CITY OF SCOTTSDALE

Drainage Reports

Abbreviated Water and Sewer Needs

Water Study

Wastewater Study

Stormwater Waiver Application

Plan # _____

Case # 35-DR-2018

Q-S # _____

____ Accepted

_X_ Corrections

DG 09/04/18 RY DRAINAGE REPORT
Reviewed By Date

FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

Stormwater Review By:
Don Gerkin, PE, CFM
Phone 480-312-7903 Fax 480-312-9103
E-mail: dgerkin@ScottsdaleAZ.gov
Review Cycle 1 Date 9/4/18

Add case No. 35-DR-2018 and Zoning case no. 19-ZN-2018

DG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

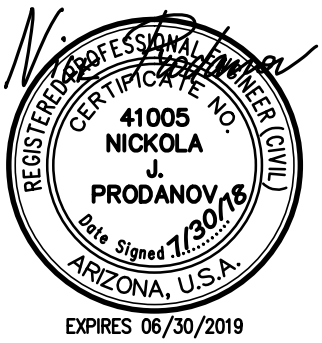
Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984

REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 41005 NICKOLA J. PRODANOV Date Signed 7/30/18 ARIZONA, U.S.A.
EXPIRES 06/30/2019

July 30, 2018

TABLE OF CONTENTS

APPENDICES



July 30, 2018

1. INTRODUCTION

This preliminary drainage report and related design have been developed in accordance with the current Maricopa County and City of Scottsdale drainage ordinances, standards and policies.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Based on provided City records, an office building development (Andante Law Group) was approved by the COS in 2016 (47-Dr-2016).

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

2. DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

A field survey and visual reconnaissance inspection was conducted in June, 2018 to observe and collect information regarding the existing topographic characteristics, drainage conditions, document any local disturbances to the historic flows, and location and condition of the existing storm drainage structures and conveyance corridors. A topographic map was developed with a one-foot contour interval for the site and the adjacent streets. The elevation contours and survey spot elevations are tied to the section monuments and are based on the City of Scottsdale vertical datum (NAVD'88).

The overall existing terrain on site is flat and fully developed. 69th Street slopes in southerly direction, 1st Avenue slopes in easterly direction. Both streets are paved with asphalt and bounded be concrete vertical curb and gutter. Existing 5' wide sidewalk is located along 69th Street. The majority of the onsite generated surface drainage flows from north to south at an average slope of 0.5%. A portion of the existing drainage flows to the west and ultimately discharge onto 69th Street.

Site is located within the Lower Indian Bend Wash Area Drainage Master Study, Tempe/South Scottsdale Drainage Improvement Area. Based on the obtained study and its exhibits, no significant offsite flows run near or through the site.

3. FEMA FLOOD ZONE CLASSIFICATION

Site is located in Flood Zone "X" (shaded) according to Flood Insurance Rate Map (FIRM) #: 045012, Panel 2235, Suffix L, dated October 16th, 2013, as published by FEMA. The FIRM Panels defines Zone "X" as follows: "*Areas determined to be outside of the 0.2% annual chance floodplain*".

See Appendix A-4 for FEMA Flood Insurance Rate Map and Appendix A-5 FCDMC Floodplain Viewer exhibits.

Provide a summary of the Cpost and Cpre calcs

4. PROPOSED DRAINAGE PLAN

Grading and drainage plan shows the proposed grades and slopes away from the buildings. Runoff generated on site is conveyed via swales and valley gutters and ultimately discharged onto 69th Street and 1st Avenue. Due to slope of the site and grades of adjacent streets, the finish floor elevations of the units were stepped from north to south following the natural slope.

Computations have been performed to estimate the required on-lot storm water retention from 100-year storm. Precipitation data was derived from the NOAA Atlas 14, Volume 1, Version 4. This development will utilize the option to apply for a Stormwater Waiver and eliminate the on-lot retention required to be detained on site. Refer to Appendix A-7 – Request for Stormwater Storage Waiver. 308 c.f. was the estimated required retention for this project. No on-lot retention is proposed for this project. The volume of 308 c.f. will be requested in the waiver - see Appendix A-2 Grading and Drainage Plan and Appendix A-6 Drainage Calculations.

Finish floor elevations of the proposed structures are set to a 1.0 ft min. above the adjacent high curb elevation and minimum 1.1 ft above the ultimate outfall of the site.

Proposed grading and drainage plan provide recommendation for the minimum top of footing elevations, which ultimately will need to be coordinated with and accepted by the project's structural and geotechnical engineers.

Grades are matched with the street elevations where the new driveway is proposed.

5. CONCLUSIONS AND RECOMMENDATIONS

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

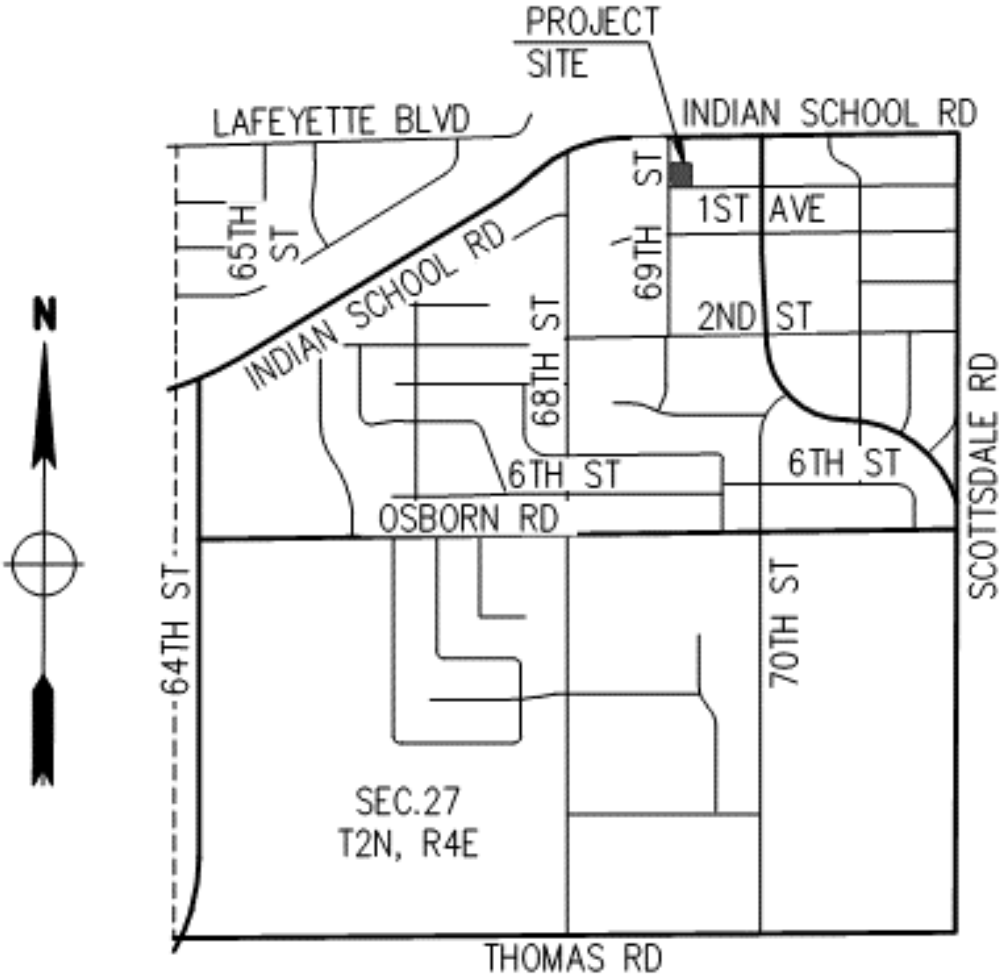
Regular inspections and maintenance of the wall openings and subsurface drainage systems after every major storm must be performed. Any obstructions of flow need to be promptly cleared out in order to keep the performance of the storm drain system as designed. It is the Owner's responsibility to inspect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

In conclusion, the project site has the potential to collect, convey, and discharge runoff effectively while meeting County, City guidelines. The proposed improvements do not impact drainage conditions of neighboring lots and will not result in significant changes to the existing drainage patterns or magnitudes.

6. REFERENCES

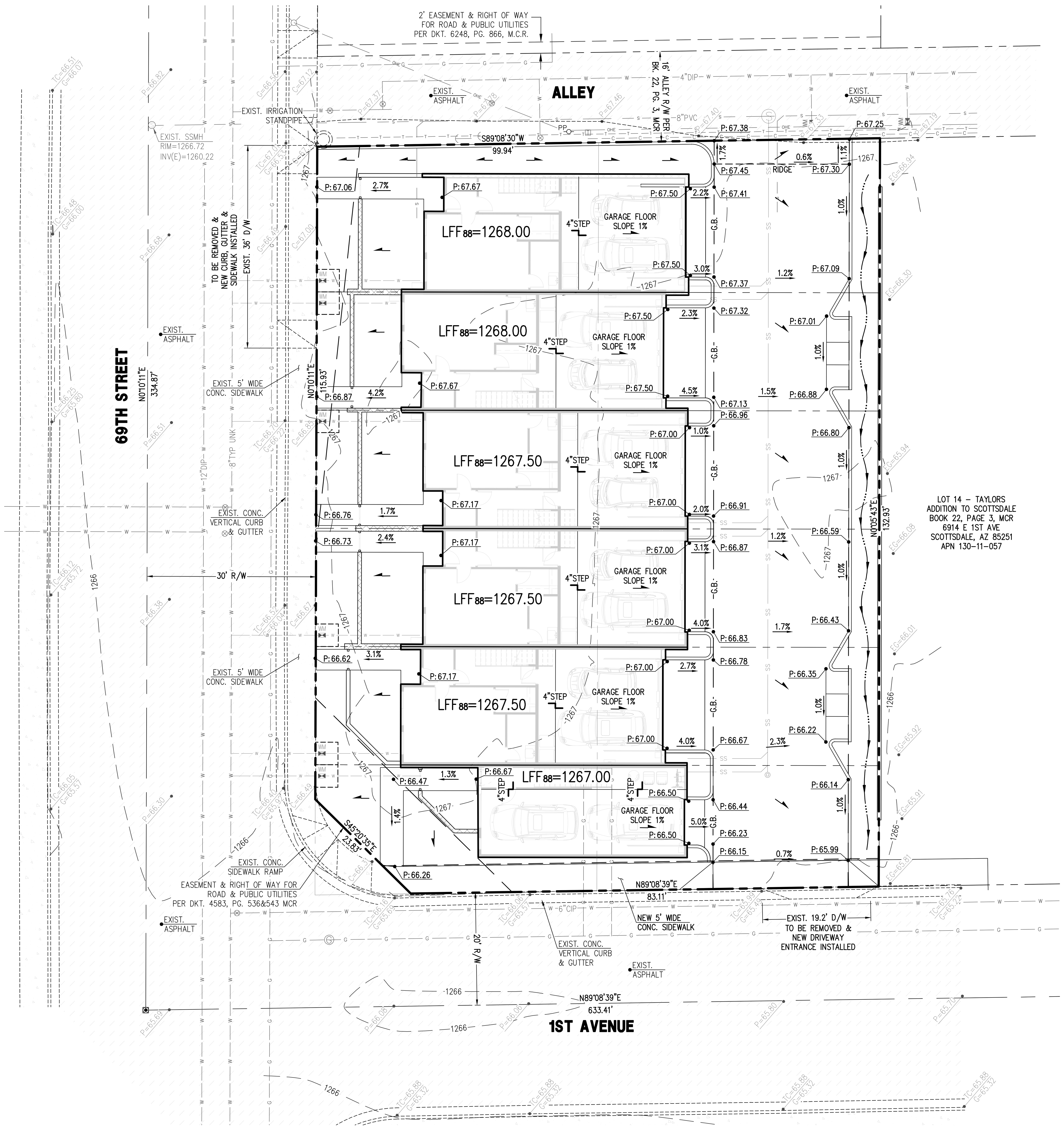
- Drainage Design Manual for Maricopa County, Arizona – Volume I Hydrology, Flood Control District of Maricopa County
- Drainage Design Manual for Maricopa County, Arizona – Volume II Hydraulics, Flood Control District of Maricopa County
- Drainage Policies and Standards Manual for Maricopa County, Arizona, Flood Control District of Maricopa County
- City of Scottsdale Design Standards & Policies Manual
- City of Scottsdale Stormwater Management System

APPENDIX A-1
Vicinity Map



APPENDIX A-2
Preliminary Grading and Drainage Plan

PRELIMINARY GRADING & DRAINAGE PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA

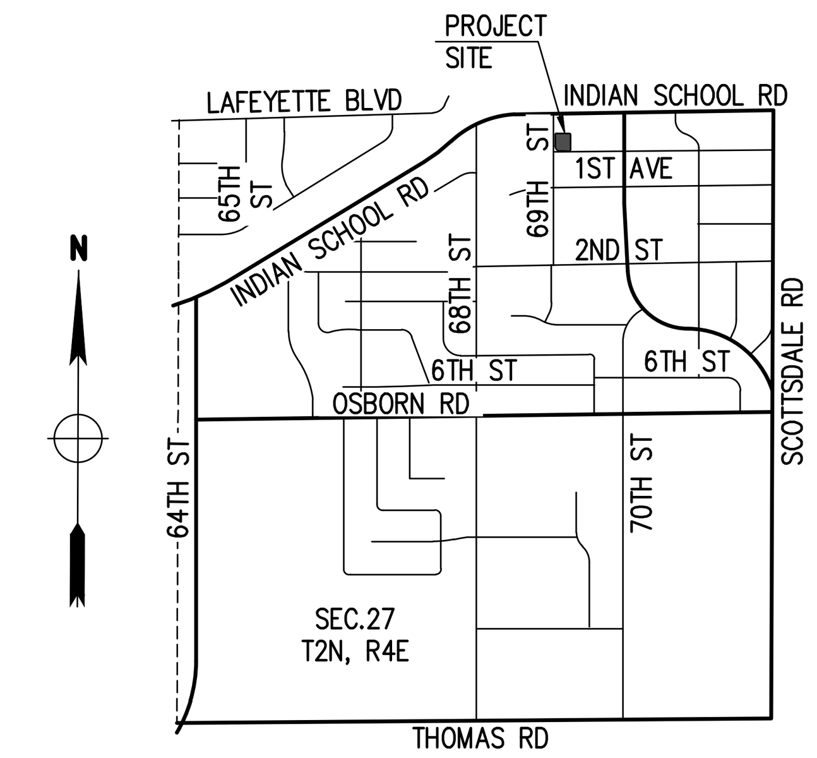


LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
- CALCULATED POINT
- PROPERTY LINE
- EASEMENT LINE
- MONUMENT LINE
- SIGN
- LIGHT POLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- CABLE TV RISER
- WATER METER BOX
- SEWER MANHOLE
- TELEPHONE PEDESTAL
- CATV, PHONE
- SEWER LINE
- WATER LINE
- ELECTRIC LINE
- COMMUNICATIONS LINE
- GAS LINE
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION
- SLOPE DIRECTION
- 22.25 PROPOSED SPOT ELEVATION
- 1121 PROPOSED CONTOUR
- FLOW LINE

ABBREVIATIONS

ARV	AIR RELEASE VALVE
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
℄	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER



VICINITY MAP
NTS

SITE DATA

APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 13,150 S.F. (0.302 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER

LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT

SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS

THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

BENCHMARK

BRASS CAP IN HANDHOLE AT THE INTERSECTION OF INDIAN SCHOOL AND SCOTTSDALE ROAD HAVING AN ELEVATION OF 1260.34 CITY OF SCOTTSDALE DATUM, NAVD 88

LEGAL DESCRIPTION

LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

FLOOD INSURANCE RATE MAP (FIRM) DATA

COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES

WATER: CITY OF SCOTTSDALE
SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

RETENTION CALCULATIONS

PRE VS. POST DEVELOPMENT RUNOFF FROM 100-YEAR, 2-HOUR STORM EVENT

$V_r = D \times A \times (C - C_E)/12$

V_r=VOLUME REQUIRED
V_p=VOLUME PROVIDED
D=RAINFALL DEPTH=2.16, INCHES (100-YR, 2HR RAINFALL DEPTH – NOAA ATLAS 14, VOL.1, VER. 5)
C=0.82 (PER COS DESIGN STANDARDS & POLICIES MANUAL)
C_E=0.69 (PER EXIST. SITE CURRENT CONDITIONS)
A=AREA IN S.F. (13,150)
V_w=VOLUME WAIVED
V_r=308 C.F. *V_p=0 C.F.
*STORM WATER STORAGE WAIVER IN-LIEU FEE: V_w (308 C.F.) x $1.87=$575.96

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

SCALE: 1"=10' | DATE: 08/01/18 | JOB: 1805133 | DESIGNED BY: NP | VERSION: 1.1 | DRAWN BY: DW | CHECKED BY: JF | PLOT DATE: 08/01/18

REVISIONS:

PRELIMINARY GRADING & DRAINAGE PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

Land DEVELOPMENT GROUP
P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM

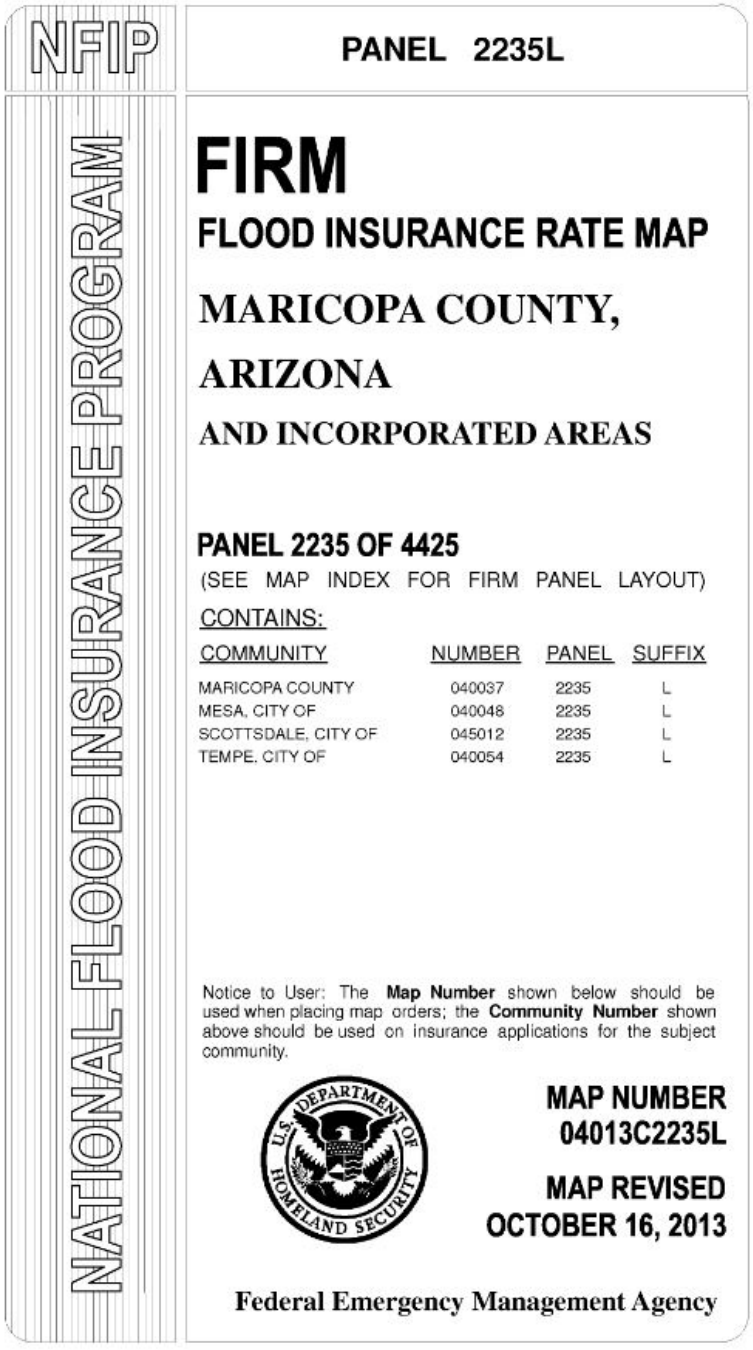
PRELIMINARY NOT FOR CONSTRUCTION

P-GD
1 OF 1

APPENDIX A-3
Aerial Topography Map Exhibit


PROJECT SITE
East 5th Avenue
East Indian School Road
East 1st Avenue
East Main Street
North el Dorado Lane
North 69th Street
North Goldwater Boulevard
6806 E 5TH AVE
6820 E 5TH AVE
6824 E 5TH AVE
6822 E 5TH AVE
6830 E 5TH AVE
6831 E 5TH AVE
6925 E 5TH AVE
6935 E 5TH AVE
4154 N 70TH ST
4110 N 70TH ST
6840 E INDIAN SCHOOL RD
6900 E INDIAN SCHOOL RD
6924 E INDIAN SCHOOL RD
6940 E INDIAN SCHOOL RD
7008 E INDIAN SCHOOL RD
6901 E INDIAN SCHOOL RD
6915 E INDIAN SCHOOL RD
6925 E INDIAN SCHOOL RD
6931 E INDIAN SCHOOL RD
6939 E INDIAN SCHOOL RD
6945 E INDIAN SCHOOL RD
7007 E INDIAN SCHOOL RD
6902 E 1ST AVE
6908 E 1ST AVE
6914 E 1ST AVE
6920 E 1ST AVE
6926 E 1ST AVE
6934 E 1ST AVE
6944 E 1ST AVE
6950 E 1ST AVE
6956 E 1ST AVE
6962 E 1ST AVE
7000 E 1ST AVE
6850 E MAIN ST
6910 E MAIN ST
6922 E MAIN ST
6926 E MAIN ST
6936 E MAIN ST
6952 E MAIN ST
6990 E MAIN ST
7000 E MAIN ST
6939 E 1ST AVE
6943 E 1ST AVE
4014 N GOLDWATER BLVD
7001 E 1ST AVE

APPENDIX A-4
FEMA FIRM Exhibit



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2235L

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 2235 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

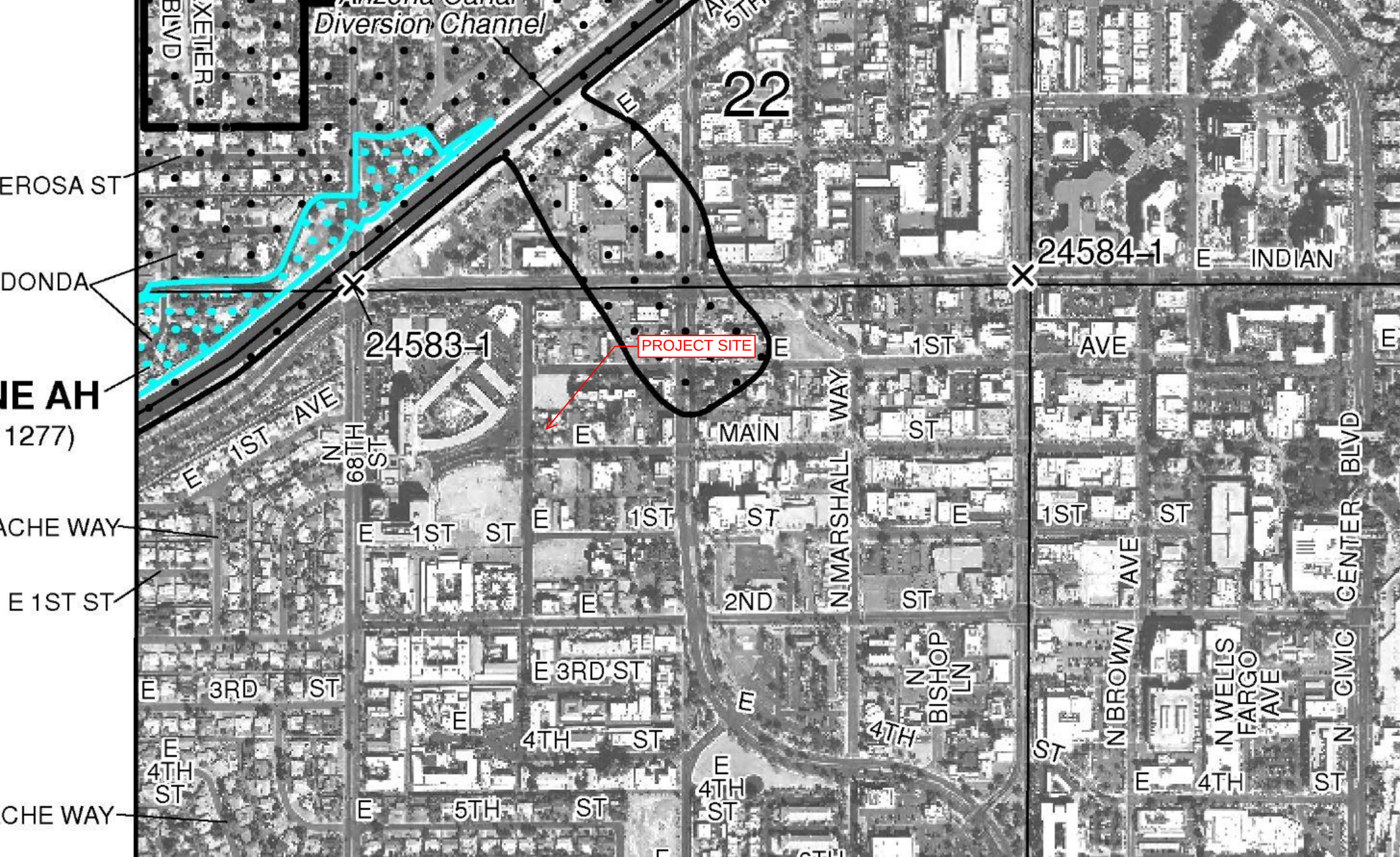
COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2235	L
MESA, CITY OF	040048	2235	L
SCOTTSDALE, CITY OF	045012	2235	L
TEMPE, CITY OF	040054	2235	L

