_B + zy_c)]^3}{(W_B + 2zy_C)}$$ Equation 7.14

Per Equation 7.14, critical flow for an open channel of any shape will occur when:

$$\frac{Q^2 T_C}{g A_C{}^3} = 1$$

Where: T_C = water surface width at critical flow condition, (ft)
A_C = flow area at critical flow condition, (ft^2)
z = basin side slope, z:1 (H:V)

$$3.1\ ft^5 = \frac{(10\ cfs)^2}{\left(32.2\ \frac{ft}{s^2}\right)} = \frac{(A_C)^3}{T_C} = \frac{[y_c((6.67\ ft) + (4)y_c)]^3}{((6.67\ ft) + 2(4)y_C)}$$

$$\therefore y_C = 0.38\ ft \qquad \therefore T_C = 1.15\ ft \qquad \therefore A_C = 1.53\ ft^2$$

$$V_C = \frac{Q}{A_C} = \frac{(10\ cfs)}{(1.53\ ft^{22})} = 6.54\ \frac{ft}{s}$$

$$\therefore V_C < V_{allow} = 8.15\ \frac{ft}{s} \quad \checkmark$$

Step 5: **Assess need for additional riprap downstream of the dissipator exit. If $TW/y_o \leq 0.75$, no additional riprap is needed.**

$$\frac{TW}{y_O} = \frac{(0.5\ ft)}{(1.18\ ft)} = 0.42\ ft \leq 0.75\ \checkmark$$

No additional riprap is needed.

Exterior Building Color & Material Samples

Color Drawdowns

Archaeological Resources

Airport Vicinity Development Checklist

Parking Study

Trip Generation Comparison

Parking Master Plan

Samples/Misc.

Native Resources
INTERNATIONAL

Native Plant Inventory

Scottsdale Heights
SEC of Scottsdale Road & Dove Valley Road
Scottsdale, AZ

1/10/2018

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
1	Foothills Palo Verde	7	S	
2	Foothills Palo Verde	4	S	
3	Foothills Palo Verde	12	NS	Cambium Damage
4	Foothills Palo Verde	8	NS	Cambium Damage
5	Foothills Palo Verde	6	NS	Trunk Form / Leaning
6	Foothills Palo Verde	12	NS	Mistletoe / Cambium Damage
7	Foothills Palo Verde	12	NS	Cambium Damage
8	Foothills Palo Verde	4	NS	Trunk Form / Leaning
9	Saguaro	11	S	
10	Foothills Palo Verde	12	NS	Cambium Damage
11	Foothills Palo Verde	10	NS	Branch Dieback
12	Foothills Palo Verde	18	NS	Cambium Damage
13	Hackberry	36	NS	Wide Base
14	Foothills Palo Verde	8	NS	Branch Dieback
15	Foothills Palo Verde	8	NS	Branch Dieback
16	Foothills Palo Verde	10	NS	Mistletoe / Cambium Damage
17	Foothills Palo Verde	7	S	
18	Foothills Palo Verde	5	S	
19	Foothills Palo Verde	5	NS	Mistletoe
20	Barrel	3	S	
21	Foothills Palo Verde	6	NS	Branch Dieback
22	Foothills Palo Verde	20	NS	Trunk Form / Root Growth
23	Foothills Palo Verde	14	NS	Mistletoe / Cambium Damage
24	Foothills Palo Verde	24	NS	Cambium Damage
25	Foothills Palo Verde	12	NS	Branch Dieback
26	Foothills Palo Verde	26	NS	Branch Dieback
27	Foothills Palo Verde	12	NS	Branch Dieback
28	Saguaro	13	S	
29	Foothills Palo Verde	8	S	
30	Foothills Palo Verde	6	NS	Trunk Form / Root Growth
31	Barrel	3	S	
32	Barrel	5	S	
33	Foothills Palo Verde	20	NS	Branch Dieback
34	Saguaro	117	NS	6 arms / Damaged
35	Foothills Palo Verde	7	NS	Exposed Roots / Root Growth
36	Foothills Palo Verde	12	NS	Mistletoe / Cambium Damage
37	Foothills Palo Verde	7	NS	Mistletoe

