Drainage Reports

Abbreveated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

Siena Estates

WASTEWATER BASIS OF DESIGN REPORT

Northwest Corner of Palo Verde and Cattletrack Rd.
Maricopa County, Arizona
5805 N Sundown Dr
Scottsdale 85250

Prepared for:
Owner:
Adams Craig Acquisitions
7904 E Chaparral Rd
Ste A110-113
Scottsdale 85250

Prepared by:
6K CONSULTING L.L.C.
4858 E Baseline Road, Suite 101
Mesa, AZ 85206
Phone: (480) 664-8592
Fax: (480) 275-5512

Expires 9/30/19

June 2017

TABLE OF CONTENTS

Expires 9/30/19

A. Introduction

Location & Description

The project address is on the cover of this report. The property consists of three separate parcels and is located on the west side of Cattletrack Road north of Palo Verde Ln. They are further identified as APN 173-04-018, 173-04-017, and 173-04-016. The properties currently feature homes and have roads surrounding the properties on three sides (east, west and south). The parcels are quite flat and have a homes that are older and dated. The homes are served for wastewater treatment using septic systems. This development will extend the sewer line from Palo Verde Lane north up Sundown Road and east into the proposed cul-de sac. There are sewer lines in Palo verde and Cattletrack. The flow is east in Palo Verde and north in Cattletrack.

B. Design Documentation

Design Procedures:

The proposed subdivision will consist of 7 new lots on approximately 3 acres for a 2-3 du/acre dwelling range. The design consisted of determining the elevation of the manhole being connected to and then running back along the proposed sewer line to determine the elevations of the inverts and that adequate depths are achieved. The design slope used is 0.007 ft/ft starting at 11 feet deep. Dropping 0.10' in each manhole and 0.20' in each manhole that makes a greater than 45 degree direction turn.

Software used in design analysis:

Microsoft Excel was used to provide the calculations

C. Existing Conditions

Existing Zoning and land use:

The existing zoning is R1-43 for the existing three parcels and homes. The homes are served by septic systems.

Existing topography and vegetation:

The topography is relatively flat and vegetation is minimal on two of the three parcels. The general slope is from northwest to southeast.

Utilities:

The parcels have utility easements along the interior lot lines that are used for electric and gas utilities. Water is served at the perimeter of the current lots and served from water meters on Cattletrack and Sundown. These existing meters are anticipated to be capped and abandoned. All utilities except sewer currently are available to each lot.

D. Proposed Conditions

Site plan:

The property is proposing to replat the existing 3 lots into 7 lots based on R1-18 Planned Residential Development. This layout with a cul-de-sac will serve to create a unique community in this quiet corner of Scottsdale near downtown.

Proposed Wastewater Connection(s):

The proposed solution for wastewater is to extend the sewer line from Palo Verde and North on Sundown and east into the cul-de-sac. The calculations for the elevations need to be

refined but it sems like the proposed system will work well. If there is not enough cover, then a sewer line may need to be extended, in an easement, along the north line of Lot 4 and into the sewer line in Cattletrack. This second solution will certainly provide cover but it is less desirable because of the impact to the proposed lot.

Maintenance:

The sewer line extension will be granted to the City after the completion of the improvements. The maintenance will be to provide periodic flushing of this dead end sewer line. A fire hydrant is planned at the end of the c-d-s to assist in this effort as well as to provide the blow off for the dead end water line.

E. Computations

Common Spreadsheet formats (MS Excell)

F. Design Documentation

See the attached sheet

G. Summary

The sewer line extension will provide the needed access for the project. As the project progresses and more analysis is provided and completed, the verification will be made to tie the grading and sewer design together such that each home will be able to have access to the sewer system and other utility conflicts will not occur. Perhaps the 0.1' drops in each manhole can be eliminated and only 0.1' drop be provided on the manholes providing >45 degree direction change.

H. Supporting Maps

Vicinity map
Subdivision Plan
Quarter Section map

RETURN TO ENGINEER

Siena Estates

DRAINAGE REPORT

Northwest Corner of Palo Verde and Cattletrack Rd.
Maricopa County, Arizona
5805 N Sundown Dr
Scottsdale 85250

Prepared for:
Owner:
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7904 E Chaparral Rd
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Expires 9/30/17

Prepared by:
6K CONSULTING L.L.C.
4858 E Baseline Road, Suite 101
Mesa, AZ 85206
Phone: (480) 664-8592
Fax: (480) 275-5512

Plan # _____
Case # 10-ZN-2017
Q-S # _____
☒ Accepted
☐ Corrections
A. MEÑEZ 9/6/17
Reviewed By Date

(SEE STIPS)

August 2017

Stormwater Review By:
Alex Menez
Phone: 480-312-7278
Fax: 480-312-9103
e-mail: amenez@ScottsdaleAZ.gov
Review Cycle 2 Date 9/6/17

Case Review – Siena Estates

PROJECT NAME: SIENA ESTATES
LOCATION: NORTHWEST CORNER OF CATTLETRACK RD AND PALO VERDE RD
PLAN NUMBER: 10-ZN-2017

Review comments for the Drainage Report prepared by 6K Consulting, sealed June 20, 2017 (**2nd submittal sealed August 23, 2017**). The date of our review is July 11, 2017 (**date of 2nd review is September 6, 2017**). **The Zoning Case Drainage report is approved with the following stipulations in BLUE**:

1. In general, case drainage reports submitted in support of general plan amendments and zoning applications should include a 50% level of design and analysis to enable City staff to evaluate the major drainage elements of the proposed project. Note that if this project progresses to the development review or preliminary plat level, the case drainage report will need to be updated to include a 90% level of design and analysis. **ADDRESSED. MORE INFO WILL BE REQUIRED AT PRELIMINARY PLAT OR DEVELOPMENT REVIEW STAGE. AOM 9/6/17.**

2. Provide backup information on how the C values were calculated. An exhibit showing the development site based on a current aerial photograph and showing the delineation of the various C value areas based on no improvements (existing conditions) should be included in the report along with a weighted C calculation. The C value for the proposed condition is consistent with the proposed zoning, so no exhibit is needed for that. **ADDRESSED. AOM 9/6/17.**

3. The C values in the calculations provided in the report do not match the C values shown on the drainage map. The calculations in the report refer to "NSFC Striker Complex" which appears to be a different project. **ADDRESSED. AOM 9/6/17.**

4. Provide output from NOAA Atlas 14 verifying the rainfall used in the retention calculations. **PARTIALLY ADDRESSED. RAINFALL OUTPUT FROM NOAA ATLAS 14 WAS PROVIDED, BUT THE RETENTION CALCS USE A SLIGHTLY LOWER RAINFALL . THIS SHOULD BE FIXED DURING FINAL DESIGN. AOM 9/6/17.**

5. Provide preliminary G&D plans that meet the requirements in the DS&PM, Section 4-1.900. The plans should be prepared to a 50% level of design and include the following:

    a. Existing contours
    b. Proposed contours
    c. All proposed drainage features including swales that direct flow to the basins
    d. Existing storm drain in Cattletrack Rd
    e. Flood Insurance Rate Map (FIRM) information

    PARTIALLY ADDRESSED. FIRM INFO IS MISSING – PROVIDE DURING FINAL DESIGN. AOM 9/6/17.

6. The basins should be sized to meet either the pre- vs post-developed condition or first flush, whichever is greater. Provide first flush calculations in the report. Note that during final plans, the Engineer must demonstrate that the basins will meet pre- vs post-developed discharges for the 2-, 10- and 100-year storms. This will require a storage routing analysis with inflow and outflow hydrographs for each basin and orifice calculations for each outlet pipe. **NOT ADDRESSED. DURING FINAL DESIGN, PROVIDE FIRST FLUSH CALCULATIONS ALONG WITH DETENTION BASIN ROUTING ANALYSIS. AOM 9/6/17.**

7. It appears DA-1 drains directly into the existing catch basin in Cattletrack Rd. Pre- vs post-development retention must be provided for each drainage area discharging from the site. **ADDRESSED. AOM 9/6/17.**

8. Basins must meet the requirements outlined in Section 4-1.402 of the DS&PM. For example:

    a. Basin side slopes should not exceed 4:1. Basin 2 has a retaining wall, which is not allowed. **NOT ADDRESSED. RESOLVE DURING FINAL DESIGN. AOM 9/6/17.**
    b. Basins require an emergency spillway. **PARTIALLY ADDRESSED. DURING FINAL DESIGN, SHOW EMERGENCY OUTFALL OF EACH BASIN ON THE G&D PLANS. AOM 9/6/17.**
    c. Basins must be drained completely within 36 hours. **PROVIDE DRAIN TIME CALCULATIONS DURING FINAL DESIGN. AOM 9/6/17.**
    d. Basins will require the dedication of a drainage easement to allow for access from public R/W. **DURING FINAL DESIGN, SHOW PROPOSED DRAINAGE EASEMENTS ON G&D PLANS. AOM 9/6/17**
    e. Basins shall be designed as detention basins with a positive outfall. **ALL BASINS WITHOUT A POSITIVE OUTFALL WILL REQUIRE A DRYWELL. AOM 9/6/17**

9. The northern portion of DA-1 appears to flow Basin 4, in which case the drainage boundaries for DA-1 are incorrect. **BASED ON CONVERSATION WITH ENGINEER, DRAINAGE BOUNDARIES ARE DRAWN CORRECTLY. AOM 9/6/17**

10. The storm drain for DA-1 appears to have a manhole and pipe inside Basin 3. Verify elevations to ensure the storm drain profile has sufficient cover and has positive drainage. The manhole needs to be located where it can be easily accessed. In addition the proposed storm drain is connecting to the existing catch basin at a sharp skewed angle, which may not be constructible. **PARTIALLY ADDRESSED. MANHOLE HAS BEEN REPLACED WITH A BUBBLE UP STRUCTURE, WHICH IS NOT ALLOWED. DURING FINAL DESIGN, 18" STORM DRAIN SHOULD BE REPLACED WITH A SWALE. AOM 9/6/17**