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
04013C2235L

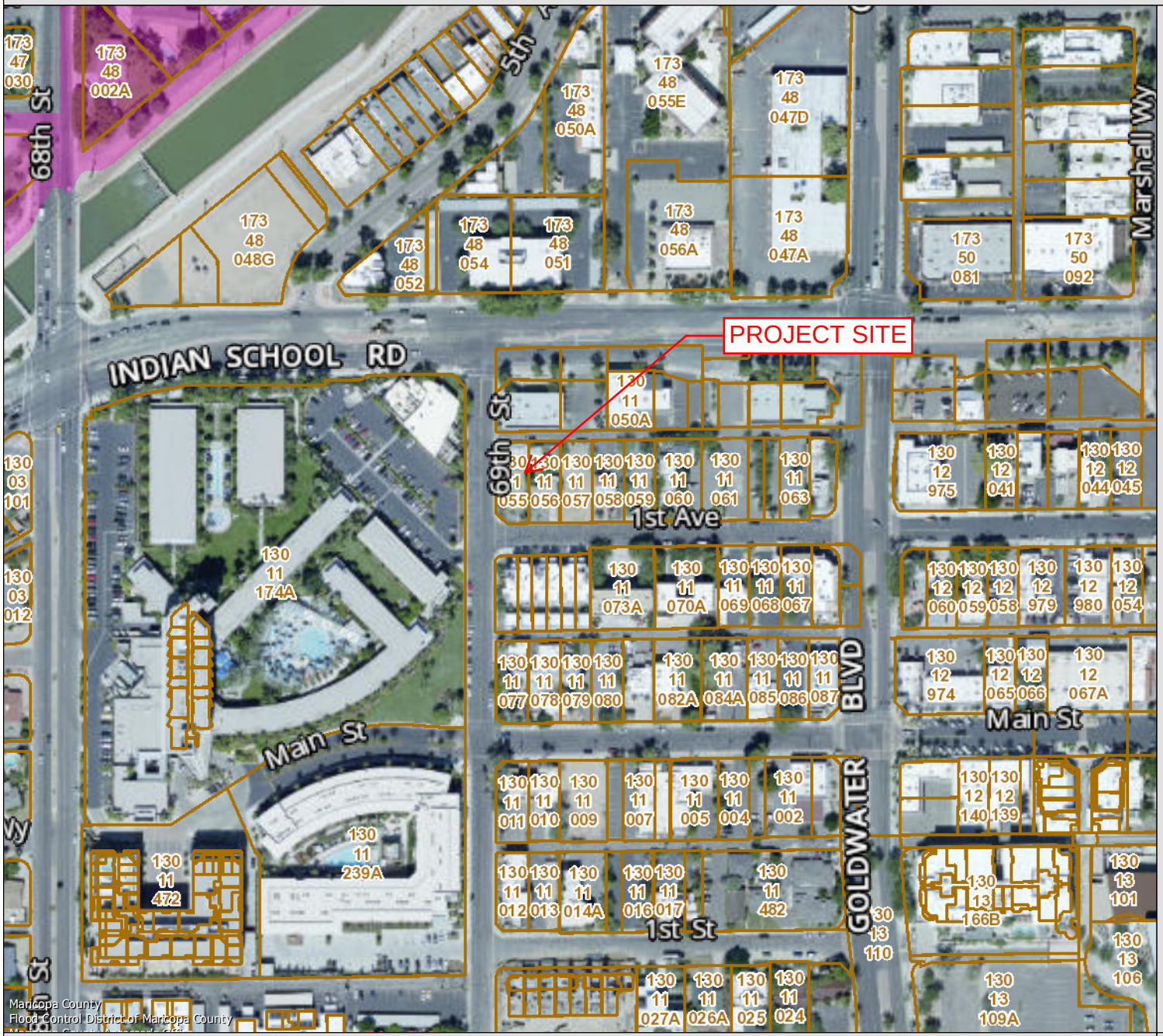
MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency


Arizona Canal
Diversion Channel
EXETER BLVD
22
EROSA ST
DONDA
NE AH
1277)
ACHE WAY
E 1ST ST
CHE WAY
24583-1
24584-1
PROJECT SITE
E
1ST
AVE
N 68TH ST
MAIN
WAY
ST
N MARSHALL
2ND
N BISHOP LN
4TH
5TH
3RD
N BROWN AVE
N WELLS FARGO AVE
N CIVIC CENTER BLVD
INDIAN

APPENDIX A-5
FCDMC Flood Plain Viewer

Floodplain Viewer



Parcel

Flood Zone

Not Within 100-Year Floodplain

A

AE

AH

AO

Regulatory Floodway

Pending Floodplain

A

AE

AH

AO

Floodway

Pending Floodplain Overlap

A

AE

AH

AO

Floodway

Flood Control District of Maricopa County
2801 W Durango St
Phoenix, AZ 85009
(602) 506-2419
http://www.fcd.maricopa.gov

N

1:3,428 — 1 inch = 286 feet

0 — 0.0275 — 0.055 — 0.11 mi

APPENDIX A-6
Drainage Calculations

RETENTION CALCULATIONS

PRE VS. POST DEVELOPMENT RUNOFF FROM 100-YEAR, 2-HOUR STORM EVENT

$Vr=DxAx(C-C\varepsilon)/12$

Vr=VOLUME REQUIRED
Vp=VOLUME PROVIDED
D=RAINFALL DEPTH=2.16, INCHES (100-YR, 2HR RAINFALL DEPTH - NOAA ATLAS 14, VOL.1, VER. 5)
C=0.82 (PER COS DESIGN STANDARDS & POLICIES MANUAL)
$C\varepsilon$=0.69 (PER EXIST. SITE CURRENT CONDITIONS)
A=AREA IN S.F. (13,150)
Vw=VOLUME WAIVED
Vr=308 C.F. *Vp=0 C.F.
*STORM WATER STORAGE WAIVER IN-LIEU FEE: Vw (308 C.F.) x $1.87=$575.96

See Grading and Drainage Plan for provided on-site surface retention.

Provide an exhibit and calculations for the pre dev C value.

$3/CF as of 7/1/18

0.82 looks low for this development. Use the table on the next page. Cpost for these types are usually 0.94. You can provide Cweighted post calcs to see what the actual Cpost is. You would need a detailed exhibit and calcs.

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.494°, Longitude: -111.9324°
Elevation: 1263.42 ft**

3. Runoff Coefficients. Use Fig. 4-1.5, Runoff Coefficients for Use with Rational Method, 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, slopes 10% or less			
R1-190	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	0.40	0.56	0.62
R1-18	0.43	0.58	0.64
R1-10	0.47	0.62	0.70
R1-7	0.51	0.66	0.80
R1-5	0.54	0.69	0.86
Residential Areas – Single Family, slopes greater than 10%			
R1-190	0.65	0.74	0.82
R1-130	0.68	0.76	0.84
R1-70	0.69	0.77	0.85
R1-43	0.70	0.77	0.85
R1-35	0.70	0.78	0.85
R1-18	0.71	0.79	0.86
R1-10	0.75	0.82	0.88
R1-7	0.81	0.86	0.91
R1-5	0.85	0.89	0.92
Townhouse (R-2, R-4)	0.63	0.74	0.94
Apartments & Condominiums (Condos) (R-3, R-5)	0.76	0.83	0.94
Specified Surface Type Values			
Paved streets, parking lots (concrete or asphalt), roofs, driveways, 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	0.45
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
Gravel floodways and shoulders	0.68	0.78	0.82

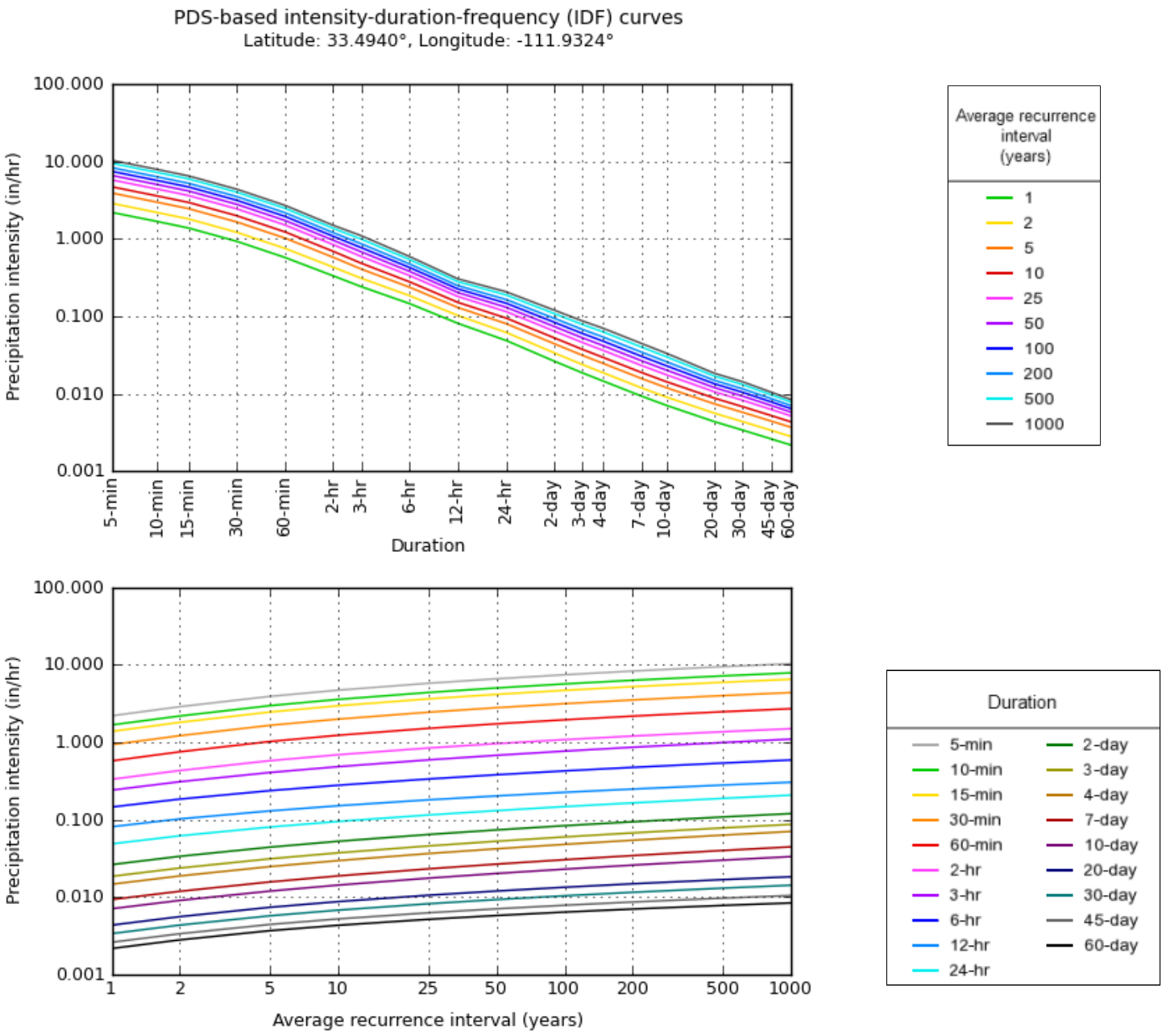
FIGURE 4-1.5 RUNOFF COEFFICIENTS FOR RATIONAL METHOD

PDS-based ... nches/hour)[1]

Duration	1	...	1000
5-min	2.2((1.85-2	...	10.3 (7.69-12.3)
10-min	1.67 (1.40-2	...	7.87 (5.86-9.40)
15-min	1.38 (1.16-1	...	6.50 (4.84-7.76)
30-min	0.93 (0.780-1	...	4.38 (3.26-5.23)
60-min	0.57 (0.483-0	...	2.71 (2.02-3.24)
2-hr	0.33 (0.284-0	...	1.50 (1.13-1.77)
3-hr	0.24 (0.204-0	...	1.10 (0.818-1.30)
6-hr	0.14 (0.126-0	...	0.590 (0.452-0.686)
12-hr	0.08 (0.071-0	...	0.304 (0.240-0.355)
24-hr	0.04 (0.044-0	...	0.207 (0.175-0.233)
2-day	0.02 (0.023-0	...	0.120 (0.102-0.136)
3-day	0.01 (0.017-0	...	0.087 (0.073-0.098)
4-day	0.01 (0.013-0	...	0.071 (0.059-0.079)
7-day	0.00 (0.008-0	...	0.045 (0.037-0.050)
10-day	0.00 (0.006-0	...	0.033 (0.028-0.037)
20-day	0.00 (0.004-0	...	0.018 (0.016-0.021)
30-day	0.00 (0.003-0	...	0.014 (0.012-0.016)
45-day	0.00 (0.002-0	...	0.011 (0.009-0.012)
60-day	0.00 (0.002-0	...	0.008 (0.007-0.009)

[1] Precipitation freque ... quency estimates (for
Numbers in parenthe ... upper bounds are not
a given duration and
checked against prot
Please refer to NOA

PF graphical



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Aug 2 17:23:27 2018

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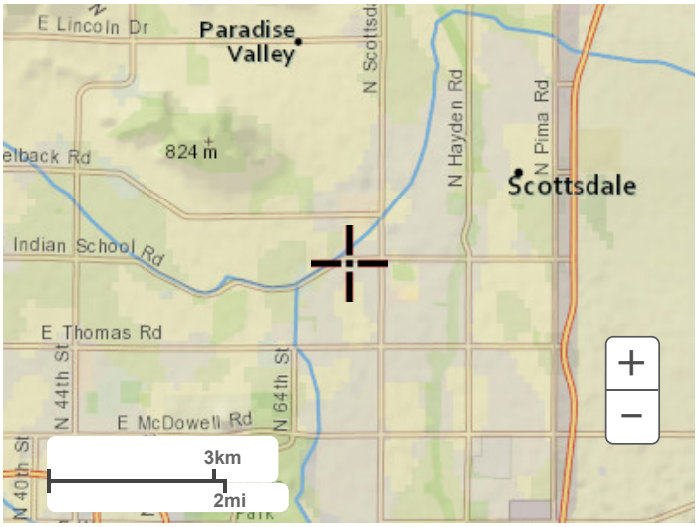
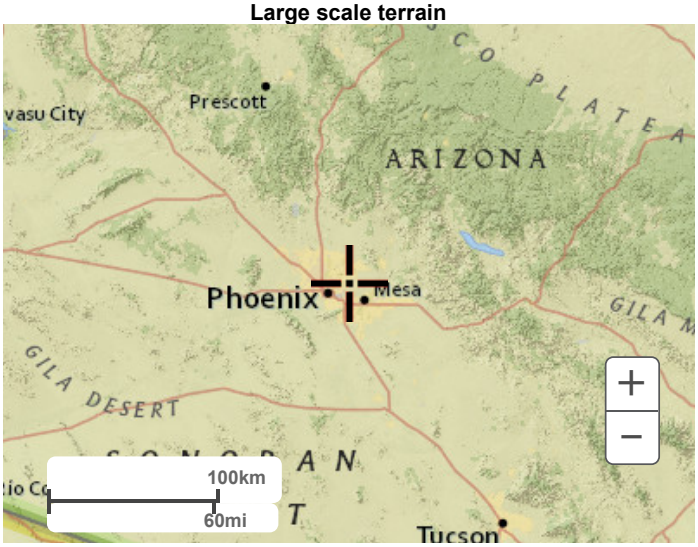
Maps & aerials