1-PP-2018

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
38	Mesquite	20	NS	Branch Dieback
39	Saguaro	180	NS	19 arms / Damaged
40	Mesquite	7	NS	Branch Dieback
41	Foothills Palo Verde	8	S	
42	Saguaro	38	NS	6 arms / Damaged
43	Foothills Palo Verde	7	S	
44	Foothills Palo Verde	7	S	
45	Foothills Palo Verde	8	NS	Cambium Damage
46	Foothills Palo Verde	14	NS	Mistletoe / Cambium Damage
47	Foothills Palo Verde	22	NS	Branch Dieback / Cambium Damage
48	Foothills Palo Verde	16	NS	Branch Dieback / Cambium Damage
49	Foothills Palo Verde	8	NS	Cambium Damage / Leaning
50	Foothills Palo Verde	7	NS	Cambium Damage / Leaning
51	Saguaro	79	S	7 arms
52	Foothills Palo Verde	10	NS	Mistletoe
53	Foothills Palo Verde	8	NS	Mistletoe
54	Foothills Palo Verde	7	NS	Mistletoe
55	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
56	Foothills Palo Verde	6	NS	Trunk Form / Root Growth
57	Foothills Palo Verde	7	NS	Branch Dieback
58	Foothills Palo Verde	6	NS	Branch Dieback
59	Hackberry	8	NS	Branch Dieback
60	Foothills Palo Verde	14	NS	Mistletoe / Cambium Damage
61	Foothills Palo Verde	7	NS	Trunk Form / Leaning
62	Foothills Palo Verde	6	NS	Exposed Roots
63	Foothills Palo Verde	8	NS	Branch Dieback
64	Foothills Palo Verde	6	NS	Branch Dieback
65	Barrel	3	S	
66	Barrel	8	NS	3 arms / Damaged
67	Barrel	4	S	
68	Foothills Palo Verde	36	NS	Mistletoe / Cambium Damage
69	Foothills Palo Verde	14	NS	Mistletoe / Cambium Damage
70	Foothills Palo Verde	8	NS	Branch Dieback / Leaning
71	Foothills Palo Verde	4	NS	Exposed Roots
72	Foothills Palo Verde	7	NS	Exposed Roots / Leaning
73	Foothills Palo Verde	12	NS	Exposed Roots / Leaning
74	Foothills Palo Verde	6	NS	Exposed Roots / Leaning
75	Foothills Palo Verde	6	NS	Exposed Roots / Leaning
76	Foothills Palo Verde	14	NS	Wide Base
77	Foothills Palo Verde	6	S	
78	Foothills Palo Verde	6	S	
79	Foothills Palo Verde	16	NS	Cambium Damage
80	Foothills Palo Verde	9	S	
81	Foothills Palo Verde	10	NS	Mistletoe
82	Foothills Palo Verde	12	NS	Cambium Damage
83	Foothills Palo Verde	7	NS	Cambium Damage
84	Foothills Palo Verde	9	NS	Exposed Roots
85	Foothills Palo Verde	24	NS	Cambium Damage
86	Foothills Palo Verde	12	NS	Cambium Damage

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
87	Foothills Palo Verde	12	NS	Branch Dieback
88	Foothills Palo Verde	6	S	
89	Foothills Palo Verde	6	NS	Trunk Form / Leaning
90	Foothills Palo Verde	5	S	
91	Foothills Palo Verde	8	NS	Branch Dieback
92	Foothills Palo Verde	6	NS	Branch Dieback
93	Saguaro	10	S	
94	Foothills Palo Verde	7	S	
95	Foothills Palo Verde	7	NS	Exposed Roots
96	Foothills Palo Verde	5	S	
97	Foothills Palo Verde	14	NS	Trunk Form / Poor Structure
98	Foothills Palo Verde	12	NS	Trunk Form / Poor Structure
99	Foothills Palo Verde	6	NS	Mistletoe
100	Foothills Palo Verde	6	NS	Insect Damage / Cambium Damage
101	Foothills Palo Verde	6	NS	Branch Dieback / Cambium Damage
102	Foothills Palo Verde	7	NS	Cambium Damage / Leaning
103	Foothills Palo Verde	8	NS	Cambium Damage
104	Foothills Palo Verde	7	S	
105	Ocotillo	10	S	
106	Ocotillo	68	NS	7 arms / Damaged
107	Foothills Palo Verde	7	NS	Cambium Damage
108	Foothills Palo Verde	9	NS	Exposed Roots / Mistletoe
109	Foothills Palo Verde	10	NS	Mistletoe
109	Barrel	5	S	
111	Foothills Palo Verde	9	NS	Mistletoe / Cambium Damage
112	Foothills Palo Verde	9	NS	Mistletoe / Cambium Damage
113	Hackberry	48	NS	Wide Base
114	Foothills Palo Verde	12	NS	Trunk Form / Leaning
115	Foothills Palo Verde	8	S	
116	Barrel	4	S	
117	Foothills Palo Verde	12	NS	Branch Dieback
118	Foothills Palo Verde	8	NS	Mistletoe / Shallow Roots
119	Foothills Palo Verde	6	NS	Exposed Roots
120	Foothills Palo Verde	14	NS	Mistletoe / Shallow Roots
121	Foothills Palo Verde	7	NS	Exposed Roots
122	Foothills Palo Verde	4	NS	Cambium Damage
123	Mesquite	9	S	
124	Foothills Palo Verde	5	S	
125	Foothills Palo Verde	4	S	
126	Mesquite	14	NS	Cambium Damage
127	Saguaro	124	NS	8 arms / Damaged
128	Foothills Palo Verde	7	NS	Cambium Damage
129	Foothills Palo Verde	7	NS	Cambium Damage
130	Foothills Palo Verde	7	NS	Cambium Damage
131	Foothills Palo Verde	6	NS	Mistletoe
132	Foothills Palo Verde	14	NS	Cambium Damage
133	Mesquite	24	NS	Wide Base / Cambium Damage
134	Foothills Palo Verde	14	NS	Cambium Damage
135	Barrel	6	S	3 arms