11. How will the western portion of DA-3 drain to Basin 2? Will there be a proposed drainage swale? If so, show this on the G&D plans. **ADDRESSED. AOM 9/6/17.**

12. The FIRM provided should be printed at a scale that is legible enough to locate the property. Label the property on the FIRM. Print the FIRM so that the panel information (date, map number, etc.) is not cut off. **PARTIALLY ADDRESSED. NEED TO LABEL PROPERTY ON THE FIRM. AOM 9/6/17.**

13. Submit the revised drainage report with a CD containing a pdf file of the complete and sealed report. **ADDRESSED. AOM 9/6/17.**

Alex Meñez, P.E., CFM
Sr. Stormwater Engineer
Stormwater Management
City of Scottsdale
Phone: 480-312-7278

Stormwater Review By:
Alex Menez
Phone: 480-312-7278
Fax: 480-312-9103
e-mail: amenez@ScottsdaleAZ.gov
Review Cycle 2 Date 9/6/17

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Location & Description

The project address is on the cover of this report. The property consists of three separate parcels and is located on the west side of Cattletrack Road north of Palo Verde Ln. They are further identified as APN 173-04-018, 173-04-017, and 173-04-016. The properties currently feature homes and have roads surrounding the properties on three sides (east, west and south). The parcels are quite flat and have homes on each lot. The homes are old and dated. The area was developed as a rural development, there is little vegetation on lots 3 and 5 but Lot 4 has some relatively dense native vegetation and trees. There are easements for utilities (power and gas) along the interior lot lines. These utilities and all structures will be abandoned and deconstructed in the creation of this subdivision.

Purpose and objectives

The purpose of this report is to establish some preliminary drainage concepts for the project and to verify that the layout provides for the drainage requirements for the proposed projects.

Type of Report

This is a preliminary drainage report suitable for the rezoning effort on the property.

II. DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

On-site drainage

The properties are currently graded to drain the storm runoff to the surrounding streets, the lowest of which are Palo Verde and Cattletrack. This area all drains to catch basins located very nearly at the existing lot line between lots 4 and 5 in Cattletrack Road. The current understanding is that the drainage from this catch basin drains to a basin located east of Cattletrack and north of the Scottsdale water facilities. This basin outfalls to a concrete box culvert adjacent to it. This system will continue to be utilized.

Existing drainage network/patterns/watershed and floodplain boundaries

The general flow on the property is from NW to SE. Sundown Circle drains to Sundown and then south into Palo Verde then east to Cattletrack and north to the inlets. There are no flood plains identified on the property.

Off site watershed

The offsite watershed that may affect the property is essentially the lots within Schaffner Estates identified as lots 6-10. The surrounding properties are developed and engineered to accommodate the storm water flows so that no impacts are anticipated. The property is elevated such that the drainage designed to collect in Cattletrack has no impact on the previous finished floors. The proposed grading plan has been influenced by the need to keep the proposed finished floors at least as high as the existing finished floor elevation.

Existing conditions and drainage network entering and exiting the project site

The cul-de-sac from the west drains into Sundown. The existing subdivision streets do not have curbs or gutters and due to the rural and low density are allowed to flow in no defined way across lots and down streets until the flow reaches the area basins located in Cattletrack.

Context relative to adjacent projects and improvements

These lots are the lowest elevation lots in the area. The previously approved design reports and plans will be referenced as the project progresses. Given that the area facilities are working and are designed to outfall to regional drainage facilities. It seems most responsible to continue to utilize these facilities rather than let them be underutilized.

Flood Hazard Zones on the property/Firm Maps

There are no flood zones on the FIRM for the project area.

Site Specific Photographs:

Please see the aerial photograph exhibit on the vicinity map.

III. PROPOSED DRAINAGE PLAN

General Description of proposed drainage system and components:

The improvements will work to construct and grade the pads such that the bulk of them drain to the back side of the cul-de-sac. Sundown Drive will be improved by replacing the pavement and adding curb and gutter with a sidewalk along the east side. The c-d-s will have a high point graded in the entry to keep the flows from the west within the improved Sundown Drive and convey them south to Palo Verde. These proposed improvements will serve to better define the drainage patterns in the area.

Future conditions:

The c-d-s will have a catch basin installed in a drainage easement along the edge of Lot 4 to allow the water to flow through the storm drain to a shallow basin and overflow into another catch basin that drains into the existing catch basins located in Cattletrack on the east side of the development.

Stormwater storage requirements

There have been 4 basins designed to provide retention for the project improvements. The property is currently developed and has a calculated weighted C-value of 0.65 based on the existing uses and their associated listed C-values. The improved property, according to the City guidelines will have a C-Value of 0.64, based on R-18 zoning. The basins, as shown will provide over 7,500 cf of retention volume and capacity. The request of this project is to be allowed to continue to follow the same flow patterns and allow a pre-vs post retention condition. The current basins will contain almost 3 times the extra runoff volume from the project between the pre and post conditions.

Pre and Post runoff Characteristics at concentration points:

The pre-vs post flows have not been compared for the purposes of this report, only the pre-vs post runoff volumes.

Proposed drainage structures or special drainage facilities:

The proposed pattern will require in the installation of a scupper north of the entry to the project to drain water from the street into an open space basin located there. At the east end of the proposed cul-de-sac will be a catch basin with storm drain to a proposed bubble up structure to direct the flow into the basin and then a second overflow structure is to be built as shown on the north end to allow the overflow water to

not allowed

drain into the existing storm drain system in Cattletrack. The low flow outfall inlet will have an appropriately sized orifice plate to detain the water in the basin. Basins 2 and 4 will overflow via a shallow swale to Basin 3. A drywell or connector pipe will be installed in Basin 2 to ensure drainage within 36 hours. Basin 1 will be drained using a drywell system to be designed and installed.

Project Phasing

There will be no phasing in this project. Once started, the entire development of 7 lots will be constructed to completed pads and preparation for home construction.

IV. SPECIAL CONDITIONS

There are no natural washes that require 404 designation and permits

V. DATA ANALYSIS METHODS

Hydrologic Procedures

The Rational Method will be used to calculate the storm water flows on the project.

Hydraulic Procedures

The preliminary hydraulic analyses show that the proposed 18" pipe will provide capacity for the anticipated flow to leave the C-D-S and not cause ponding issues. The future reports and plans for the existing facilities will include all required calculations detailing the working system. The existing storm drain system in Cattletrack has 4 catch basins they are connected north and south with 12" pipes. The pipe connecting the north basins under Cattletrack is a 12" line with a 30" culvert leaving the basin and conveying all collected water to the associated drainage outfall. All 4 rim elevations are within 0.15' of one another. The existing storm drain system currently drains the water from the parcel. With no anticipated increase in runoff volumes, it stands to reason that the proposed catch basins and pipe sizes are adequate.

Stormwater Storage Calculations

The Equation V=PCA was used to define the runoff from the project. The C-values provided in the City Design Manual was used to verify the flow exiting the project. The existing weighted C-value is calculated as 0.65. Refer to the Appendix D for the exhibit and calculations. The Post development C-Values are based on zoning and anticipated to be 0.61. Therefore no storm water storage is required based on a pre- vs post development analysis. However, the attached calculations attempt to determine a realistic c-value for each drainage area entering the basins so that we size the basins to detain sufficient for those areas we can realistically capture based on the current land plan.

meet pre vs post or first flush, whichever greater.

VI. CONCLUSIONS

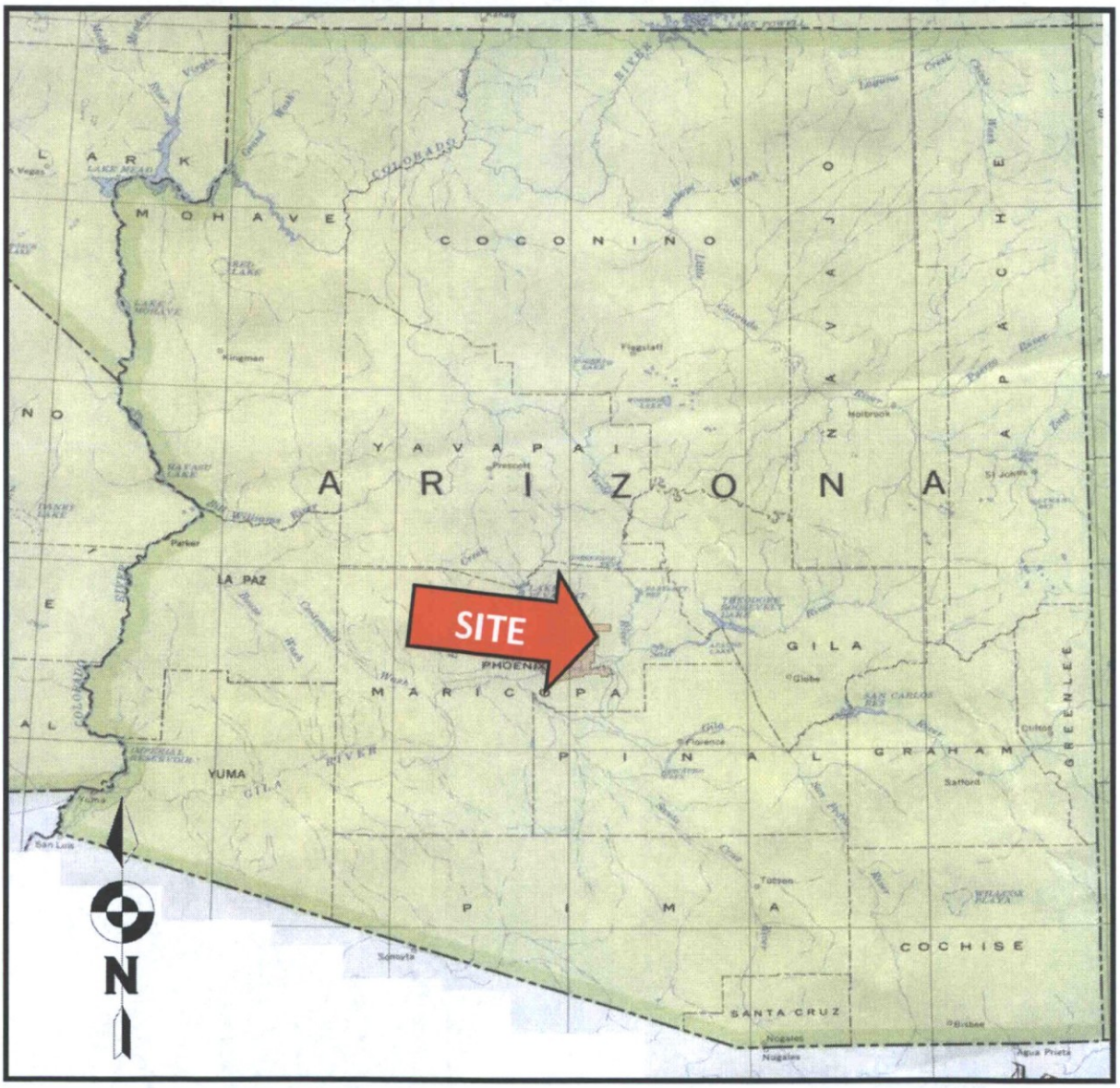
The project is not required to have basins when looking at the pre- vs post development calculations however it makes sense to retain some of the flow basins have been sized to contain more than 4 times the runoff generated from the project. This preliminary report is used to explain the proposed concept of providing the drainage requirements for the project. The next report will analyze the design reports and plans used for the City retention basin located north and east of the property. The assumption is that there is capacity in that system for the