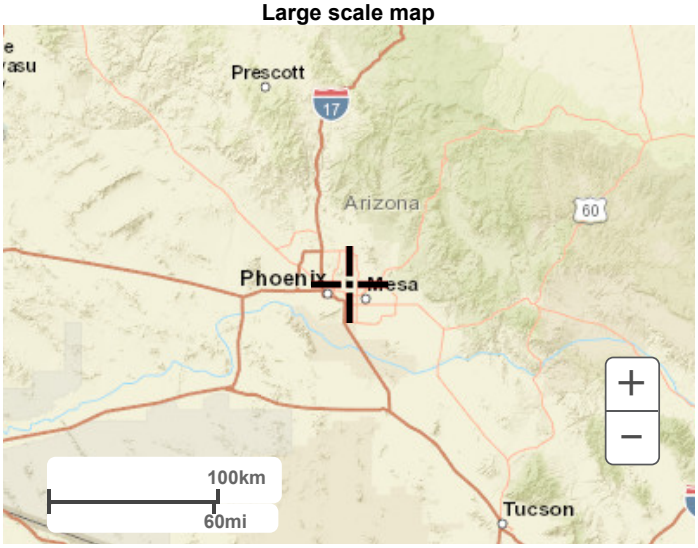
Small scale terrain



Large scale terrain



Large scale map



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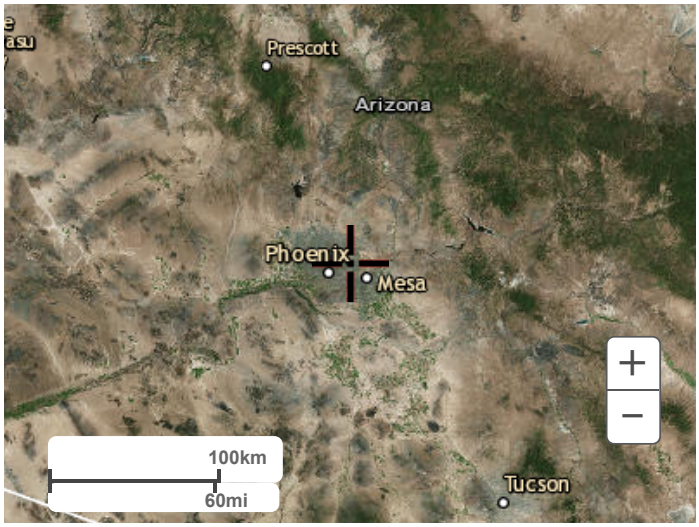

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.494°, Longitude: -111.9324°
Elevation: 1263.42 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	**0.183** (0.154-0.223)	**0.240** (0.202-0.291)	**0.326** (0.273-0.395)	**0.392** (0.326-0.472)	**0.481** (0.394-0.577)	**0.550** (0.444-0.657)	**0.620** (0.492-0.739)	**0.692** (0.540-0.824)	**0.788** (0.598-0.940)	**0.862** (0.641-1.03)
10-min	**0.279** (0.234-0.339)	**0.364** (0.307-0.443)	**0.495** (0.415-0.600)	**0.596** (0.496-0.719)	**0.732** (0.599-0.878)	**0.837** (0.676-1.00)	**0.944** (0.748-1.12)	**1.05** (0.821-1.25)	**1.20** (0.911-1.43)	**1.31** (0.976-1.57)
15-min	**0.345** (0.290-0.420)	**0.452** (0.381-0.549)	**0.614** (0.514-0.744)	**0.739** (0.614-0.891)	**0.907** (0.743-1.09)	**1.04** (0.838-1.24)	**1.17** (0.928-1.39)	**1.31** (1.02-1.55)	**1.49** (1.13-1.77)	**1.63** (1.21-1.94)
30-min	**0.465** (0.390-0.565)	**0.608** (0.513-0.740)	**0.827** (0.692-1.00)	**0.995** (0.827-1.20)	**1.22** (1.00-1.47)	**1.40** (1.13-1.67)	**1.58** (1.25-1.88)	**1.76** (1.37-2.09)	**2.00** (1.52-2.39)	**2.19** (1.63-2.61)
60-min	**0.575** (0.483-0.700)	**0.753** (0.635-0.915)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.51** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.32)	**2.18** (1.70-2.59)	**2.48** (1.88-2.95)	**2.71** (2.02-3.24)
2-hr	**0.666** (0.569-0.795)	**0.863** (0.736-1.03)	**1.16** (0.983-1.37)	**1.38** (1.16-1.64)	**1.69** (1.40-1.99)	**1.92** (1.57-2.26)	**2.16** (1.75-2.54)	**2.41** (1.91-2.82)	**2.74** (2.12-3.21)	**2.99** (2.27-3.54)
3-hr	**0.724** (0.614-0.870)	**0.929** (0.793-1.12)	**1.22** (1.04-1.47)	**1.45** (1.22-1.74)	**1.78** (1.47-2.11)	**2.04** (1.66-2.41)	**2.31** (1.85-2.73)	**2.59** (2.04-3.06)	**2.98** (2.28-3.52)	**3.29** (2.46-3.91)
6-hr	**0.873** (0.756-1.03)	**1.11** (0.962-1.30)	**1.42** (1.23-1.66)	**1.67** (1.43-1.95)	**2.01** (1.70-2.33)	**2.28** (1.90-2.63)	**2.56** (2.10-2.95)	**2.84** (2.28-3.28)	**3.23** (2.53-3.74)	**3.53** (2.71-4.11)
12-hr	**0.977** (0.855-1.13)	**1.23** (1.08-1.44)	**1.57** (1.36-1.81)	**1.82** (1.58-2.11)	**2.17** (1.86-2.50)	**2.44** (2.07-2.81)	**2.72** (2.27-3.13)	**3.00** (2.47-3.45)	**3.37** (2.71-3.91)	**3.67** (2.89-4.28)
24-hr	**1.17** (1.05-1.32)	**1.49** (1.33-1.68)	**1.93** (1.72-2.18)	**2.28** (2.02-2.56)	**2.76** (2.43-3.11)	**3.14** (2.75-3.53)	**3.54** (3.08-3.97)	**3.95** (3.41-4.44)	**4.53** (3.86-5.08)	**4.98** (4.20-5.60)
2-day	**1.26** (1.13-1.43)	**1.62** (1.44-1.82)	**2.12** (1.89-2.39)	**2.53** (2.24-2.84)	**3.09** (2.73-3.47)	**3.54** (3.11-3.98)	**4.02** (3.50-4.52)	**4.51** (3.90-5.08)	**5.21** (4.45-5.87)	**5.76** (4.88-6.51)
3-day	**1.34** (1.19-1.51)	**1.71** (1.52-1.93)	**2.25** (2.00-2.53)	**2.69** (2.38-3.02)	**3.30** (2.91-3.70)	**3.79** (3.32-4.25)	**4.32** (3.75-4.84)	**4.87** (4.20-5.47)	**5.64** (4.80-6.34)	**6.26** (5.28-7.06)
4-day	**1.41** (1.25-1.59)	**1.80** (1.60-2.04)	**2.38** (2.11-2.68)	**2.85** (2.52-3.20)	**3.51** (3.08-3.94)	**4.04** (3.53-4.53)	**4.61** (4.00-5.17)	**5.22** (4.49-5.86)	**6.07** (5.16-6.82)	**6.77** (5.69-7.61)
7-day	**1.57** (1.39-1.77)	**2.00** (1.78-2.26)	**2.64** (2.34-2.98)	**3.16** (2.80-3.56)	**3.90** (3.43-4.38)	**4.49** (3.92-5.04)	**5.12** (4.44-5.75)	**5.79** (4.98-6.51)	**6.73** (5.72-7.57)	**7.49** (6.30-8.45)
10-day	**1.70** (1.51-1.92)	**2.18** (1.94-2.45)	**2.87** (2.55-3.23)	**3.44** (3.04-3.86)	**4.22** (3.71-4.73)	**4.85** (4.24-5.43)	**5.52** (4.79-6.18)	**6.22** (5.36-6.98)	**7.21** (6.14-8.08)	**8.00** (6.74-8.99)
20-day	**2.09** (1.87-2.34)	**2.69** (2.40-3.01)	**3.55** (3.17-3.97)	**4.20** (3.74-4.69)	**5.08** (4.50-5.67)	**5.76** (5.08-6.42)	**6.44** (5.65-7.19)	**7.14** (6.23-7.98)	**8.08** (6.99-9.05)	**8.81** (7.56-9.88)
30-day	**2.44** (2.17-2.74)	**3.14** (2.80-3.52)	**4.14** (3.68-4.63)	**4.90** (4.35-5.47)	**5.92** (5.23-6.60)	**6.70** (5.89-7.47)	**7.51** (6.57-8.36)	**8.32** (7.25-9.27)	**9.42** (8.14-10.5)	**10.3** (8.81-11.5)
45-day	**2.83** (2.53-3.16)	**3.64** (3.26-4.07)	**4.80** (4.29-5.36)	**5.66** (5.04-6.32)	**6.78** (6.02-7.57)	**7.63** (6.76-8.52)	**8.49** (7.49-9.49)	**9.35** (8.21-10.5)	**10.5** (9.13-11.8)	**11.3** (9.82-12.7)
60-day	**3.13** (2.81-3.49)	**4.04** (3.63-4.51)	**5.32** (4.76-5.92)	**6.24** (5.58-6.95)	**7.45** (6.64-8.29)	**8.34** (7.41-9.29)	**9.24** (8.17-10.3)	**10.1** (8.91-11.3)	**11.3** (9.87-12.6)	**12.1** (10.6-13.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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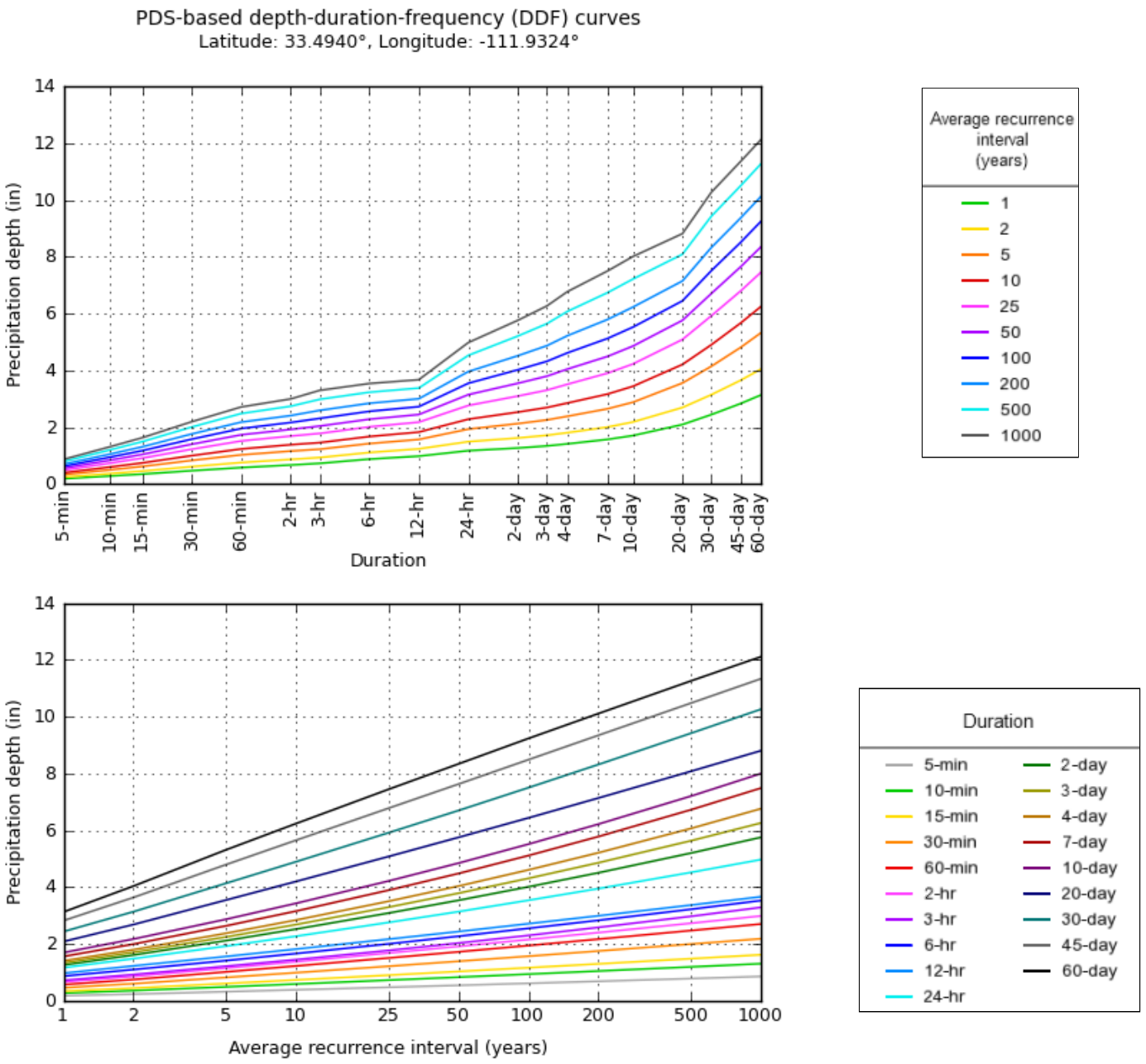
PF graphical



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Aug 2 17:22:48 2018

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Maps & aerials

Small scale terrain

APPENDIX A-7
Request for Stormwater Storage Waiver

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 18 ____ - PP - ____ PC#_____

The applicant/developer must complete and submit this form to the city for processing and obtain approval of waiver request ***before submitting improvement plans***. Denial of the waiver may require the developer to submit a revised site plan to the Development Review Board.