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
136	Saguaro	14	S	
137	Foothills Palo Verde	16	NS	Cambium Damage
138	Ocotillo	17	S	
139	Barrel	4	S	
140	Saguaro	110	S	7 arms
141	Foothills Palo Verde	10	NS	Branch Dieback
142	Foothills Palo Verde	16	NS	Cambium Damage
143	Foothills Palo Verde	9	NS	Branch Dieback
144	Foothills Palo Verde	8	NS	Branch Dieback
145	Foothills Palo Verde	14	NS	Cambium Damage
146	Foothills Palo Verde	12	NS	Cambium Damage
147	Saguaro	85	S	2 heads / 3 arms
148	Saguaro	23	S	
149	Saguaro	11	S	
150	Foothills Palo Verde	7	S	
151	Whitethorn Acacia	6	S	
152	Foothills Palo Verde	6	S	
153	Foothills Palo Verde	4	NS	Exposed Roots
154	Foothills Palo Verde	6	S	
155	Ironwood	30	NS	Cambium Damage
156	Hackberry	12	NS	Form / Poor Structure
157	Foothills Palo Verde	14	S	
158	Foothills Palo Verde	24	NS	Mistletoe
159	Foothills Palo Verde	7	S	
160	Foothills Palo Verde	5	S	
161	Foothills Palo Verde	6	NS	Branch Dieback
162	Saguaro	4	S	
163	Ocotillo	16	S	
164	Foothills Palo Verde	9	S	
165	Foothills Palo Verde	7	S	
166	Foothills Palo Verde	12	NS	Exposed Roots / Leaning
167	Foothills Palo Verde	24	NS	Branch Dieback / Cambium Damage
168	Foothills Palo Verde	12	NS	Cambium Damage / Leaning
169	Foothills Palo Verde	14	NS	Branch Dieback / Cambium Damage
170	Foothills Palo Verde	20	S	
171	Foothills Palo Verde	4	NS	Trunk Form / Leaning
172	Mesquite	8	S	
173	Mesquite	8	S	
174	Blue Palo Verde	4	NS	Branch Dieback
175	Foothills Palo Verde	4	S	
176	Ocotillo	16	S	
177	Foothills Palo Verde	20	NS	Cambium Damage
178	Foothills Palo Verde	6	NS	Form / Leaning
179	Foothills Palo Verde	10	NS	Branch Dieback / Leaning
180	Foothills Palo Verde	8	NS	Cambium Damage / Leaning
181	Foothills Palo Verde	12	NS	Cambium Damage
182	Saguaro	33	NS	1 arm / Declining
183	Foothills Palo Verde	10	NS	Mistletoe
184	Foothills Palo Verde	6	S	