current level of improvement. The grading plan and design have been prepared to keep the finished floor elevations above the anticipated high water levels for storm water in this area.

APPENDIX A

Vicinity Map
Vicinity Aerial Photograph

STATE MAP



Siena Estates		
PROJ: #3639	Adams Craig Aquisitons	CITY: Scottsdale
DRAFTED: BJ		COUNTY: Maricopa
DATE: JUN 2017		STATE: AZ

VICINITY MAP

STREET MAP

Siena Estates		
PROJ: #3639	Adams Craig Aquisitons	**CITY: Scottsdale**
DRAFTED: BJ		**COUNTY: Maricopa**
DATE: JUN 2017		**STATE: AZ**

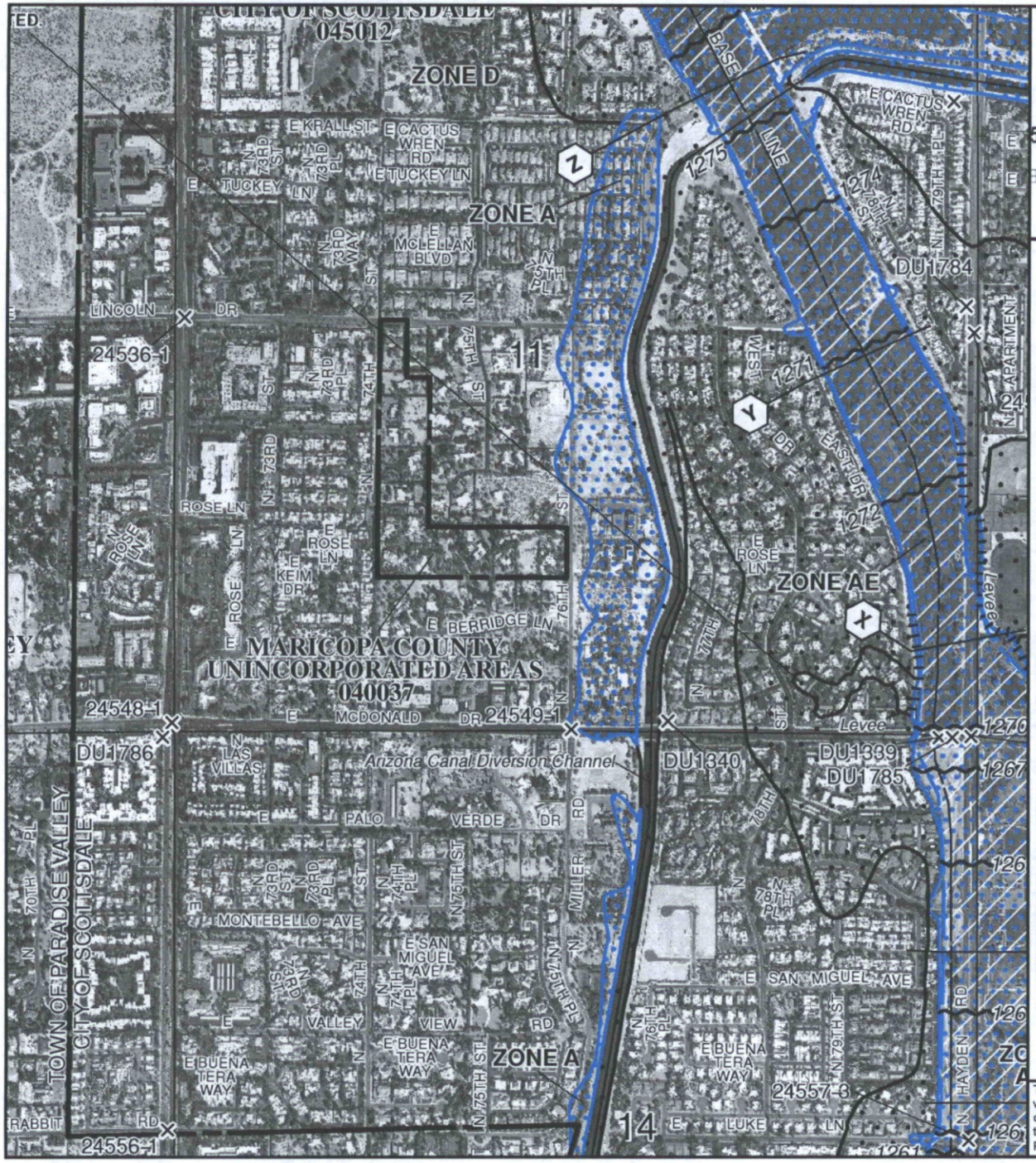
VICINITY MAP

AERIAL MAP

Siena Estates		
PROJ: #3639	Adams Craig Aquisitons	**CITY: Scottsdale**
DRAFTED: BJ		**COUNTY: Maricopa**
DATE: JUN 2017		**STATE: AZ**

APPENDIX B

Flood Insurance Rate Map



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

PANEL 1770L

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 1770 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1770	L
PARADISE VALLEY, TOWN OF	040049	1770	L
SCOTTSDALE, CITY OF	045012	1770	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
04013C1770L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

APPENDIX C

Drainage Map
Grading Plan

ADAMS CRAIG ACQUISITIONS

REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250

APN's 173-04-016, 173-04-017, 173-04-018

PROJECT NARRATIVE:

ADAMS CRAIG ACQUISITIONS HAS ASSEMBLED THE THREE PARCELS AND DESIRES TO OBTAIN GENERAL PLAN AMENDMENT AND REZONING TO CREATE A NEW SUBDIVISION COMPRISED OF 7 LOTS ON THE EXISTING 3 ACRES.

DRAINAGE NARRATIVE:

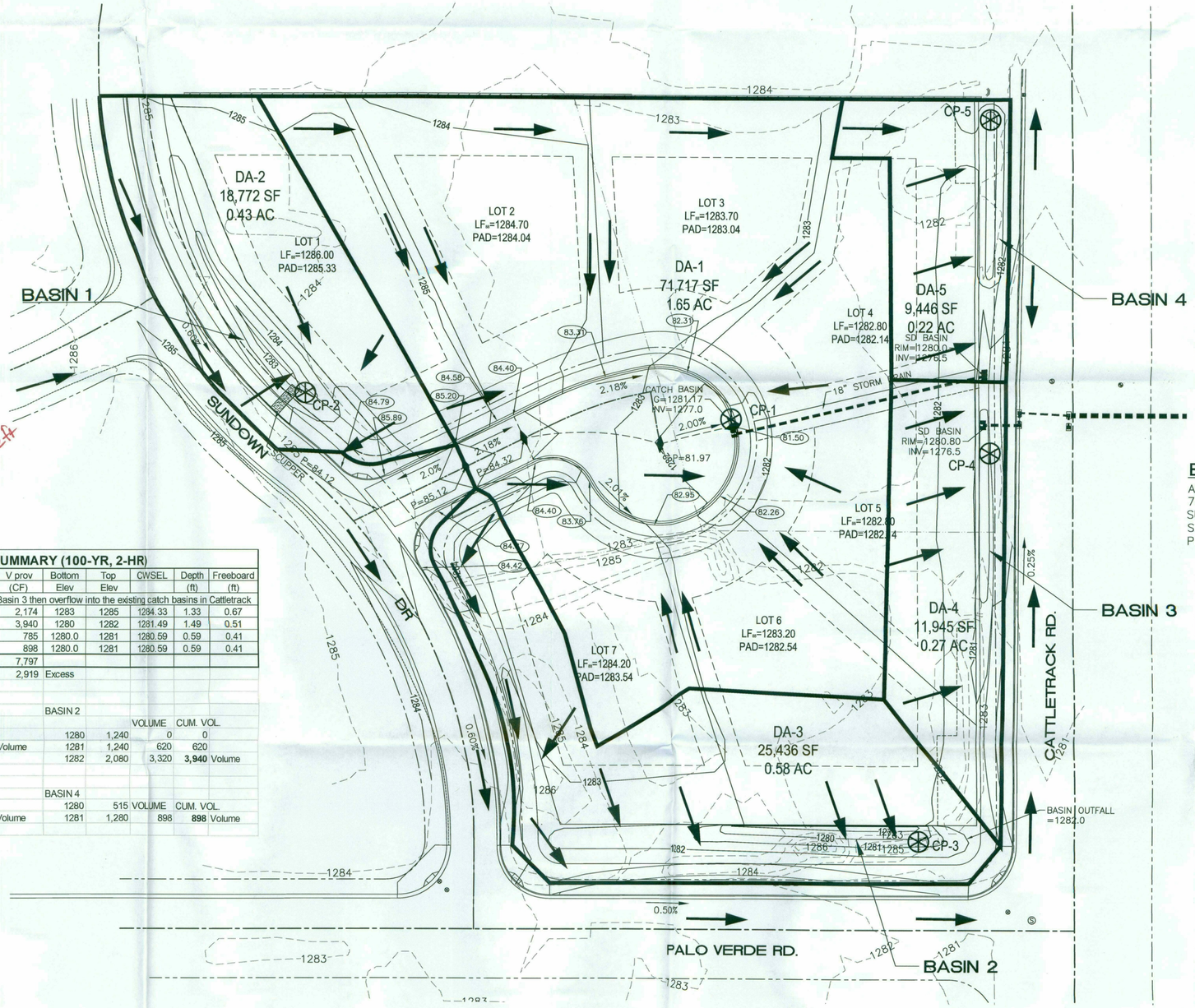
THE EXISTING PARCELS DO NOT RETAIN ON THEMSELVES, ALL THREE DRAIN TO SURROUNDING STREETS. IT IS ASSUMED THAT THE RUNOFF IS RETAINED IN THE LARGE BASIN NORTH OF THE SCOTTSDALE FACILITIES ON THE EAST SIDE OF CATTLE TRACK. BASINS ARE ADDED TO THIS PLAN TO CREATE OPPORTUNITIES TO DETAIN SOME OF THE ADDITIONAL FLOW.