Date 11/05/18 **Project Name** Fleetwood 6 Townhomes

Project Location NEC 1st Ave & 69th Street

Applicant Contact Lance Baker **Company Name** Synectic Design Incorporated

Phone 480 244 9204 Fax _____ E-mail lbaker@sdiaz.us

Address 1111 W. University Drive, Suite 104, Tempe, Arizona 85281

Waiver Criteria

A project must meet at least one of three criteria listed below for the city to consider waiving some or all required stormwater storage. **However, regardless of the criteria, a waiver will only be granted if the applicant can demonstrate that the effect of a waiver will not increase the potential for flooding on any property.** Check the applicable box and provide a signed engineering report and supporting engineering analysis that demonstrate the project meets the criteria and that the effect of a waiver will not increase the potential for flooding on any property.

If the runoff for the project has been included in a storage facility at 35-DR-2018 must demonstrate that the stormwater storage facility was specifically designed to accommodate runoff from the subject property and that the runoff will be conveyed to this location through an adequately designed conveyance facility.

☐ 1. The development is adjacent to a conveyance facility that an engineering analysis shows is designed and constructed to handle the additional runoff from the site as a result of development.

☐ 2. The development is on a parcel less than one-half acre in size.

☐ 3. Stormwater storage requirements conflict with requirements of the Environmentally Sensitive Lands Ordinance (ESLO).

For a full storage waiver, a conflict with ESLO is limited to:

- Property located in the hillside landform as defined in the city Zoning Ordinance
- Property in the upper desert landform that has a land slope steeper than 5% as defined in the city Zoning Ordinance
- Property within the ESL zoning overlay district where the only viable location for a stormwater storage basin requires blasting

This full waiver only applies to those portions of property meeting one of these three requirements.

Partial waivers are available for projects or portions of properties within the Environmentally Sensitive Lands Zoning Overlay District, not meeting any of the three full waiver criteria above, if post-development peak discharge rates do not exceed pre-development conditions, based on the 10- and 100-year storm events.

By signing below, I certify that the stated project meets the waiver criteria selected above as demonstrated by the attached documentation.

Nick Prodanov

Engineer

11/05/18

Date

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 2018 ____ - PP - ____ PC#_____

CITY STAFF TO COMPLETE THIS PAGE

Project Name _____

Check Appropriate Boxes:

☐ Meets waiver criteria (specify): ☐ 1 ☐ 2 ☐ 3 35-DR-2018

☐ Recommend approve waiver.

☐ Recommend deny waiver:
- ☐ None of waiver criteria met.
- ☐ Downstream conditions prohibit waiver of any storage.
- ☐ Other:

Explain: _____

_____

☐ Return waiver request:
- ☐ Insufficient data provided.
- ☐ Other: _____

Explain: _____

_____

Recommended Conditions of Waiver:
- ☐ All storage requirements waived.
- ☐ Post-development peak discharge rates do not exceed pre-development conditions.
- ☐ Other:

Explain: _____

_____

☐ **Waiver approved per above conditions.**

☐ **Waiver denied.**

_____ _____

Floodplain Administrator or Designee Date

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 18 ____ - PP - ____ PC#_____

In-Lieu Fee and In-Kind Contributions

In-lieu fees are only applicable to projects where post-development peak discharge rates exceed pre-development levels, based on the 10- and 100-year storm events. If the city grants a waive[illegible]o calculate and contribute an in-lieu fee based on what it would cost the city to provide a [illegible]ribed below, including costs such as land acquisition, construction, landscaping, design, construction management, and maintenance over a 75-year design life. The fee for this cost is $1.87 per cubic foot of stormwater storage for a virtual storage basin designed to mitigate the increase in runoff associated with the 100-year/2-hour storm event. The applicant may submit site-specific in-lieu fee calculations subject to the Floodplain Administrator's approval.

35-DR-2018

The Floodplain Administrator considers in-kind contributions on a case-by-case basis. An in-kind contribution can serve as part of or instead of the calculated in-lieu fee. In-kind contributions must be stormwater related and must constitute a public benefit. In-lieu fees and in-kind contributions are subject to the approval of the Floodplain Administrator or designee.

Project Name Fleetwood 6 Townhomes

The waived stormwater storage volume is calculated using a simplified approach as follows:

V = ΔCRA; where
V = stormwater storage volume required, in cubic feet,
ΔC = increase in weighted average runoff coefficient over disturbed area (C_{post} –
R = 100-year/2-hour precipitation depth, in feet (DSPM, Appendix 4-1D, page 11)
A = area of disturbed ground, in square feet

The waiver fee is $3/CF as of July 1, 2018. Please recalculate the fee.

Furthermore,

$V_w = V – V_p$; where
V_w = volume waived,
V = volume required, and
V_p = volume provided

R = 2.16
ΔC= 0.82-0.69=0.13
A = 13,150
V = 308
V_p= 0
V_w= 308

☑ An in-lieu fee will be paid, based on the following calculations and supporting documentation:
In-lieu fee ($) = V_w (cu. ft.) x $1.87 per cubic foot = $978

☐ An in-kind contribution will be made, as follows:

_____
_____
_____

☐ No in-lieu fee is required. Reason:

_____
_____

Approved by:

_____ _____
Floodplain Administrator or Designee Date

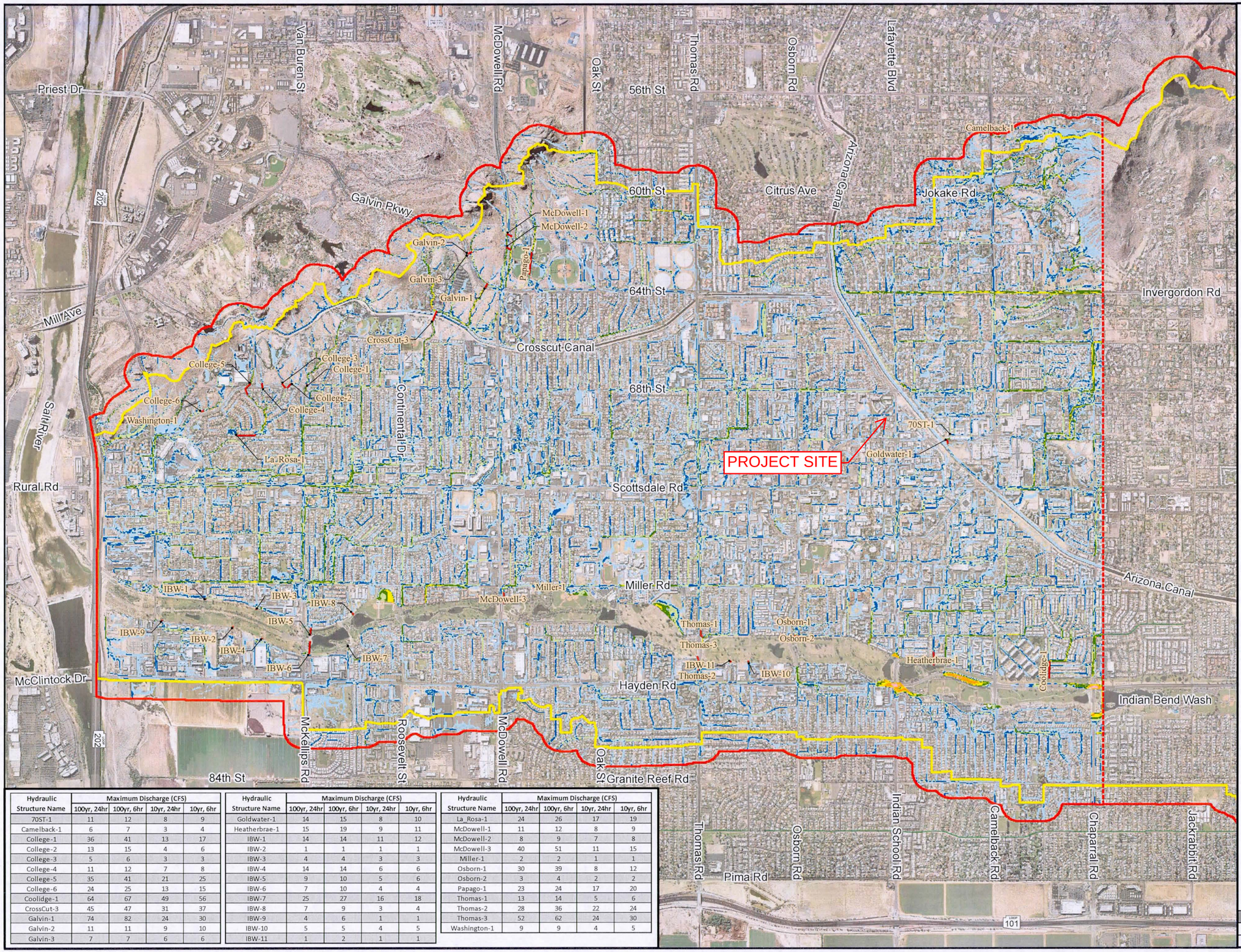
Planning, Neighborhood & Transportation Division
7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

APPENDIX A-8
Lower Indian Bend Wash ADMS Excerpt

LOWER INDIAN BEND WASH ADMS/P

STUDY AREA-SOUTH HYDRAULIC STRUCTURES RESULTS SUMMARY

EXHIBIT I1.2



Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
70ST-1	11	12	8	9
Camelback-1	6	7	3	4
College-1	36	41	13	17
College-2	13	15	4	6
College-3	5	6	3	3
College-4	11	12	7	8
College-5	35	41	21	25
College-6	24	25	13	15
Coolidge-1	64	67	49	56
CrossCut-3	45	47	31	37
Galvin-1	74	82	24	30
Galvin-2	11	11	9	10
Galvin-3	7	7	6	6

Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
Goldwater-1	14	15	8	10
Heatherbrae-1	15	19	9	11
IBW-1	14	14	11	12
IBW-2	1	1	1	1
IBW-3	4	4	3	3
IBW-4	14	14	6	6
IBW-5	9	10	5	6
IBW-6	7	10	4	4
IBW-7	25	27	16	18
IBW-8	7	9	3	4
IBW-9	4	6	1	1
IBW-10	5	5	4	5
IBW-11	1	2	1	1

Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
La_Rosa-1	24	26	17	19
McDowell-1	11	12	8	9
McDowell-2	8	9	7	8
McDowell-3	40	51	11	15
Miller-1	2	2	1	1
Osborn-1	30	39	8	12
Osborn-2	3	4	2	2
Papago-1	23	24	17	20
Thomas-1	13	14	5	6
Thomas-2	28	36	22	24
Thomas-3	52	62	24	30
Washington-1	9	9	4	5

Legend

(100-YR, 6-HR Max Discharge in CFS)

- 0.00 - 1.00
- 1.01 - 5.00
- 5.01 - 10.00
- 10.01 - 25.00
- 25.01 - 50.00
- 50.01 - 100.00
- 100.01 - 200.00
- 200.01 - 500.00
- 500.01 - 1,000.00
- >1,000.00
- 70ST-1 Hydraulic Structures

Reference Features

- Study Area
- Model Area
- North & South Model Matchline

N

0 1,100 2,200

1 inch = 1,100 feet

Flood Control District of Maricopa County

Gavan & Barker Inc. Civil Engineering & Landscape Architecture 3030 North Central Avenue, Suite 1230 Phoenix, AZ 85012 Phone 602-200-0031

TY·LIN INTERNATIONAL engineers| planners| scientists

	By	Date
Prepared	AJA/OK	12/14/2017
Checked	MTG	12/14/2017

APPENDIX A-9
Warning and 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 [illegible] streambed meander or man-made obstructions and diversions, all of wh[illegible]t in the event of a flood. You are advised to consult your own engin[illegible]hese considerations.

Please sign and date.
the case no. is
35-DR-2018

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
_____	_____	_____

PRELIMINARY DRAINAGE REPORT

FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

COS Case No. 35-Dr-2018
Zoning Case No. 19-ZN-2018

LDG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984

EXPIRES 06/30/2019

July 30, 2018
Rev. 1 November 5th, 2018

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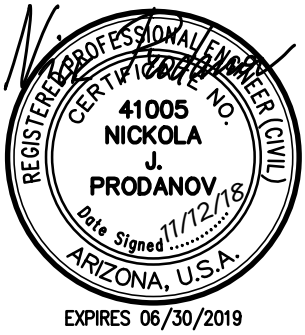
APPENDICES



EXPIRES 06/30/2019

July 30, 2018

Rev. 1 November 5th, 2018

1. INTRODUCTION

This preliminary drainage report and related design have been developed in accordance with the current Maricopa County and City of Scottsdale drainage ordinances, standards and policies.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Based on provided City records, an office building development (Andante Law Group) was approved by the COS in 2016 (47-Dr-2016).