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
185	Foothills Palo Verde	12	NS	Exposed Roots
186	Foothills Palo Verde	12	NS	Branch Dieback / Cambium Damage
187	Foothills Palo Verde	8	S	
188	Foothills Palo Verde	10	NS	Cambium Damage
189	Barrel	3	S	
190	Foothills Palo Verde	10	S	
191	Foothills Palo Verde	14	S	
192	Foothills Palo Verde	8	NS	Trunk Form / Leaning
193	Foothills Palo Verde	8	S	
194	Foothills Palo Verde	14	NS	Branch Dieback
195	Foothills Palo Verde	10	S	
196	Foothills Palo Verde	20	NS	Cambium Damage / Poor Structure
197	Saguaro	24	S	1 arm
198	Foothills Palo Verde	16	NS	Mistletoe
199	Barrel	4	S	
200	Barrel	4	S	
201	Foothills Palo Verde	22	NS	Mistletoe / Cambium Damage
202	Foothills Palo Verde	8	NS	Branch Dieback / Poor Structure
203	Foothills Palo Verde	7	S	
204	Foothills Palo Verde	14	NS	Mistletoe
205	Crucifixion Thorn	5	NS	Branch Dieback
206	Foothills Palo Verde	7	S	
207	Foothills Palo Verde	7	NS	Branch Dieback
208	Foothills Palo Verde	5	S	
209	Foothills Palo Verde	7	S	
210	Foothills Palo Verde	6	S	
211	Foothills Palo Verde	8	S	
212	Foothills Palo Verde	8	S	
213	Foothills Palo Verde	6	S	
214	Foothills Palo Verde	7	S	
215	Foothills Palo Verde	6	S	
216	Foothills Palo Verde	6	S	
217	Foothills Palo Verde	7	NS	Cambium Damage
218	Foothills Palo Verde	7	NS	Cambium Damage
219	Foothills Palo Verde	7	S	
220	Foothills Palo Verde	6	NS	Cambium Damage
221	Foothills Palo Verde	6	S	
222	Foothills Palo Verde	7	S	
223	Foothills Palo Verde	6	S	
224	Foothills Palo Verde	7	S	
225	Foothills Palo Verde	8	S	
226	Foothills Palo Verde	9	S	
227	Foothills Palo Verde	7	NS	Trunk Form / Leaning
228	Foothills Palo Verde	7	S	
229	Foothills Palo Verde	8	NS	Trunk Form / Leaning
230	Foothills Palo Verde	5	NS	Trunk Form / Leaning
231	Foothills Palo Verde	8	S	
232	Foothills Palo Verde	10	NS	Trunk Form / Leaning
233	Foothills Palo Verde	6	NS	Trunk Form / Leaning

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
234	Foothills Palo Verde	8	NS	Trunk Form / Leaning
235	Foothills Palo Verde	9	S	
236	Foothills Palo Verde	6	S	
237	Foothills Palo Verde	7	S	
238	Foothills Palo Verde	7	S	
239	Foothills Palo Verde	5	S	
240	Foothills Palo Verde	7	S	
241	Foothills Palo Verde	5	S	
242	Foothills Palo Verde	7	NS	Trunk Form / Leaning
243	Foothills Palo Verde	7	NS	Trunk Form / Leaning
244	Foothills Palo Verde	9	NS	Trunk Form / Leaning
245	Foothills Palo Verde	7	NS	Trunk Form / Leaning
246	Foothills Palo Verde	9	NS	Cambium Damage / Leaning
247	Foothills Palo Verde	5	S	
248	Foothills Palo Verde	14	S	
249	Foothills Palo Verde	24	NS	Cambium Damage / Poor Structure
250	Foothills Palo Verde	6	NS	Trunk Form / Leaning
251	Foothills Palo Verde	4	NS	Trunk Form / Leaning
252	Foothills Palo Verde	4	NS	Cambium Damage / Leaning
253	Foothills Palo Verde	40	NS	Wide Base
254	Foothills Palo Verde	4	NS	Trunk Form / Leaning
255	Foothills Palo Verde	7	NS	Cambium Damage
256	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
257	Foothills Palo Verde	8	NS	Cambium Damage / Poor Structure
258	Foothills Palo Verde	7	NS	Cambium Damage / Poor Structure
259	Foothills Palo Verde	5	NS	Cambium Damage
260	Foothills Palo Verde	4	S	
261	Foothills Palo Verde	5	NS	Cambium Damage
262	Mesquite	4	S	
263	Foothills Palo Verde	5	S	
264	Foothills Palo Verde	8	S	
265	Saguaro	54	NS	4 arms / Damaged
266	Foothills Palo Verde	20	NS	Branch Dieback
267	Mesquite	30	NS	Cambium Damage
268	Foothills Palo Verde	5	NS	Cambium Damage
269	Foothills Palo Verde	17	NS	Cambium Damage / Poor Structure
270	Foothills Palo Verde	8	NS	Cambium Damage
271	Mesquite	7	S	
272	Foothills Palo Verde	24	NS	Branch Dieback
273	Foothills Palo Verde	6	NS	Cambium Damage
274	Foothills Palo Verde	8	NS	Cambium Damage
275	Foothills Palo Verde	10	NS	Branch Dieback
276	Foothills Palo Verde	5	S	
277	Foothills Palo Verde	5	S	
278	Foothills Palo Verde	9	NS	Mistletoe
279	Foothills Palo Verde	24	NS	Wide Base / Cambium Damage
280	Foothills Palo Verde	20	NS	Cambium Damage
281	Foothills Palo Verde	5	S	
282	Saguaro	155	NS	8 arms / Damaged