LEGAL DESCRIPTION:

THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.

ENGINEER'S NOTES:

1. THE C-VALUE FOR RUNOFF ON THIS PROJECT ADJUST FROM 0.61 TO 0.65. THEREFORE THE CALCULATED RUNOFF INCREASE WILL BE MINIMAL AND WILL BE CONTAINED IN THE PROPOSED BASINS.
2. WALL OPENINGS WILL BE REQUIRED IN REAR AND/OR SIDE WALLS TO BE ABLE TO ALLOW WATER TO THE TRACTS AND RETENTION BASINS.
3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
4. THE C-D-S IS GRADED TO HAVE A HIGH POINT AT THE ENTRY SO THAT WATER FROM THE NEW STREET FLOWS EAST TO THE PROPOSED CATCH BASIN AND STORM DRAIN THAT WILL DIVERT WATER THROUGH A BASIN AND INTO THE EXISTING CATCH BASINS LOCATED IN CATTLE TRACK. BASINS WILL SERVE TO ATTENUATE THE PEAK FLOWS
5. THE EXISTING INTERIOR WALLS, UTILITIES AND BUILDING STRUCTURES HAVE BEEN REMOVED IN ANTICIPATION OF THE CONSTRUCTION OF THE SUBDIVISION.



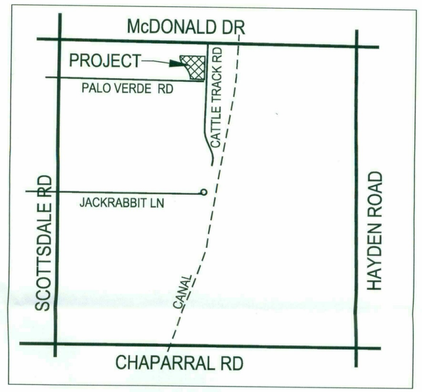
slightly lower than rainfall from NOAA Atlas 14
2.18 in x 1 ft / 12 in = 0.182 ft

RETENTION CALCULATION SUMMARY (100-YR, 2-HR)

ID	AREA (SQ FT)	C	R (FT)	V req (CF)	BASIN ID		V prov (CF)	Bottom Elev	Top Elev	CWSEL	Depth (ft)	Freeboard (ft)
1	71,717	0.05	0.175	628	OFFSITE	Drains into Basin 3 then overflow into the existing catch basins in Cattletrack						
2	18,772	0.44	0.175	1,445	BASIN 1		2,174	1283	1285	1284.33	1.33	0.67
3	25,436	0.66	0.175	2,938	BASIN 2		3,940	1280	1282	1281.49	1.49	0.51
4	11,945	0.11	0.175	230	BASIN 3		785	1280.0	1281	1280.59	0.59	0.41
5	9,446	0.16	0.175	264	BASIN 4		898	1280.0	1281	1280.59	0.59	0.41
TOTAL	137,316			5,505			7,797					
							2,919	Excess				

3.15 ac

BASIN VOLUMES										
BASIN 1						BASIN 2				
Basin 1 is north of entry	1283	195	VOLUME	CUM. VOL.		1280	1,240	VOLUME	0	CUM. VOL. 0
Basin 2 is on south	1284	965	580	580		1281	1,240	620	620	
Basin 3 is on east side, south	1285	2,223	1,594	**2,174**	Volume	1282	2,080	3,320	**3,940**	Volume
Basin 4 is on east side, north										
BASIN 3						BASIN 4				
	1280.0	410	VOLUME	CUM. VOL.		1280	515	VOLUME	CUM. VOL.	
	1281	1,160	785	**785**	Volume	1281	1,280	898	**898**	Volume



VICINITY MAP

BUILDER:

ADAMS CRAIG ACQUISITIONS
7904 E. CHAPARRAL RD.
SUITE A110-113
SCOTTSDALE, ARIZONA 85250
PHONE: (480) 634-5015

ENGINEER:

6K CONSULTING, L.L.C.
4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592
FAX: (480) 275-5512

Registered Professional Engineer (Civil)
36627
CARL H. BLOOMFIELD
Date signed 9/22/17
ARIZONA U.S.A.
EXPIRES 9/30/2019

Stormwater Review By:
Alex Menez
Phone: 480-312-7278
Fax: 480-312-9103
e-mail: amenez@ScottsdaleAZ.gov
Review Cycle 2 Date 9/26/17

N

30 15 0 30 60
SCALE FEET

SIENA ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

DRAINAGE MAP

PROJ. No.: 3639	6K CONSULTING L.L.C.
DATE: AUG 2017	
SCALE: 1"=30'	
DESIGNED: 6K	DRAWN: 6K
APPROVED: CHB	
REV.	DRAWING NO. 1
	SHT. 1 OF 1

ADAMS CRAIG ACQUISITIONS

REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250

APN's 173-04-016, 173-04-017, 173-04-018

DRAINAGE NARRATIVE:

THE EXISITING PARCELS AND HOMES DRAIN GENERALLY TO THE SOUTHEAST. THE LOTS WILL DRAIN TO THE CUL-DE-SAC TO BE COLLECTED AND DIRECTED, BY STORM DRAIN, TO A PROPOSED SHALLOW BASIN WHICH WILL DRAIN INTO EXISTING CATCH BASINS IN CATTLE TRACK THAT DIRECT WATER TO THE EXISTING RETENTION BASIN LOCATED EAST OF CATTLETRACK AND SOUTH OF MCDONALD DRIVE. PORTIONS OF LOTS 4-7 WILL DRAIN TO CATTLETRACK AND TO PALO VERDE TO BE RETAINED IN SMALL DETENTION BASINS DESIGNED TO ASSIST IN PROVIDING ADDITIONAL RUNOFF GENERATED BY THE DEVELOPMENT.

LEGAL DESCRIPTION:

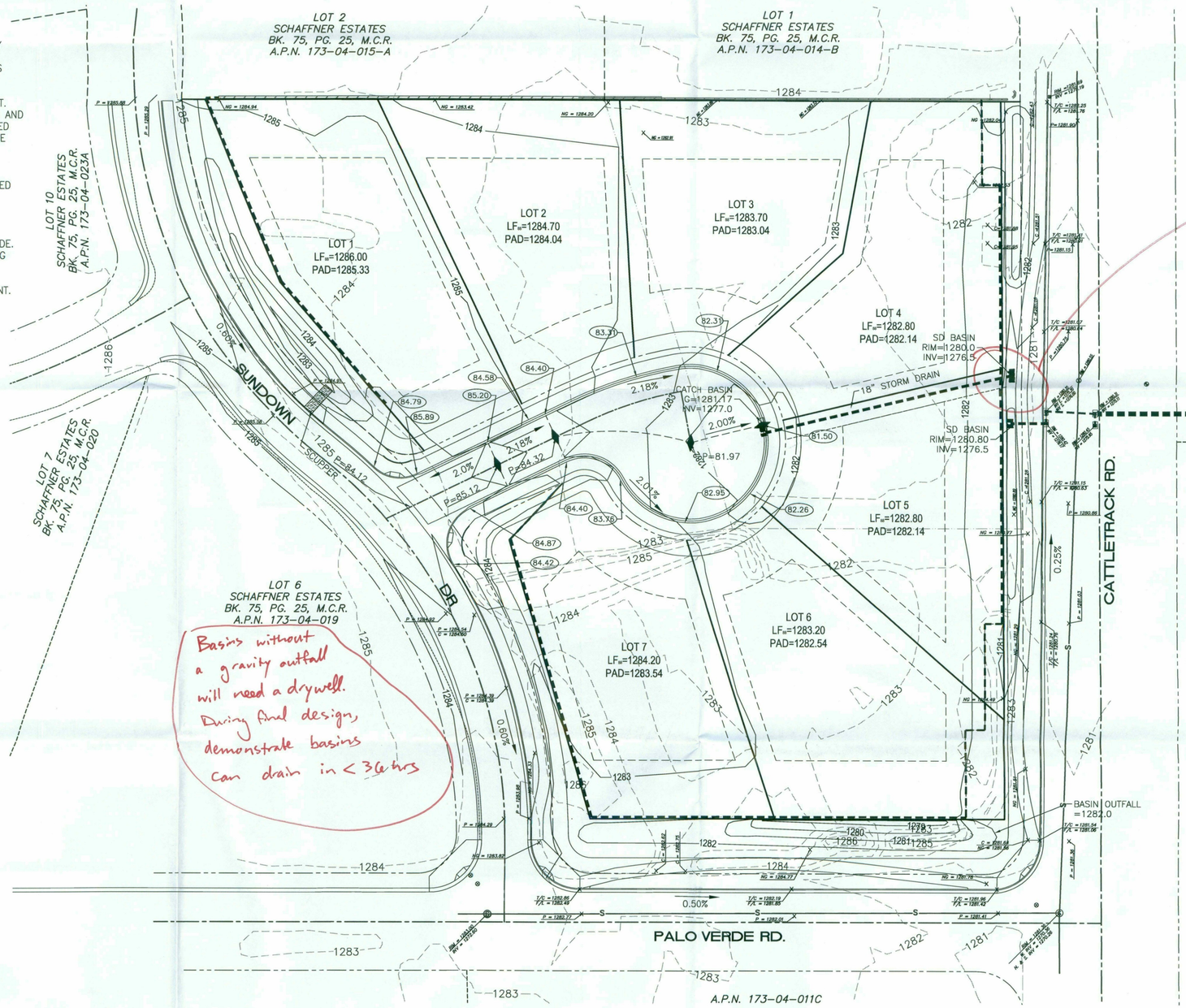
THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.