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

2. DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

A field survey and visual reconnaissance inspection was conducted in June, 2018 to observe and collect information regarding the existing topographic characteristics, drainage conditions, document any local disturbances to the historic flows, and location and condition of the existing storm drainage structures and conveyance corridors. A topographic map was developed with a one-foot contour interval for the site and the adjacent streets. The elevation contours and survey spot elevations are tied to the section monuments and are based on the City of Scottsdale vertical datum (NAVD'88).

The overall existing terrain on site is flat and fully developed. 69th Street slopes in southerly direction, 1st Avenue slopes in easterly direction. Both streets are paved with asphalt and bounded be concrete vertical curb and gutter. Existing 5' wide sidewalk is located along 69th Street. The majority of the onsite generated surface drainage flows from north to south at an average slope of 0.5%. A portion of the existing drainage flows to the west and ultimately discharge onto 69th Street.

Site is located within the Lower Indian Bend Wash Area Drainage Master Study, Tempe/South Scottsdale Drainage Improvement Area. Based on the obtained study and its exhibits, no significant offsite flows run near or through the site.

3. FEMA FLOOD ZONE CLASSIFICATION

Site is located in Flood Zone "X" (shaded) according to Flood Insurance Rate Map (FIRM) #: 045012, Panel 2235, Suffix L, dated October 16th, 2013, as published by FEMA. The FIRM Panels defines Zone "X" as follows: "*Areas determined to be outside of the 0.2% annual chance floodplain*".

See Appendix A-4 for FEMA Flood Insurance Rate Map and Appendix A-5 FCDMC Floodplain Viewer exhibits.

4. PROPOSED DRAINAGE PLAN

Grading and drainage plan shows the proposed grades and slopes away from the buildings.
Runoff generated on site is conveyed via swales and valley gutters and ultimately discharged onto 69th Street and 1st Avenue. Due to slope of the site and grades of adjacent streets, the finish floor elevations of the units were stepped from north to south following the natural slope.

Computations have been performed to estimate the required on-lot storm water retention from 100-year storm. Precipitation data was derived from the NOAA Atlas 14, Volume 1, Version 4. This development will utilize the option to apply for a Stormwater Waiver and eliminate the on-lot retention required to be detained on site. 308 c.f. was the estimated required retention for this project. Pre-development runoff coefficient was estimated at 0.71. Post-development runoff coefficient was estimated at 0.85. See enclosed exhibit. No on-lot retention is proposed for this project. The volume of 308 c.f. will be requested in the waiver - see Appendix A-2 Grading and Drainage Plan, Appendix A-6 Drainage Calculations and Refer to Appendix A-7 – Request for Stormwater Storage Waiver.

Finish floor elevations of the proposed structures are set to a 1.0 ft min. above the adjacent high curb elevation and minimum 1.1 ft above the ultimate outfall of the site.

Proposed grading and drainage plan provide recommendation for the minimum top of footing elevations, which ultimately will need to be coordinated with and accepted by the project's structural and geotechnical engineers.

Grades are matched with the street elevations where the new driveway is proposed.

5. CONCLUSIONS AND RECOMMENDATIONS

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

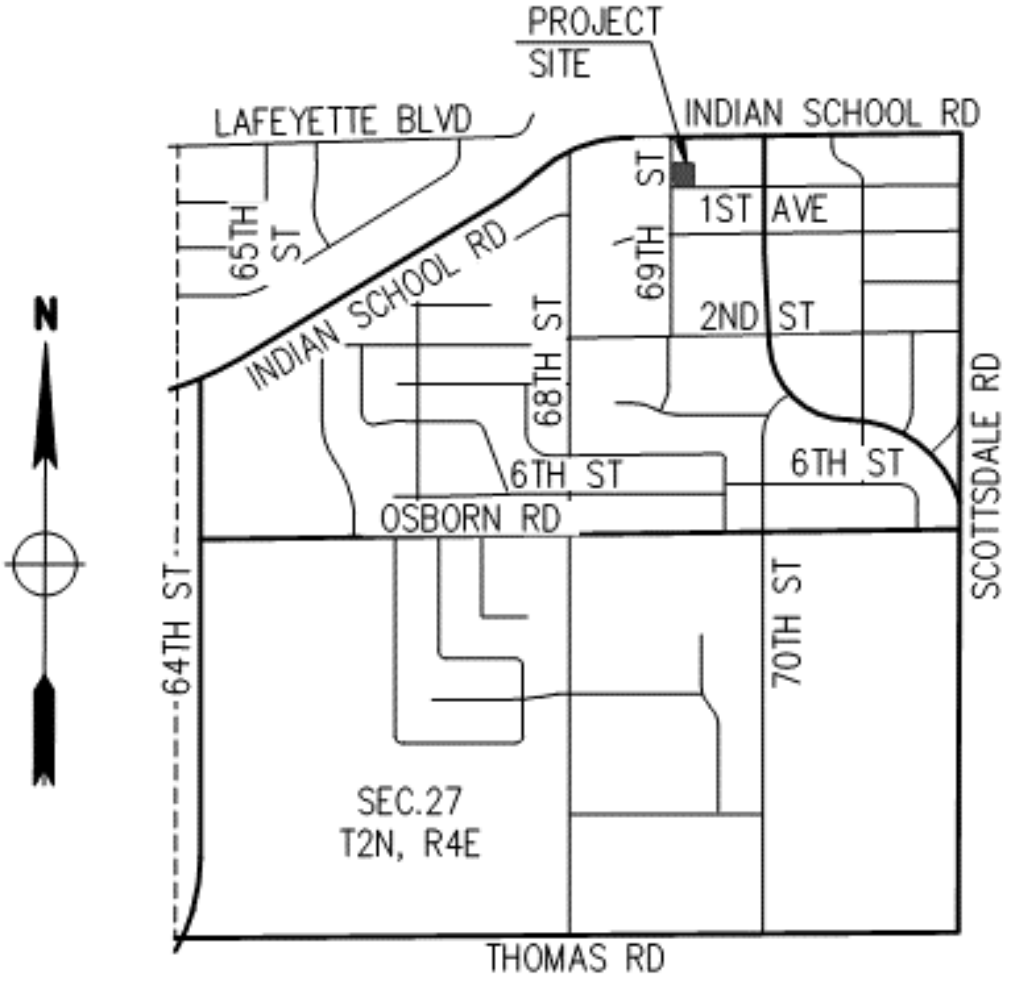
Regular inspections and maintenance of the wall openings and subsurface drainage systems after every major storm must be performed. Any obstructions of flow need to be promptly cleared out in order to keep the performance of the storm drain system as designed. It is the Owner's responsibility to inspect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

In conclusion, the project site has the potential to collect, convey, and discharge runoff effectively while meeting County, City guidelines. The proposed improvements do not impact drainage conditions of neighboring lots and will not result in significant changes to the existing drainage patterns or magnitudes.

6. REFERENCES

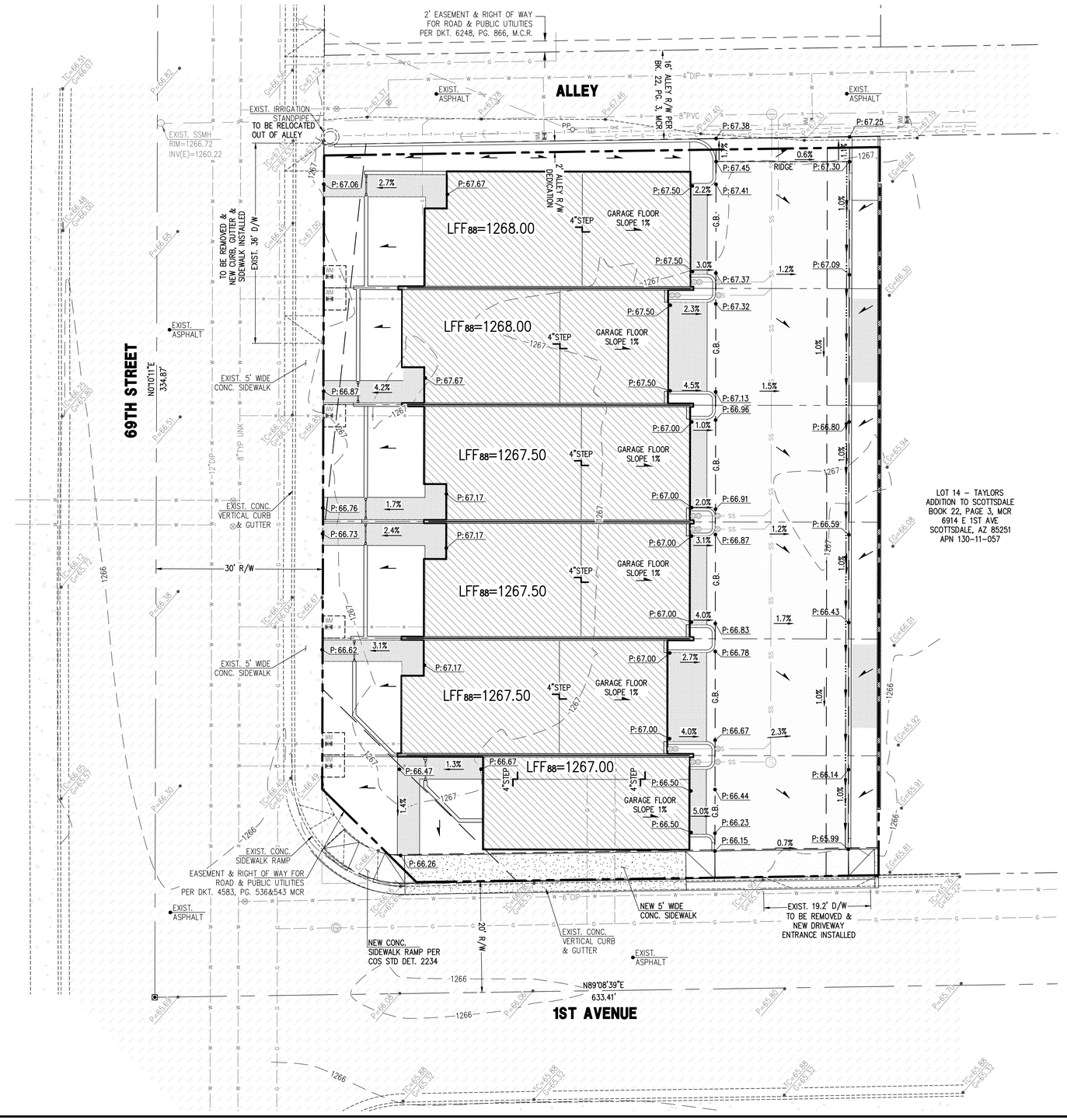
- Drainage Design Manual for Maricopa County, Arizona – Volume I Hydrology, Flood Control District of Maricopa County
- Drainage Design Manual for Maricopa County, Arizona – Volume II Hydraulics, Flood Control District of Maricopa County
- Drainage Policies and Standards Manual for Maricopa County, Arizona, Flood Control District of Maricopa County
- City of Scottsdale Design Standards & Policies Manual
- City of Scottsdale Stormwater Management System

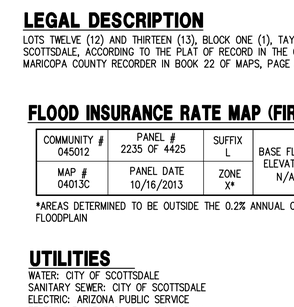
APPENDIX A-1
Vicinity Map



APPENDIX A-2
Preliminary Grading and Drainage Plan

PRELIMINARY GRADING & DRAINAGE PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA





VICINITY MAP
NTS

LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
- CALCULATED POINT
- PROPERTY LINE
- EASEMENT LINE
- MONUMENT LINE
- SIGN
- LIGHT POLE
- WM WATER METER
- WATER VALVE
- FIRE HYDRANT
- CTV CABLE TV RISER
- WATER METER BOX
- SEWER MANHOLE
- TELEPHONE PEDESTAL
- T CATV, PHONE
- S SEWER LINE
- W WATER LINE
- E ELECTRIC LINE
- C COMMUNICATIONS LINE
- G GAS LINE
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION
- SLOPE DIRECTION
- 22.25 PROPOSED SPOT ELEVATION
- 1121 PROPOSED CONTOUR
- FLOW LINE

ABBREVIATIONS

ARV	AIR RELEASE VALVE
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
FL	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER

SITE DATA

APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 12,950 S.F. (0.297 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER

LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT

SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS

THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

BENCHMARK

BRASS CAP IN HANDHOLE AT THE INTERSECTION OF INDIAN SCHOOL AND SCOTTSDALE ROAD HAVING AN ELEVATION OF 1260.34 CITY OF SCOTTSDALE DATUM, NAVD 88