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
283	Foothills Palo Verde	8	S	
284	Foothills Palo Verde	12	NS	Branch Dieback
285	Saguaro	68	NS	8 arms / Damaged
286	Foothills Palo Verde	12	NS	Branch Dieback
287	Foothills Palo Verde	6	NS	Trunk Form / Leaning
288	Foothills Palo Verde	14	NS	Branch Dieback
289	Mesquite	10	NS	Cambium Damage
290	Mesquite	10	NS	Cambium Damage
291	Hackberry	10	NS	Branch Dieback
292	Saguaro	48	S	3 arms
293	Foothills Palo Verde	16	S	
294	Foothills Palo Verde	7	NS	Trunk Form / Leaning
295	Foothills Palo Verde	6	S	
296	Foothills Palo Verde	8	NS	Branch Dieback
297	Foothills Palo Verde	7	NS	Cambium Damage
298	Foothills Palo Verde	7	S	
299	Foothills Palo Verde	8	NS	Cambium Damage
300	Mesquite	10	NS	Branch Dieback
301	Foothills Palo Verde	10	NS	Branch Dieback
302	Foothills Palo Verde	8	S	
303	Foothills Palo Verde	16	NS	Branch Dieback
304	Foothills Palo Verde	30	NS	Wide Base / Cambium Damage
305	Foothills Palo Verde	14	NS	Branch Dieback / Cambium Damage
306	Foothills Palo Verde	24	NS	Wide Base / Cambium Damage
307	Foothills Palo Verde	24	NS	Branch Dieback / Cambium Damage
308	Foothills Palo Verde	8	NS	Trunk Form / Leaning
309	Foothills Palo Verde	7	NS	Branch Dieback
310	Foothills Palo Verde	7	NS	Leaning / Cambium Damage
311	Foothills Palo Verde	4	S	
312	Foothills Palo Verde	5	NS	Cambium Damage
313	Foothills Palo Verde	5	S	
314	Foothills Palo Verde	8	NS	Branch Dieback
315	Foothills Palo Verde	7	NS	Cambium Damage / Poor Structure
316	Foothills Palo Verde	8	NS	Trunk Form / Leaning
317	Foothills Palo Verde	8	NS	Trunk Form / Leaning
318	Foothills Palo Verde	7	NS	Trunk Form / Leaning
319	Foothills Palo Verde	7	NS	Trunk Form / Leaning
320	Foothills Palo Verde	18	NS	Branch Dieback
321	Foothills Palo Verde	5	NS	Trunk Form / Leaning
322	Foothills Palo Verde	6	NS	Trunk Form / Leaning
323	Foothills Palo Verde	7	NS	Trunk Form / Cambium Damage
324	Foothills Palo Verde	6	NS	Cambium Damage
325	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
326	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
327	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
328	Foothills Palo Verde	7	NS	Cambium Damage / Leaning
329	Foothills Palo Verde	6	NS	Branch Dieback
330	Foothills Palo Verde	4	NS	Branch Dieback
331	Foothills Palo Verde	7	NS	Branch Dieback