ENGINEER'S NOTES:

1. THE POWER, GAS AND WATER UTILITIES ARE ALREADY LOCATED IN THE EXISTING STREETS. THE EXISTING EASEMENTS AND UTILITIES LOCATED WITHIN THE LOTS WILL BE ABANDONED AND REMOVED. NEW FACILITY LINES WILL BE EXTENDED INTO THE PROPOSED CUL-DE-SAC AND SERVICES PROVIDED TO EACH LOT.
2. THE EXISTING SEPTIC SYSTEMS WILL BE ABANDONED AND REMOVED. THE PROPOSED LOTS WILL BE CONNECTED TO A SEWER LINE THAT WILL BE EXTENDED INTO THE DEVELOPMENT FROM PALO VERDE LANE.
3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
4. THE EXISTING HOMES AND UTILITIES WILL BE REMOVED AS THE PROPERTY IS DEVELOPED.
5. THE ZONING BOUNDARY IS EXTENDED TO THE CENTERLINES OF CATTLETRACK, PALO VERDE AND SUNDOWN.
6. THE SIDEWALK WILL BE EXTENDED ALONG PALO VERDE.
7. CURB, GUTTER AND SIDEWALK WILL BE ADDED ALONG THE EAST SIDE OF SUNDOWN DRIVE.
8. THE PAVEMENT IN SUNDOWN WILL BE REMOVED BY MILLING AND REPLACED WITH NEW ASPHALT PAVEMENT. DURING THE CONSTRUCTION OF THIS PROJECT.

LEGEND

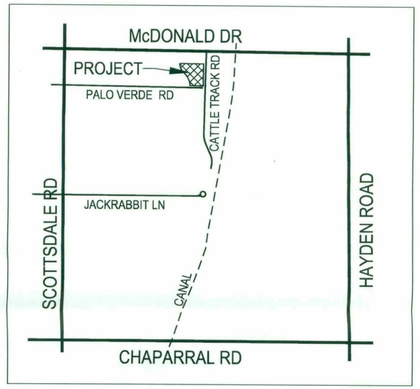
- (85.38) TOP OF CURB
- GRADE BREAK
- EXISTING SPOT ELEVATION
- 1284 EXISTING CONTOUR
- BUILDING SETBACK LINE (BSL)
- EXISTING CONCRETE (TO REMAIN)
- PROPOSED CONCRETE
- 1280 PROPOSED CONTOUR
- EXISTING LOT LINE
- PROPOSED LOT LINE
- EXISTING WALL (TO REMOVE)
- EXISTING WALL (TO REMAIN)
- PROPOSED WALL
- STORM DRAIN



Basins without a gravity outfall will need a drywell. During final design, demonstrate basins can drain in < 36 hrs

Bubbler not allowed. This has to pond up 3.5 ft before spilling over. Provide over land flow.

Provide FIRM info



VICINITY MAP

BUILDER:

ADAMS CRAIG ACQUISITIONS
7904 E. CHAPARRAL RD.
SUITE A110-113
SCOTTSDALE, ARIZONA 85250
PHONE: (480) 634-5015

ENGINEER:

6K CONSULTING, L.L.C.
4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592
FAX: (480) 275-5512

Registered Professional Engineer (Civil)
CERTIFICATE NO.
36627
CARL H. BLOOMFIELD
Date Signed 8/22/17
ARIZONA U.S.A.

EXPIRES 9/30/2019

Stormwater Review By:
Alex Menez
Phone: 480-312-7278
Fax: 480-312-9103
e-mail: amenez@ScottsdaleAZ.gov
Review Cycle 2 Date 9/6/17

N

30 15 0 30 60
SCALE FEET

SIENA ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

GRADING AND DRAINAGE PLAN

PROJ. No.: 3639	6K CONSULTING L.L.C.
DATE: AUG 2017	
SCALE: 1"=30'	
DESIGNED: 6K	DRAWN: 6K
APPROVED: CHB	
REV.	DRAWING NO. 1
	SHT. 1 OF 1

ADAMS CRAIG ACQUISITIONS

REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250

APN's 173-04-016, 173-04-017, 173-04-018

PROJECT NARRATIVE:

ADAMS CRAIG ACQUISITIONS HAS ASSEMBLED THE THREE PARCELS AND DESIRES TO OBTAIN GENERAL PLAN AMENDMENT AND REZONING TO CREATE A NEW SUBDIVISION COMPRISED OF 7 LOTS ON THE EXISTING 3 ACRES.

DRAINAGE NARRATIVE:

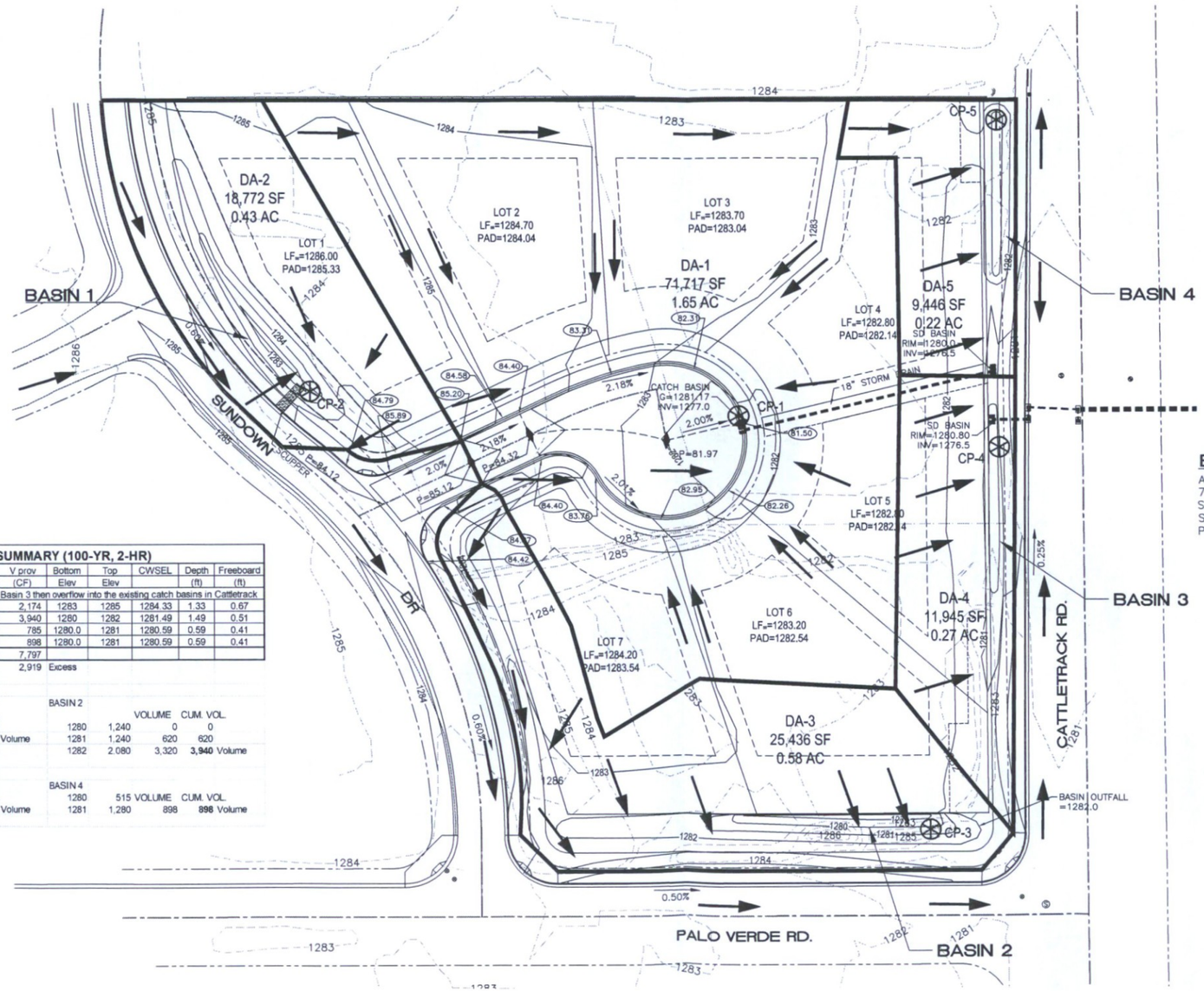
THE EXISTING PARCELS DO NOT RETAIN ON THEMSELVES, ALL THREE DRAIN TO SURROUNDING STREETS. IT IS ASSUMED THAT THE RUNOFF IS RETAINED IN THE LARGE BASIN NORTH OF THE SCOTTSDALE FACILITIES ON THE EAST SIDE OF CATTLE TRACK. BASINS ARE ADDED TO THIS PLAN TO CREATE OPPORTUNITIES TO DETAIN SOME OF THE ADDITIONAL FLOW.

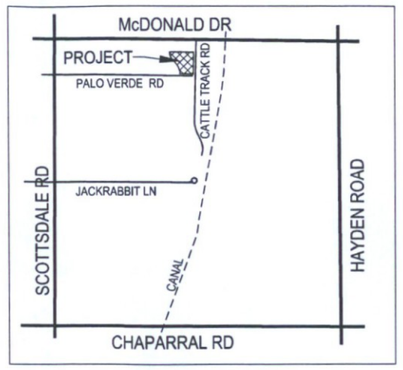
LEGAL DESCRIPTION:

THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.

ENGINEER'S NOTES:

1. THE C-VALUE FOR RUNOFF ON THIS PROJECT ADJUST FROM 0.61 TO 0.65. THEREFORE THE CALCULATED RUNOFF INCREASE WILL BE MINIMAL AND WILL BE CONTAINED IN THE PROPOSED BASINS.
2. WALL OPENINGS WILL BE REQUIRED IN REAR AND/OR SIDE WALLS TO BE ABLE TO ALLOW WATER TO THE TRACTS AND RETENTION BASINS.
3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
4. THE C-D-S IS GRADED TO HAVE A HIGH POINT AT THE ENTRY SO THAT WATER FROM THE NEW STREET FLOWS EAST TO THE PROPOSED CATCH BASIN AND STORM DRAIN THAT WILL DIVERT WATER THROUGH A BASIN AND INTO THE EXISTING CATCH BASINS LOCATED IN CATTLE TRACK. BASINS WILL SERVE TO ATTENUATE THE PEAK FLOWS
5. THE EXISTING INTERIOR WALLS, UTILITIES AND BUILDING STRUCTURES HAVE BEEN REMOVED IN ANTICIPATION OF THE CONSTRUCTION OF THE SUBDIVISION.





VICINITY MAP

RETENTION CALCULATION SUMMARY (100-YR, 2-HR)												
ID	AREA (SQ FT)	C	P (FT)	V req (CF)	BASIN ID		V prov (CF)	Bottom Elev	Top Elev	CWSEL	Depth (ft)	Freeboard (ft)
1	71,717	0.05	0.175	628	OFFSITE	Drains into Basin 3 then overflow into the existing catch basins in Cattletrack						
2	18,772	0.44	0.175	1,445	BASIN 1		2,174	1283	1285	1284.33	1.33	0.67
3	25,436	0.66	0.175	2,938	BASIN 2		3,940	1280	1282	1281.49	1.49	0.51
4	11,945	0.11	0.175	230	BASIN 3		785	1280.0	1281	1280.59	0.59	0.41
5	9,446	0.16	0.175	264	BASIN 4		898	1280.0	1281	1280.59	0.59	0.41
TOTAL	137,316			5,505			7,797					
							2,919	Excess				

3.15 ac **BASIN VOLUMES**

BASIN 1					BASIN 2				
		195	VOLUME	CUM. VOL.			VOLUME	CUM. VOL.	
Basin 1 is north of entry	1283								
Basin 2 is on south	1284	965	580	580	1280	1,240	0	0	
Basin 3 is on east side, south	1285	2,223	1,594	**2,174** Volume	1281	1,240	620	620	
Basin 4 is on east side, north					1282	2.080	3,320	**3,940** Volume	

BASIN 3					BASIN 4				
		410	VOLUME	CUM. VOL.			515	VOLUME	CUM. VOL.
	1280.0				1280				
	1281	1,160	785	**785** Volume	1281	1,280	898	**898** Volume	

BUILDER:

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ENGINEER:

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4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592
FAX: (480) 275-5512

EXPIRES 9/30/2019

30 15 0 30 60
SCALE FEET

SIENA ESTATES
PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

DRAINAGE MAP

PROJ. No.: 3639	6K CONSULTING L.L.C.
DATE: AUG 2017	
SCALE: 1"=30'	
DESIGNED: 6K	DRAWN: 6K
APPROVED: CHB	
REV.	DRAWING NO. 1
	SHT. 1 OF 1

ADAMS CRAIG ACQUISITIONS

REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250

APN's 173-04-016, 173-04-017, 173-04-018

DRAINAGE NARRATIVE:

THE EXISITING PARCELS AND HOMES DRAIN GENERALLY TO THE SOUTHEAST. THE LOTS WILL DRAIN TO THE CUL-DE-SAC TO BE COLLECTED AND DIRECTED, BY STORM DRAIN, TO A PROPOSED SHALLOW BASIN WHICH WILL DRAIN INTO EXISTING CATCH BASINS IN CATTLE TRACK THAT DIRECT WATER TO THE EXISTING RETENTION BASIN LOCATED EAST OF CATTLETRACK AND SOUTH OF MCDONALD DRIVE. PORTIONS OF LOTS 4-7 WILL DRAIN TO CATTLETRACK AND TO PALO VERDE TO BE RETAINED IN SMALL DETENTION BASINS DESIGNED TO ASSIST IN PROVIDING ADDITIONAL RUNOFF GENERATED BY THE DEVELOPMENT.

LEGAL DESCRIPTION:

THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.

ENGINEER'S NOTES:

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3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
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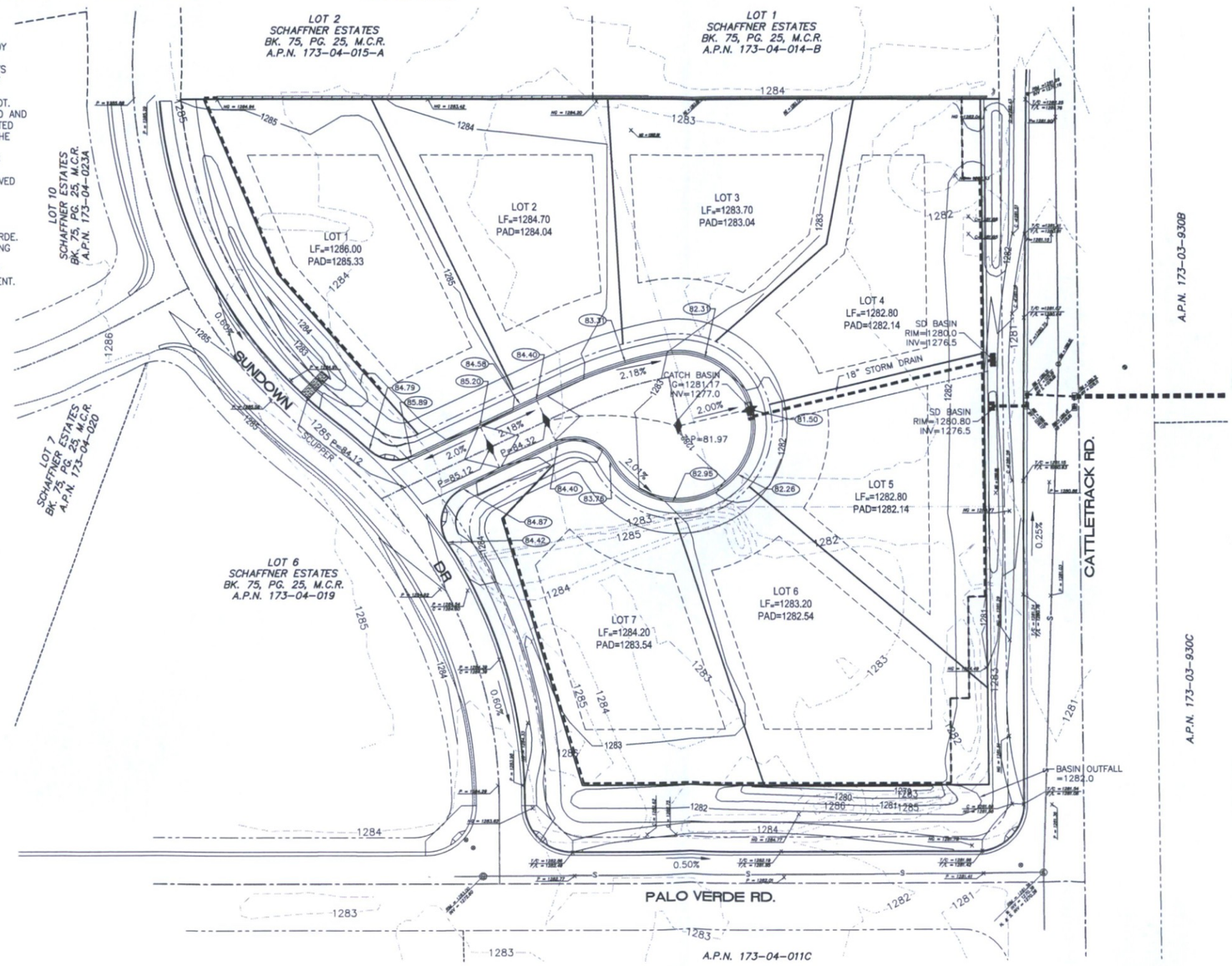
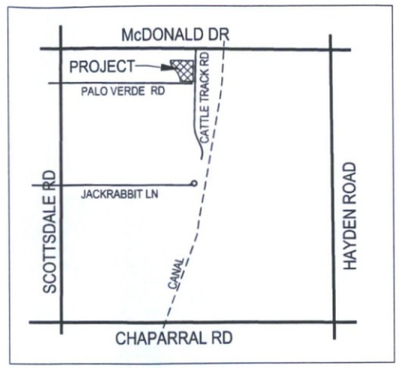
5. THE ZONING BOUNDARY IS EXTENDED TO THE CENTERLINES OF CATTLETRACK, PALO VERDE AND SUNDOWN.
6. THE SIDEWALK WILL BE EXTENDED ALONG PALO VERDE.
7. CURB, GUTTER AND SIDEWALK WILL BE ADDED ALONG THE EAST SIDE OF SUNDOWN DRIVE.
8. THE PAVEMENT IN SUNDOWN WILL BE REMOVED BY MILLING AND REPLACED WITH NEW ASPHALT PAVEMENT. DURING THE CONSTRUCTION OF THIS PROJECT.