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
332	Foothills Palo Verde	8	NS	Branch Dieback
333	Foothills Palo Verde	7	S	
334	Foothills Palo Verde	5	NS	Form / Leaning
335	Foothills Palo Verde	7	NS	Branch Dieback / Leaning
336	Foothills Palo Verde	4	NS	Branch Dieback / Leaning
337	Foothills Palo Verde	8	NS	Mistletoe / Cambium Damage
338	Foothills Palo Verde	5	NS	Cambium Damage
339	Foothills Palo Verde	5	NS	Branch Dieback
340	Foothills Palo Verde	5	NS	Branch Dieback
341	Foothills Palo Verde	4	NS	Branch Dieback
342	Foothills Palo Verde	6	NS	Branch Dieback / Cambium Damage
343	Mesquite	5	NS	Cambium Damage
344	Foothills Palo Verde	4	S	
345	Foothills Palo Verde	7	NS	Leaning / Cambium Damage
346	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
347	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
348	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
349	Foothills Palo Verde	7	NS	Cambium Damage
350	Foothills Palo Verde	9	NS	Mistletoe / Cambium Damage
351	Foothills Palo Verde	7	NS	Cambium Damage
352	Foothills Palo Verde	9	NS	Cambium Damage
353	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
354	Foothills Palo Verde	6	NS	Cambium Damage / Leaning
355	Foothills Palo Verde	16	NS	Branch Dieback / Cambium Damage
356	Saguaro	73	NS	6 arms / Damaged
357	Barrel	3	S	
358	Foothills Palo Verde	12	NS	Cambium Damage
359	Foothills Palo Verde	7	NS	Exposed Roots
360	Foothills Palo Verde	5	NS	Cambium Damage
361	Foothills Palo Verde	7	NS	Cambium Damage
362	Foothills Palo Verde	8	NS	Cambium Damage
363	Foothills Palo Verde	9	NS	Branch Dieback / Cambium Damage
364	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
365	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
366	Hackberry	5	S	
367	Foothills Palo Verde	8	NS	Branch Dieback
368	Foothills Palo Verde	18	NS	Branch Dieback
369	Foothills Palo Verde	12	NS	Branch Dieback / Cambium Damage
370	Foothills Palo Verde	30	NS	Wide Base / Cambium Damage
371	Hackberry	99	NS	Wide Base
372	Foothills Palo Verde	8	NS	Branch Dieback
373	Foothills Palo Verde	6	NS	Mistletoe / Branch Dieback
374	Foothills Palo Verde	12	NS	Mistletoe / Branch Dieback
375	Foothills Palo Verde	12	NS	Cambium Damage
376	Foothills Palo Verde	4	NS	Form / Leaning
377	Foothills Palo Verde	4	NS	Form / Leaning
378	Foothills Palo Verde	16	S	
379	Foothills Palo Verde	7	NS	Cambium Damage / Leaning
380	Foothills Palo Verde	24	NS	Mistletoe / Poor Structure

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
381	Foothills Palo Verde	14	NS	Mistletoe / Poor Structure
382	Foothills Palo Verde	14	NS	Mistletoe
383	Foothills Palo Verde	4	NS	Branch Dieback
384	Barrel	4	S	
385	Saguaro	11	S	
386	Foothills Palo Verde	14	S	
387	Foothills Palo Verde	7	NS	Cambium Damage
388	Foothills Palo Verde	16	NS	Cambium Damage
389	Foothills Palo Verde	14	NS	Cambium Damage
390	Foothills Palo Verde	8	NS	Cambium Damage
391	Foothills Palo Verde	7	NS	Trunk Form
392	Foothills Palo Verde	8	NS	Exposed Roots
393	Foothills Palo Verde	8	NS	Cambium Damage
394	Foothills Palo Verde	7	S	
395	Foothills Palo Verde	8	NS	Exposed Roots / Cambium Damage
396	Foothills Palo Verde	6	S	
397	Foothills Palo Verde	8	NS	Branch Dieback
398	Foothills Palo Verde	7	NS	Leaning / Wash
399	Foothills Palo Verde	7	S	
400	Foothills Palo Verde	7	NS	Cambium Damage
401	Saguaro	9	S	
402	Foothills Palo Verde	5	S	
403	Saguaro	62	S	6 arms
404	Foothills Palo Verde	18	NS	Cambium Damage
405	Foothills Palo Verde	7	NS	Form / Leaning
406	Mesquite	7	NS	Form / Leaning
407	Foothills Palo Verde	7	NS	Branch Dieback / Leaning
408	Foothills Palo Verde	9	NS	Mistletoe / Cambium Damage
409	Foothills Palo Verde	14	NS	Cambium Damage
410	Foothills Palo Verde	8	NS	Cambium Damage
411	Foothills Palo Verde	7	NS	Form / Leaning
412	Foothills Palo Verde	6	NS	Branch Dieback / Leaning
413	Foothills Palo Verde	16	NS	Cambium Damage
414	Saguaro	18	NS	4 arms / Damaged
415	Barrel	3	S	
416	Saguaro	37	S	3 arms
417	Saguaro	14	S	
418	Foothills Palo Verde	8	S	
419	Ironwood	16	NS	Branch Dieback / Cambium Damage
420	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
421	Foothills Palo Verde	9	NS	Branch Dieback / Cambium Damage
422	Saguaro	75	S	6 arms
423	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
424	Foothills Palo Verde	8	NS	Leaning / Cambium Damage
425	Foothills Palo Verde	8	NS	Branch Dieback / Cambium Damage
426	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
427	Foothills Palo Verde	12	NS	Branch Dieback / Cambium Damage
428	Foothills Palo Verde	15	NS	Branch Dieback / Cambium Damage
429	Foothills Palo Verde	5	NS	Trunk Form / Leaning

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
430	Foothills Palo Verde	8	NS	Branch Dieback
431	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
432	Mesquite	16	NS	Branch Dieback / Cambium Damage
433	Saguaro	96	NS	7 arms / Damaged
434	Foothills Palo Verde	14	NS	Branch Dieback / Cambium Damage
435	Foothills Palo Verde	14	NS	Cambium Damage / Poor Structure
436	Foothills Palo Verde	7	NS	Exposed Roots / Cambium Damage
437	Foothills Palo Verde	5	NS	Cambium Damage
438	Foothills Palo Verde	18	S	
439	Foothills Palo Verde	7	S	
440	Foothills Palo Verde	7	S	
441	Foothills Palo Verde	5	S	
442	Foothills Palo Verde	6	S	
443	Foothills Palo Verde	7	S	
444	Foothills Palo Verde	8	NS	Mistletoe
445	Foothills Palo Verde	5	S	
446	Foothills Palo Verde	7	S	
447	Foothills Palo Verde	4	S	
448	Foothills Palo Verde	4	S	
449	Mesquite	10	S	
450	Foothills Palo Verde	7	NS	Form / Leaning
451	Foothills Palo Verde	8	NS	Cambium Damage / Leaning
452	Foothills Palo Verde	6	S	
453	Foothills Palo Verde	8	S	
454	Foothills Palo Verde	8	S	
455	Foothills Palo Verde	7	S	
456	Foothills Palo Verde	6	S	
457	Foothills Palo Verde	8	S	
458	Foothills Palo Verde	6	S	
459	Foothills Palo Verde	5	S	
460	Foothills Palo Verde	4	S	
461	Barrel	3	S	
462	Foothills Palo Verde	16	S	
463	Foothills Palo Verde	6	NS	Form / Leaning
464	Foothills Palo Verde	14	NS	Cambium Damage / Poor Structure
465	Foothills Palo Verde	7	NS	Exposed Roots / Leaning
466	Foothills Palo Verde	5	NS	Trunk Form / Leaning
467	Foothills Palo Verde	5	S	
468	Foothills Palo Verde	8	S	
469	Foothills Palo Verde	8	NS	Cambium Damage
470	Foothills Palo Verde	15	NS	Branch Dieback
471	Hackberry	20	NS	Wide Base
472	Foothills Palo Verde	10	S	
473	Ironwood	38	NS	Wide Base / Cambium Damage
474	Foothills Palo Verde	6	NS	Form / Leaning
475	Foothills Palo Verde	16	NS	Cambium Damage
476	Foothills Palo Verde	8	NS	Cambium Damage / Leaning
477	Foothills Palo Verde	7	NS	Cambium Damage / Leaning
478	Foothills Palo Verde	6	NS	Cambium Damage / Leaning