LEGEND

- (85.38) TOP OF CURB
- GRADE BREAK
- EXISTING SPOT ELEVATION
- 1284 EXISTING CONTOUR
- BUILDING SETBACK LINE (BSL)
- EXISTING CONCRETE (TO REMAIN)
- PROPOSED CONCRETE
- 1280 PROPOSED CONTOUR
- EXISTING LOT LINE
- PROPOSED LOT LINE
- EXISTING WALL (TO REMOVE)
- EXISTING WALL (TO REMAIN)
- PROPOSED WALL
- STORM DRAIN





VICINITY MAP

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CERTIFICATE NO. 36627 CARL H. BLOOMFIELD Date Signed 9/22/17 ARIZONA U.S.A.
EXPIRES 9/30/2019

N

30 15 0 30 60
SCALE FEET

SIENA ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

GRADING AND DRAINAGE PLAN

PROJ. No.: 3639		6K CONSULTING L.L.C.
DATE: AUG 2017		
SCALE: 1"=30'		
DESIGNED: 6K	DRAWN: 6K	APPROVED: CHB
REV.		DRAWING NO. 1
		SHT. 1 OF 1

APPENDIX D

Hydrologic Computations

. NOAA Atlas 14 exhibits
. C-Values Exhibit
. Pre-vs Post Retention Calcs

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.5233°, Longitude: -111.9181°
Elevation: 1282.5 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.185 (0.155-0.226)	0.242 (0.203-0.296)	0.328 (0.273-0.400)	0.395 (0.327-0.479)	0.484 (0.394-0.586)	0.554 (0.445-0.666)	0.624 (0.493-0.749)	0.696 (0.540-0.834)	0.793 (0.599-0.951)	0.867 (0.642-1.04)
10-min	0.282 (0.235-0.345)	0.368 (0.309-0.451)	0.500 (0.416-0.610)	0.601 (0.497-0.730)	0.737 (0.600-0.892)	0.843 (0.677-1.01)	0.950 (0.750-1.14)	1.06 (0.822-1.27)	1.21 (0.912-1.45)	1.32 (0.977-1.59)
15-min	0.349 (0.292-0.427)	0.457 (0.383-0.559)	0.620 (0.516-0.756)	0.745 (0.616-0.905)	0.914 (0.744-1.11)	1.05 (0.840-1.26)	1.18 (0.930-1.41)	1.31 (1.02-1.57)	1.50 (1.13-1.79)	1.64 (1.21-1.97)
30-min	0.470 (0.393-0.576)	0.615 (0.516-0.753)	0.835 (0.695-1.02)	1.00 (0.830-1.22)	1.23 (1.00-1.49)	1.41 (1.13-1.69)	1.59 (1.25-1.90)	1.77 (1.37-2.12)	2.01 (1.52-2.42)	2.20 (1.63-2.65)
60-min	0.582 (0.486-0.713)	0.761 (0.638-0.932)	1.03 (0.860-1.26)	1.24 (1.03-1.51)	1.52 (1.24-1.84)	1.74 (1.40-2.09)	1.96 (1.55-2.36)	2.19 (1.70-2.62)	2.49 (1.89-2.99)	2.73 (2.02-3.28)
2-hr	0.676 (0.574-0.809)	0.876 (0.743-1.05)	1.17 (0.988-1.40)	1.40 (1.17-1.66)	1.70 (1.41-2.02)	1.94 (1.58-2.29)	2.18 (1.75-2.58)	2.43 (1.91-2.86)	2.76 (2.12-3.26)	3.02 (2.27-3.58)
3-hr	0.743 (0.628-0.899)	0.952 (0.808-1.16)	1.25 (1.05-1.51)	1.48 (1.24-1.79)	1.81 (1.49-2.17)	2.08 (1.69-2.47)	2.35 (1.87-2.80)	2.64 (2.07-3.13)	3.03 (2.30-3.61)	3.35 (2.48-3.99)
6-hr	0.893 (0.771-1.06)	1.13 (0.978-1.34)	1.45 (1.25-1.70)	1.70 (1.45-1.99)	2.05 (1.72-2.38)	2.32 (1.92-2.69)	2.60 (2.12-3.02)	2.88 (2.31-3.36)	3.28 (2.56-3.82)	3.59 (2.73-4.18)
12-hr	0.994 (0.866-1.16)	1.25 (1.09-1.46)	1.59 (1.38-1.85)	1.85 (1.59-2.14)	2.21 (1.88-2.55)	2.48 (2.08-2.85)	2.76 (2.29-3.18)	3.04 (2.49-3.50)	3.42 (2.73-3.96)	3.72 (2.91-4.34)
24-hr	1.18 (1.04-1.35)	1.49 (1.32-1.71)	1.94 (1.71-2.22)	2.28 (2.01-2.61)	2.77 (2.42-3.16)	3.15 (2.73-3.59)	3.55 (3.06-4.04)	3.96 (3.38-4.51)	4.54 (3.82-5.16)	4.99 (4.16-5.69)
2-day	1.27 (1.12-1.45)	1.62 (1.44-1.86)	2.13 (1.88-2.43)	2.54 (2.23-2.89)	3.10 (2.71-3.53)	3.55 (3.08-4.04)	4.03 (3.47-4.59)	4.52 (3.87-5.15)	5.21 (4.41-5.95)	5.77 (4.82-6.60)
3-day	1.35 (1.19-1.54)	1.72 (1.52-1.96)	2.27 (2.00-2.58)	2.70 (2.38-3.07)	3.32 (2.90-3.77)	3.81 (3.31-4.33)	4.34 (3.74-4.93)	4.89 (4.18-5.56)	5.67 (4.79-6.45)	6.30 (5.26-7.18)
4-day	1.42 (1.26-1.62)	1.82 (1.61-2.07)	2.40 (2.12-2.73)	2.87 (2.52-3.26)	3.54 (3.09-4.01)	4.08 (3.54-4.62)	4.65 (4.01-5.27)	5.26 (4.50-5.97)	6.12 (5.17-6.94)	6.82 (5.70-7.76)
7-day	1.59 (1.40-1.82)	2.03 (1.79-2.32)	2.69 (2.36-3.06)	3.22 (2.82-3.66)	3.97 (3.45-4.50)	4.57 (3.95-5.18)	5.21 (4.47-5.91)	5.89 (5.02-6.69)	6.85 (5.76-7.79)	7.63 (6.35-8.69)
10-day	1.72 (1.52-1.96)	2.21 (1.95-2.51)	2.91 (2.56-3.30)	3.48 (3.05-3.94)	4.27 (3.73-4.83)	4.91 (4.26-5.54)	5.59 (4.82-6.31)	6.30 (5.39-7.13)	7.30 (6.17-8.26)	8.10 (6.78-9.18)
20-day	2.12 (1.88-2.40)	2.73 (2.42-3.08)	3.60 (3.19-4.07)	4.27 (3.76-4.81)	5.16 (4.53-5.81)	5.84 (5.11-6.58)	6.54 (5.69-7.37)	7.25 (6.27-8.18)	8.20 (7.04-9.28)	8.93 (7.61-10.1)
30-day	2.48 (2.19-2.81)	3.19 (2.82-3.60)	4.21 (3.71-4.74)	4.98 (4.38-5.60)	6.01 (5.27-6.76)	6.81 (5.95-7.65)	7.63 (6.63-8.56)	8.45 (7.31-9.49)	9.57 (8.21-10.8)	10.4 (8.88-11.8)
45-day	2.86 (2.55-3.23)	3.69 (3.28-4.16)	4.86 (4.31-5.47)	5.73 (5.07-6.44)	6.87 (6.06-7.72)	7.73 (6.79-8.69)	8.60 (7.52-9.67)	9.47 (8.24-10.7)	10.6 (9.17-12.0)	11.5 (9.86-13.0)
60-day	3.16 (2.82-3.55)	4.08 (3.64-4.58)	5.37 (4.78-6.02)	6.30 (5.59-7.07)	7.52 (6.66-8.43)	8.42 (7.43-9.44)	9.32 (8.19-10.5)	10.2 (8.93-11.5)	11.4 (9.88-12.8)	12.2 (10.6-13.8)

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

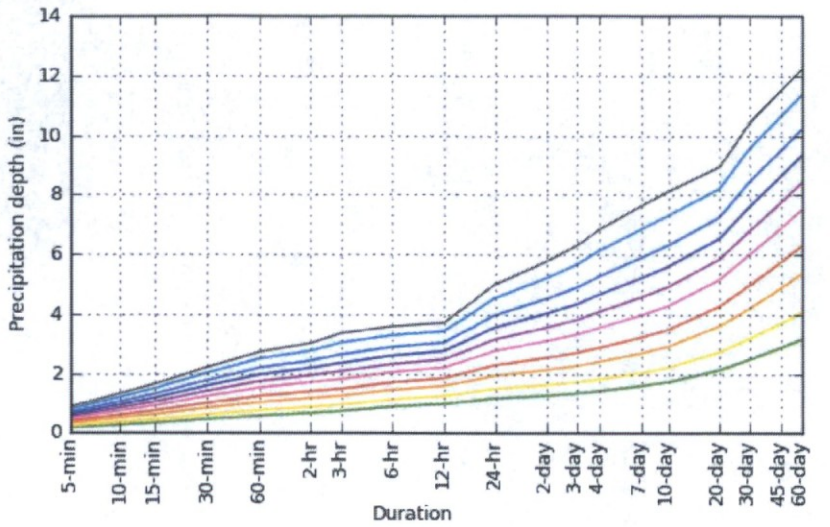
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

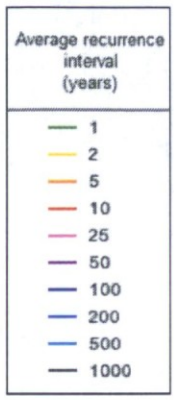
Please refer to NOAA Atlas 14 document for more information.

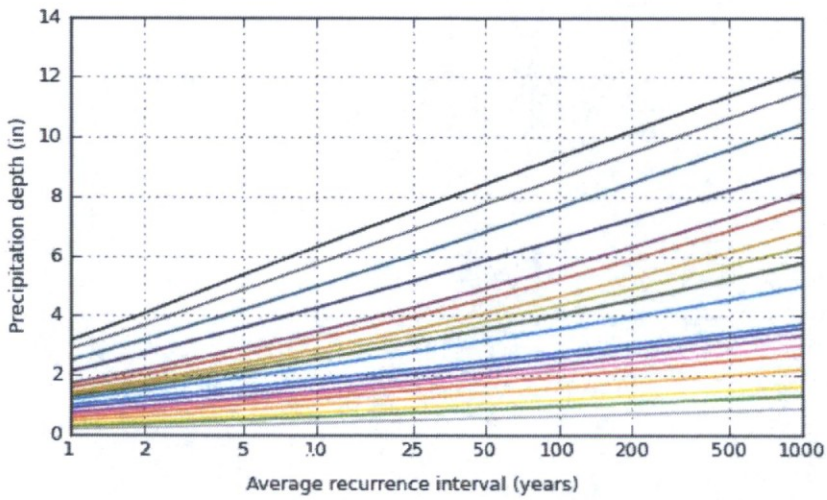
Back to Top

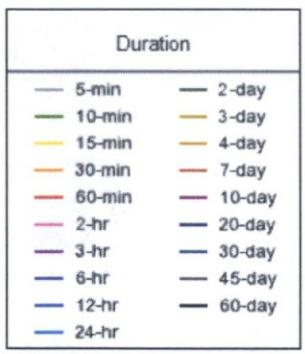
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.5233°, Longitude: -111.9181°









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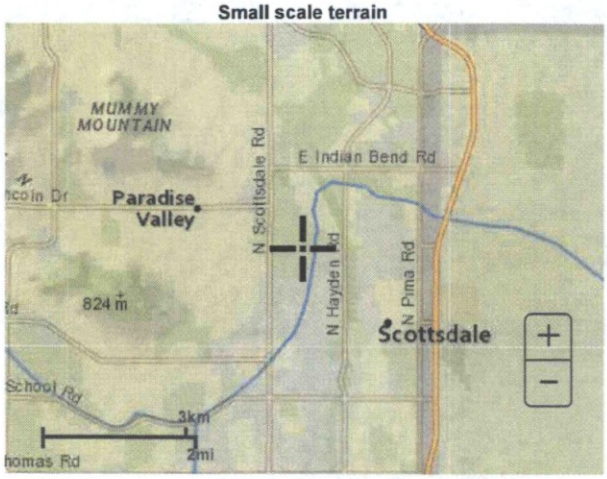
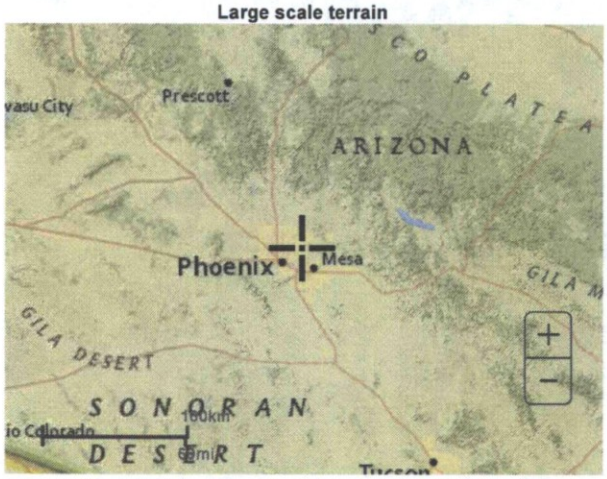
Back to Top

Maps & aerials

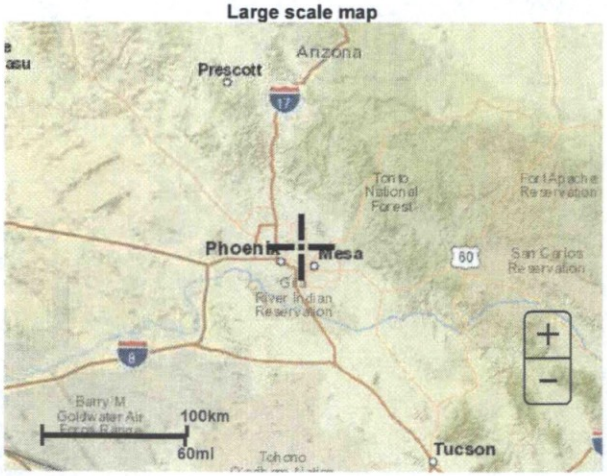
Small scale terrain



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
Questions?: HDSC.Questions@noaa.gov

Disclaimer

C-VALUES CALCULATIONS FOR EXISTING CONDITIONS.

A	B	C	D		
16,106	5,336	8,734	40,809		
137		1,856	669		
10,385		1,486	2,866		
506		8,906	6,784		
7,305		2,992	5,055		
		1,993	231		
			4,897		
			(137)		
			3,547		
34,439	5,336	25,967	64,721	130463	TOTALS
0.95	0.32	0.8	0.45		C-VALUES
32717.05	1707.52	20773.6	29124.45	84322.62	TOTAL
				0.65	=Cw

A CONCRETE, ROOF, ASPHALT, ETC
B TURF AND TREES
C STEEP SLOPES, GRAVEL DRIVES, ETC,
D NATIVE DESERT LANDSCAPING

C-VALUES CALCULATIONS FOR EXISTING CONDITK

A	B	C	D		
16,106	5,336	8,734	40,809		
137		1,856	669		
10,385		1,486	2,866		
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A CONCRETE, ROOF, ASPHALT, ETC
B TURF AND TREES
C STEEP SLOPES, GRAVEL DRIVES, ETC.
D NATIVE DESERT LANDSCAPING

LEGEND

- CONCRETE/ROOF/ETC (0.95)
- TURF – TREES (0.32)
- GRAVEL, STEEP SLOPES, DIRT DRIVES (0.80)
- NATIVE DESERT LANDSCAPING (0.45)

BUILDER:
ADAMS CRAIG ACQUISITIONS
7904 E. CHAPARRAL RD.
SUITE A110-113
SCOTTSDALE, ARIZONA 85250
PHONE: (480) 634-5015

ENGINEER:
6K CONSULTING, L.L.C.
4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592
FAX: (480) 275-5512

CARL H. BLOOMFIELD 36627 REGISTERED ARIZONA U.S.A.
EXPIRES 9/30/2019

N

30 15 0 30 60
SCALE FEET

SIENA ESTATES
PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

EXISTING C-VALUES EXHIBIT

PROJ. No.: 3639	6K CONSULTING L.L.C.
DATE: AUG 2017	
SCALE: 1"=30	
DESIGNED: 6K	DRAWN: 6K
APPROVED: CHB	
REV.	DRAWING NO. 1
	SHT. 1 OF 1

SIENA ESTATES
RETENTION SUMMARY

RETENTION CALCULATION SUMMARY (100-YR, 2-HR)												
ID	AREA	C	P	V req	BASIN ID		V prov	Bottom	Top	CWSEL	Depth	Freeboard
	(SQ FT)		(FT)	(CF)			(CF)	Elev	Elev		(ft)	(ft)
1	71,717	0.05	0.175	628	OFFSITE	Drains into Basin 3 then overflow into the existing catch basins in Cattletrack						
2	18,772	0.44	0.175	1,445	BASIN 1		2,174	1283	1285	1284.33	1.33	0.67
3	25,436	0.66	0.175	2,938	BASIN 2		3,940	1280	1282	1281.49	1.49	0.51
4	11,945	0.11	0.175	230	BASIN 3		785	1280.0	1281	1280.59	0.59	0.41
5	9,446	0.16	0.175	264	BASIN 4		898	1280.0	1281	1280.59	0.59	0.41
TOTAL	137,316			5,505			7,797					
							2,919	Excess				

3.15 ac

BASIN VOLUMES

BASIN 1

Basin 1 is north of entry	1283	195	VOLUME	CUM. VOL.
Basin 2 is on south	1284	965	580	580
Basin 3 is on east side, south	1285	2,223	1,594	**2,174** Volume
Basin 4 is on east side, north				

BASIN 2

		VOLUME	CUM. VOL.
1280	1,240	0	0
1281	1,240	620	620
1282	2,080	3,320	**3,940** Volume

BASIN 3

1280.0	410	VOLUME	CUM. VOL.
1281	1,160	785	**785** Volume

BASIN 4

1280	515	VOLUME	CUM. VOL.
1281	1,280	898	**898** Volume

Per NOAA 14:

$$2.18'' \times \frac{1\,ft}{12''} = 0.182\,ft$$

APPENDIX E

Soils Study and Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Eastern Maricopa and Northern Pinal Counties Area, Arizona

Siena Estates

June 20, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 15, 30, 60, 90

Feet: 0, 50, 100, 200, 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Maricopa and Northern Pinal Counties Area, Arizona
Survey Area Data: Version 9, Sep 29, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 31, 2014—Dec 7, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Eastern Maricopa and Northern Pinal Counties Area, Arizona (AZ655)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
LaA	Laveen loam, 0 to 1 percent slopes	1.8	49.0%
RiA	Rillito gravelly loam, 0 to 1 percent slopes	1.9	51.0%
Totals for Area of Interest		**3.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Maricopa and Northern Pinal Counties Area, Arizona

LaA—Laveen loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1sp4
Elevation: 1,100 to 1,700 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Laveen and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laveen

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

Ap - 0 to 14 inches: loam
Bk - 14 to 60 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Hydric soil rating: No

RiA—Rillito gravelly loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1sph
Elevation: 1,100 to 1,700 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rillito and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rillito

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

A/C - 0 to 13 inches: gravelly loam
Bk - 13 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

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