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
479	Foothills Palo Verde	8	NS	Cambium Damage / Leaning
480	Foothills Palo Verde	10	NS	Cambium Damage
481	Foothills Palo Verde	8	NS	Cambium Damage
482	Foothills Palo Verde	7	NS	Cambium Damage
483	Barrel	4	S	
484	Foothills Palo Verde	7	S	
485	Foothills Palo Verde	7	NS	Cambium Damage
486	Foothills Palo Verde	7	NS	Leaning / Cambium Damage
487	Foothills Palo Verde	10	NS	Branch Dieback / Cambium Damage
488	Foothills Palo Verde	10	NS	Branch Dieback / Cambium Damage
489	Foothills Palo Verde	10	NS	Exposed Roots / Cambium Damage
490	Foothills Palo Verde	10	S	
491	Foothills Palo Verde	8	NS	Leaning / Cambium Damage
492	Foothills Palo Verde	6	NS	Leaning / Cambium Damage
493	Hackberry	60	NS	Wide Base
494	Hackberry	24	NS	Wide Base
495	Foothills Palo Verde	14	NS	Cambium Damage
496	Foothills Palo Verde	8	NS	Cambium Damage
497	Saguaro	41	S	5 arms
498	Foothills Palo Verde	8	NS	Cambium Damage
499	Foothills Palo Verde	8	NS	Cambium Damage
500	Foothills Palo Verde	9	NS	Branch Dieback / Cambium Damage
501	Foothills Palo Verde	9	NS	Branch Dieback / Cambium Damage
502	Saguaro	53	S	3 arms
503	Saguaro	38	S	3 arms
504	Foothills Palo Verde	14	S	
505	Foothills Palo Verde	8	NS	Cambium Damage
505	Barrel	4	S	
506	Foothills Palo Verde	8	NS	Cambium Damage
507	Foothills Palo Verde	8	NS	Branch Dieback
509	Foothills Palo Verde	14	NS	Mistletoe / Cambium Damage
510	Barrel	4	S	
511	Foothills Palo Verde	8	S	
512	Foothills Palo Verde	7	NS	Branch Dieback / Cambium Damage
513	Foothills Palo Verde	7	S	
514	Foothills Palo Verde	16	NS	Leaning / Cambium Damage
515	Foothills Palo Verde	8	NS	Leaning / Cambium Damage
516	Foothills Palo Verde	12	NS	Leaning / Cambium Damage
517	Foothills Palo Verde	12	NS	Leaning / Cambium Damage
518	Foothills Palo Verde	6	NS	Trunk Form / Leaning
519	Foothills Palo Verde	18	NS	Cambium Damage
520	Foothills Palo Verde	7	NS	Branch Dieback
521	Foothills Palo Verde	6	NS	Cambium Damage
522	Foothills Palo Verde	18	NS	Branch Dieback / Cambium Damage
523	Foothills Palo Verde	15	S	
524	Foothills Palo Verde	13	NS	Mistletoe / Cambium Damage
525	Foothills Palo Verde	6	NS	Branch Dieback
526	Foothills Palo Verde	10	NS	Cambium Damage
527	Foothills Palo Verde	7	NS	Form / Leaning

Plant #	Common Name	Caliper (in)/ Height (ft)	Status	Comments
528	Foothills Palo Verde	12	NS	Cambium Damage
529	Foothills Palo Verde	8	NS	Form / Leaning
530	Hackberry	40	NS	Wide Base
531	Foothills Palo Verde	12	NS	Cambium Damage
532	Foothills Palo Verde	4	S	
533	Foothills Palo Verde	10	NS	Cambium Damage
534	Foothills Palo Verde	24	NS	Branch Dieback
535	Ironwood	14	S	
536	Foothills Palo Verde	8	NS	Leaning / Cambium Damage
537	Mesquite	14	NS	Branch Dieback
538	Foothills Palo Verde	10	S	
539	Foothills Palo Verde	12	S	
540	Foothills Palo Verde	16	S	
541	Foothills Palo Verde	8	NS	Form / Leaning
542	Saguaro	65	S	5 arms
543	Foothills Palo Verde	15	NS	Cambium Damage
544	Foothills Palo Verde	8	NS	Cambium Damage
545	Foothills Palo Verde	7	NS	Form / Leaning
546	Foothills Palo Verde	16	S	
547	Barrel	4	S	
548	Foothills Palo Verde	6	S	
549	Ocotillo	8	S	
550	Saguaro	8	S	
551	Foothills Palo Verde	20	NS	Cambium Damage
552	Saguaro	87	NS	7 arms / Damaged
553	Saguaro	73	S	7 arms
554	Barrel	5	S	
555	Foothills Palo Verde	7	S	
556	Foothills Palo Verde	5	S	
557	Foothills Palo Verde	6	NS	Proximity to Road
558	Foothills Palo Verde	16	NS	Branch Dieback
559	Mesquite	5	NS	Form / Leaning
560	Foothills Palo Verde	20	NS	Branch Dieback / Poor Structure
561	Foothills Palo Verde	12	NS	Branch Dieback / Poor Structure
562	Foothills Palo Verde	8	NS	Trunk Form / Leaning
563	Foothills Palo Verde	14	S	
564	Foothills Palo Verde	12	S	
565	Mesquite	8	NS	Trunk Form
566	Blue Palo Verde	8	NS	Proximity to Road
567	Mesquite	4	S	
568	Foothills Palo Verde	8	NS	Leaning / Poor Structure

Summary	Trees	Cacti
Salvageable	0	0
Non-Salvageable	0	0
Remain-In-Place	0	0
Total	**0**	**0**

Legend

S = Salvageable

NS = Non-Salvageable

RIP = Remain-In-Place