LEGAL DESCRIPTION

LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

FLOOD INSURANCE RATE MAP (FIRM) DATA

COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES

WATER: CITY OF SCOTTSDALE
SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

RETENTION CALCULATIONS

PRE VS. POST DEVELOPMENT RUNOFF FROM 100-YEAR, 2-HOUR STORM EVENT
Vr=DxAx(C-Ce)/12
Vr=VOLUME REQUIRED
Vp=VOLUME PROVIDED
D=RAINFALL DEPTH=2.16, INCHES (100-YR, 2HR RAINFALL DEPTH – NOAA ATLAS 14, VOL.1, VER. 5)
C=0.85 (PER PROPOSED SITE CONDITIONS)
Ce=0.71 (PER EXIST. SITE CURRENT CONDITIONS)
A=AREA IN S.F. (12,950)
Vw=VOLUME WAIVED
Vr=326 C.F. *Vp=0 C.F.
*STORM WATER STORAGE WAIVER IN-LIEU FEE: Vw (308 C.F.) x $3.00=$978

SCALE 1" = 10'

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

REVISIONS:	
DATE:	
SCALE: 1"=10'	DATE: 11/06/18
DESIGNED BY: NP	JOB: 1805133
DRAWN BY: DW	VERSION: 1.1
CHECKED BY: JF	PLOT DATE: 11/06/18

PRELIMINARY GRADING & DRAINAGE PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

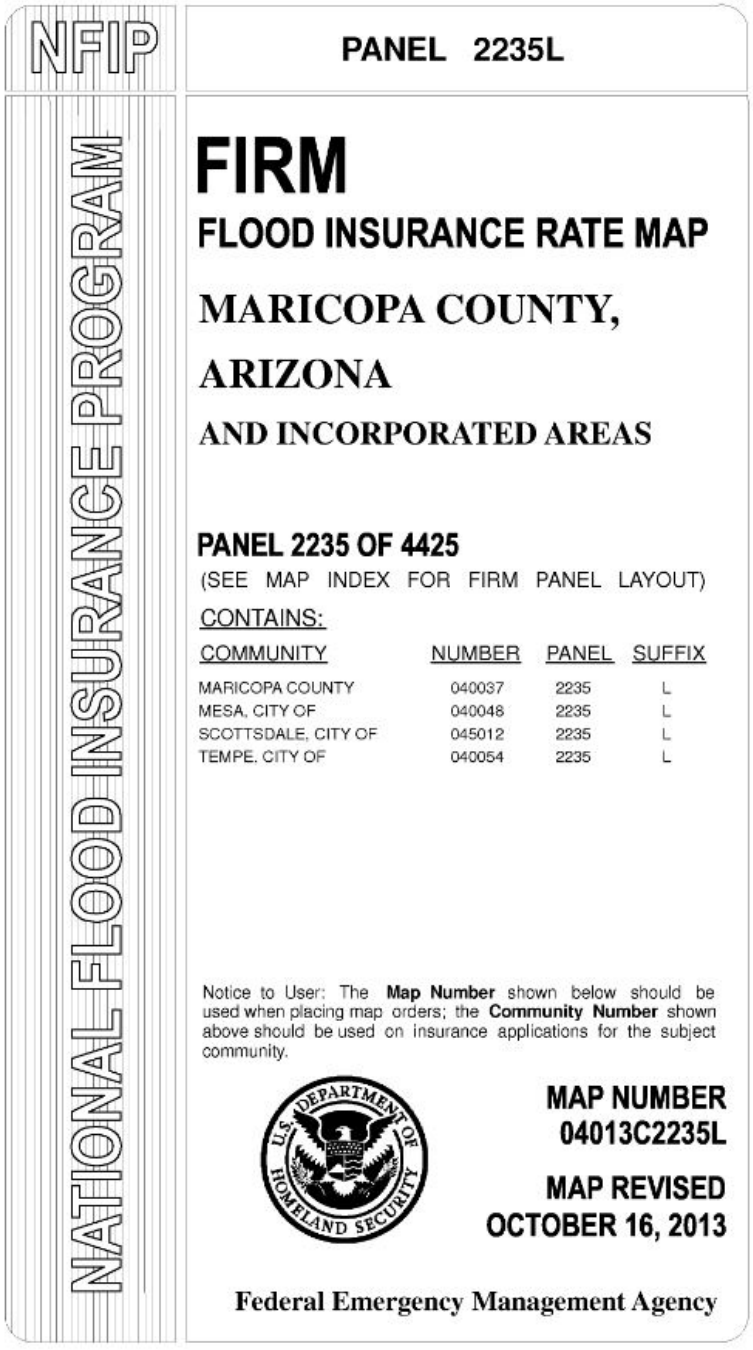
NOT FOR CONSTRUCTION
Expires 06/30/2019

P-GD
1 OF 1

APPENDIX A-3
Aerial Topography Map Exhibit


PROJECT SITE
East 5th Avenue
East Indian School Road
East 1st Avenue
East Main Street
North el Dorado Lane
North 69th Street
North Goldwater Boulevard
6806 E 5TH AVE
6820 E 5TH AVE
6824 E 5TH AVE
6822 E 5TH AVE
6830 E 5TH AVE
6831 E 5TH AVE
6925 E 5TH AVE
6935 E 5TH AVE
4154 N 70TH ST
4110 N 70TH ST
6840 E INDIAN SCHOOL RD
6900 E INDIAN SCHOOL RD
6924 E INDIAN SCHOOL RD
6940 E INDIAN SCHOOL RD
7008 E INDIAN SCHOOL RD
6901 E INDIAN SCHOOL RD
6915 E INDIAN SCHOOL RD
6925 E INDIAN SCHOOL RD
6931 E INDIAN SCHOOL RD
6939 E INDIAN SCHOOL RD
6945 E INDIAN SCHOOL RD
7007 E INDIAN SCHOOL RD
6902 E 1ST AVE
6908 E 1ST AVE
6914 E 1ST AVE
6920 E 1ST AVE
6926 E 1ST AVE
6934 E 1ST AVE
6944 E 1ST AVE
6950 E 1ST AVE
6956 E 1ST AVE
6962 E 1ST AVE
7000 E 1ST AVE
6850 E MAIN ST
6910 E MAIN ST
6922 E MAIN ST
6926 E MAIN ST
6936 E MAIN ST
6952 E MAIN ST
6990 E MAIN ST
7000 E MAIN ST
6939 E 1ST AVE
6943 E 1ST AVE
4014 N GOLDWATER BLVD
7001 E 1ST AVE

APPENDIX A-4
FEMA FIRM Exhibit



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2235L

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 2235 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

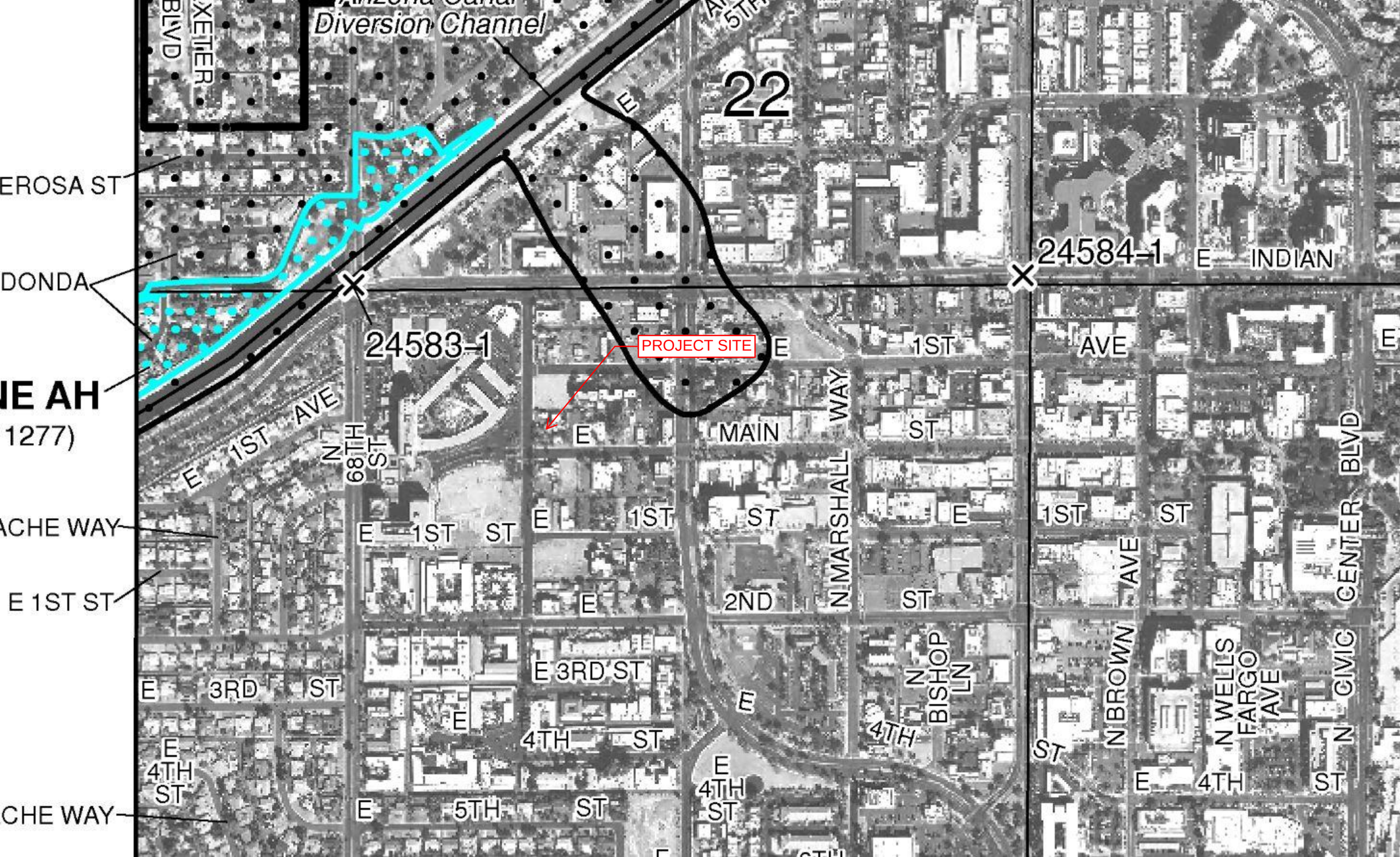
COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2235	L
MESA, CITY OF	040048	2235	L
SCOTTSDALE, CITY OF	045012	2235	L
TEMPE, CITY OF	040054	2235	L

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
04013C2235L

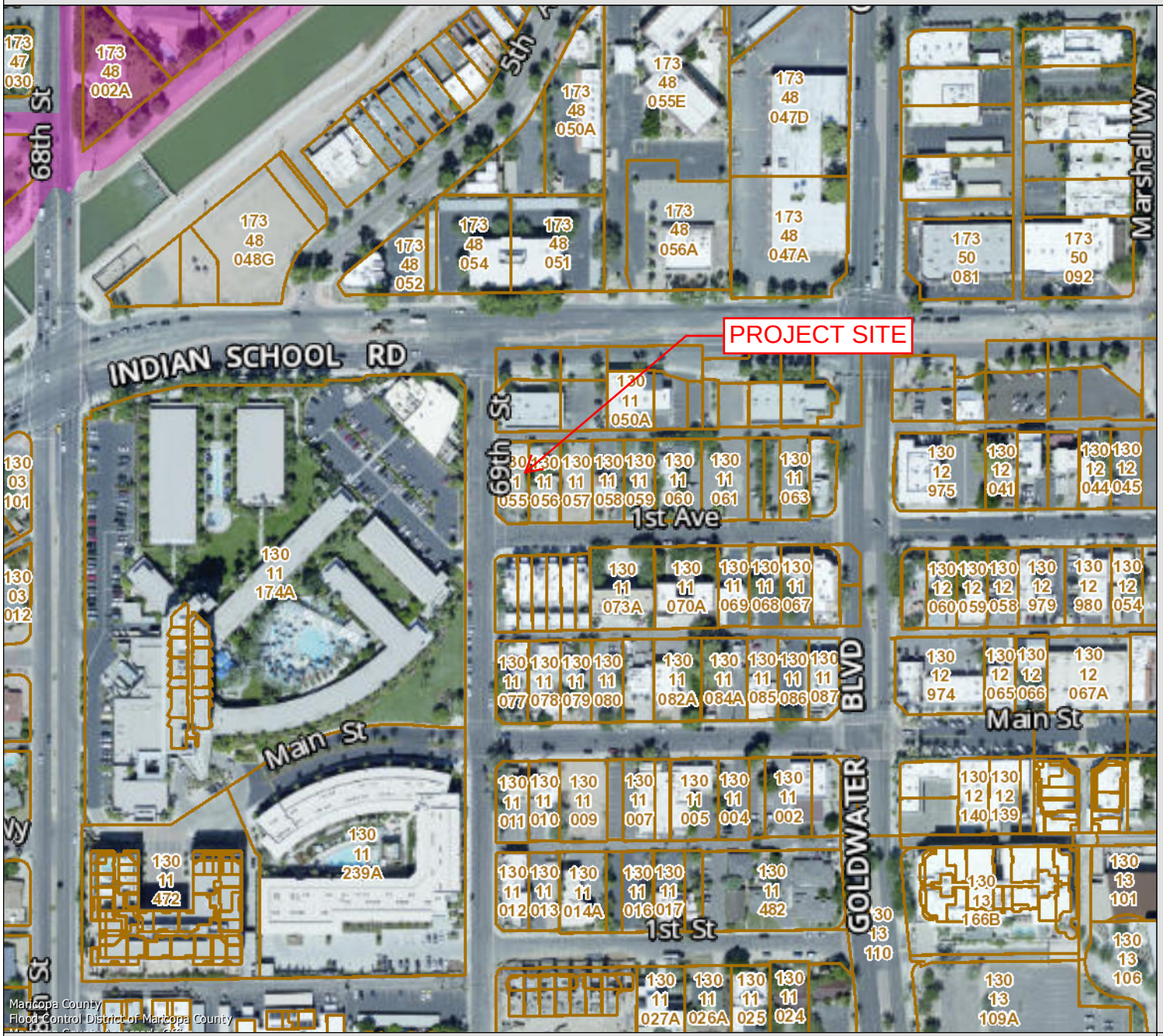
MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency


Arizona Canal
Diversion Channel
EXETER BLVD
22
EROSA ST
DONDA
NE AH
1277)
ACHE WAY
E 1ST ST
CHE WAY
24583-1
24584-1
PROJECT SITE
E
1ST
AVE
N 68TH ST
MAIN
WAY
ST
N MARSHALL
2ND
N BISHOP LN
4TH
5TH
3RD
N BROWN AVE
N WELLS FARGO AVE
N CIVIC CENTER BLVD
INDIAN

APPENDIX A-5
FCDMC Flood Plain Viewer

Floodplain Viewer



Parcel

Flood Zone

Not Within 100-Year Floodplain

A

AE

AH

AO

Regulatory Floodway

Pending Floodplain

A

AE

AH

AO

Floodway

Pending Floodplain Overlap

A

AE

AH

AO

Floodway

Flood Control District of Maricopa County
2801 W Durango St
Phoenix, AZ 85009
(602) 506-2419
http://www.fcd.maricopa.gov

N

1:3,428 — 1 inch = 286 feet

0 — 0.0275 — 0.055 — 0.11 mi

APPENDIX A-6
Drainage Calculations

RETENTION CALCULATIONS

PRE VS. POST DEVELOPMENT RUNOFF FROM 100-YEAR, 2-HOUR STORM EVENT

$Vr = D \times A \times (C - C_E)/12$

Vr=VOLUME REQUIRED
Vp=VOLUME PROVIDED
D=RAINFALL DEPTH=2.16, INCHES (100-YR, 2HR RAINFALL DEPTH – NOAA ATLAS 14, VOL.1, VER. 5)
C=0.85 (PER PROPOSED SITE CONDITIONS)
C_E=0.71 (PER EXIST. SITE CURRENT CONDITIONS)
A=AREA IN S.F. (12,950)
Vw=VOLUME WAIVED
Vr=326 C.F. *Vp=0 C.F.
*STORM WATER STORAGE WAIVER IN-LIEU FEE: Vw (308 C.F.) x $3.00=$978

See Grading and Drainage Plan for provided on-site surface retention.

PRELIMINARY 'C' VALUE EXHIBIT
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA

WEIGHTED RUNOFF COEFFICIENT, Cw PROPOSED

SURFACE TYPE	RUNOFF COEFFICIENT C	AREA SF	C*AREA
BUILDING	0.95	5,547	5,270
PAVEMENT	0.95	4,819	4,578
LANDSCAPE W/ NO IMPERVIOUS BARRIER	0.45	2,584	1,163
	TOTAL	12,950	11,011
Cw = C * AREA / TOTAL AREA			0.85

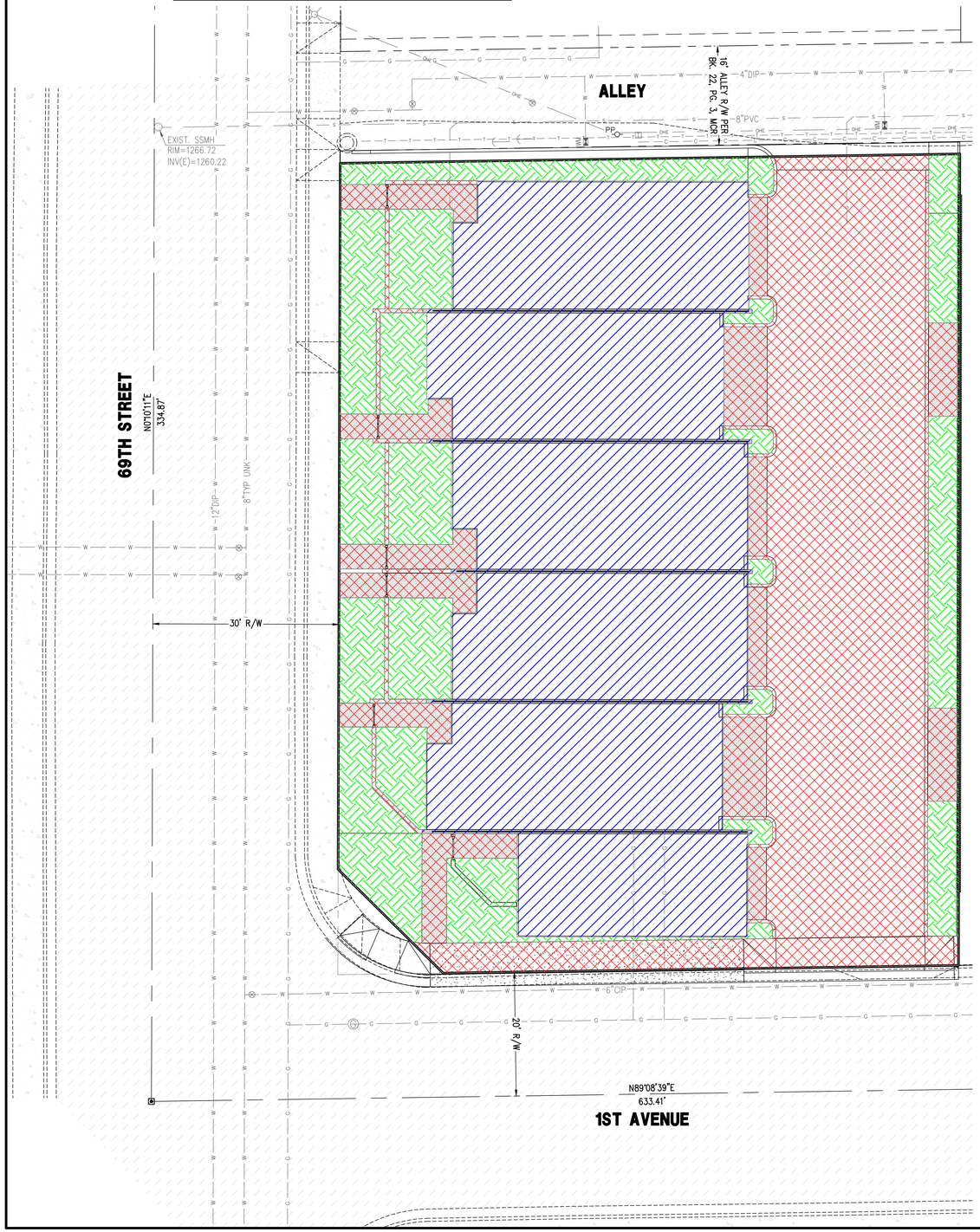
WEIGHTED RUNOFF COEFFICIENT, Cw EXISTING

SURFACE TYPE	RUNOFF COEFFICIENT C	AREA SF	C*AREA
BUILDING-ROOF	0.95	5,449	5,177
PAVEMENT	0.95	1,265	1,202
LANDSCAPE W/ NO IMPERVIOUS BARRIER	0.45	6,236	2,806
	TOTAL	12,950	9,185
Cw = C * AREA / TOTAL AREA			0.71

N

10' 5' 0 10'
SCALE 1" = 10'

PROPOSED CONDITIONS



EXISTING CONDITIONS

DATE: 08/01/18
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
JOB: 1805133
VERSION: 1.1
PLOT DATE: 08/01/18
DATE:
REVISIONS:

PRELIMINARY 'C' VALUE EXHIBIT

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 880 1984 | F 602 445 9462
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

EXHIBIT
1 OF 1

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.494°, Longitude: -111.9324°
Elevation: 1263.42 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**2.20** (1.85-2.68)	**2.88** (2.42-3.49)	**3.91** (3.28-4.74)	**4.70** (3.91-5.66)	**5.77** (4.73-6.92)	**6.60** (5.33-7.88)	**7.44** (5.90-8.87)	**8.30** (6.48-9.89)	**9.46** (7.18-11.3)	**10.3** (7.69-12.3)
10-min	**1.67** (1.40-2.03)	**2.18** (1.84-2.66)	**2.97** (2.49-3.60)	**3.58** (2.98-4.31)	**4.39** (3.59-5.27)	**5.02** (4.06-6.00)	**5.66** (4.49-6.74)	**6.32** (4.93-7.52)	**7.19** (5.47-8.58)	**7.87** (5.86-9.40)
15-min	**1.38** (1.16-1.68)	**1.81** (1.52-2.20)	**2.46** (2.06-2.98)	**2.96** (2.46-3.56)	**3.63** (2.97-4.36)	**4.15** (3.35-4.96)	**4.68** (3.71-5.58)	**5.22** (4.07-6.22)	**5.95** (4.52-7.09)	**6.50** (4.84-7.76)
30-min	**0.930** (0.780-1.13)	**1.22** (1.03-1.48)	**1.65** (1.38-2.00)	**1.99** (1.65-2.40)	**2.44** (2.00-2.93)	**2.79** (2.26-3.34)	**3.15** (2.50-3.75)	**3.52** (2.74-4.18)	**4.00** (3.04-4.77)	**4.38** (3.26-5.23)
60-min	**0.575** (0.483-0.700)	**0.753** (0.635-0.915)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.51** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.32)	**2.18** (1.70-2.59)	**2.48** (1.88-2.95)	**2.71** (2.02-3.24)
2-hr	**0.333** (0.284-0.398)	**0.432** (0.368-0.516)	**0.578** (0.492-0.687)	**0.690** (0.580-0.818)	**0.842** (0.700-0.992)	**0.960** (0.787-1.13)	**1.08** (0.872-1.27)	**1.20** (0.954-1.41)	**1.37** (1.06-1.61)	**1.50** (1.13-1.77)
3-hr	**0.241** (0.204-0.290)	**0.309** (0.264-0.374)	**0.407** (0.345-0.489)	**0.484** (0.407-0.578)	**0.592** (0.491-0.703)	**0.678** (0.554-0.803)	**0.768** (0.616-0.909)	**0.862** (0.680-1.02)	**0.992** (0.759-1.17)	**1.10** (0.818-1.30)
6-hr	**0.146** (0.126-0.172)	**0.185** (0.161-0.217)	**0.237** (0.205-0.278)	**0.279** (0.239-0.325)	**0.335** (0.284-0.389)	**0.380** (0.317-0.439)	**0.427** (0.350-0.493)	**0.474** (0.381-0.548)	**0.539** (0.423-0.625)	**0.590** (0.452-0.686)
12-hr	**0.081** (0.071-0.094)	**0.102** (0.090-0.119)	**0.130** (0.113-0.150)	**0.151** (0.131-0.175)	**0.180** (0.154-0.208)	**0.203** (0.172-0.233)	**0.226** (0.188-0.260)	**0.249** (0.205-0.287)	**0.280** (0.225-0.324)	**0.304** (0.240-0.355)
24-hr	**0.049** (0.044-0.055)	**0.062** (0.055-0.070)	**0.080** (0.072-0.091)	**0.095** (0.084-0.107)	**0.115** (0.101-0.129)	**0.131** (0.115-0.147)	**0.148** (0.128-0.166)	**0.165** (0.142-0.185)	**0.189** (0.161-0.212)	**0.207** (0.175-0.233)
2-day	**0.026** (0.023-0.030)	**0.034** (0.030-0.038)	**0.044** (0.039-0.050)	**0.053** (0.047-0.059)	**0.064** (0.057-0.072)	**0.074** (0.065-0.083)	**0.084** (0.073-0.094)	**0.094** (0.081-0.106)	**0.108** (0.093-0.122)	**0.120** (0.102-0.136)
3-day	**0.019** (0.017-0.021)	**0.024** (0.021-0.027)	**0.031** (0.028-0.035)	**0.037** (0.033-0.042)	**0.046** (0.040-0.051)	**0.053** (0.046-0.059)	**0.060** (0.052-0.067)	**0.068** (0.058-0.076)	**0.078** (0.067-0.088)	**0.087** (0.073-0.098)
4-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.021)	**0.025** (0.022-0.028)	**0.030** (0.026-0.033)	**0.037** (0.032-0.041)	**0.042** (0.037-0.047)	**0.048** (0.042-0.054)	**0.054** (0.047-0.061)	**0.063** (0.054-0.071)	**0.071** (0.059-0.079)
7-day	**0.009** (0.008-0.011)	**0.012** (0.011-0.013)	**0.016** (0.014-0.018)	**0.019** (0.017-0.021)	**0.023** (0.020-0.026)	**0.027** (0.023-0.030)	**0.030** (0.026-0.034)	**0.034** (0.030-0.039)	**0.040** (0.034-0.045)	**0.045** (0.037-0.050)
10-day	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.012** (0.011-0.013)	**0.014** (0.013-0.016)	**0.018** (0.015-0.020)	**0.020** (0.018-0.023)	**0.023** (0.020-0.026)	**0.026** (0.022-0.029)	**0.030** (0.026-0.034)	**0.033** (0.028-0.037)
20-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.007-0.008)	**0.009** (0.008-0.010)	**0.011** (0.009-0.012)	**0.012** (0.011-0.013)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.015-0.019)	**0.018** (0.016-0.021)
30-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.012)	**0.012** (0.010-0.013)	**0.013** (0.011-0.015)	**0.014** (0.012-0.016)
45-day	**0.003** (0.002-0.003)	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.008-0.011)	**0.011** (0.009-0.012)
60-day	**0.002** (0.002-0.002)	**0.003** (0.003-0.003)	**0.004** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.008** (0.007-0.009)

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

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

Please refer to NOAA Atlas 14 document for more information.

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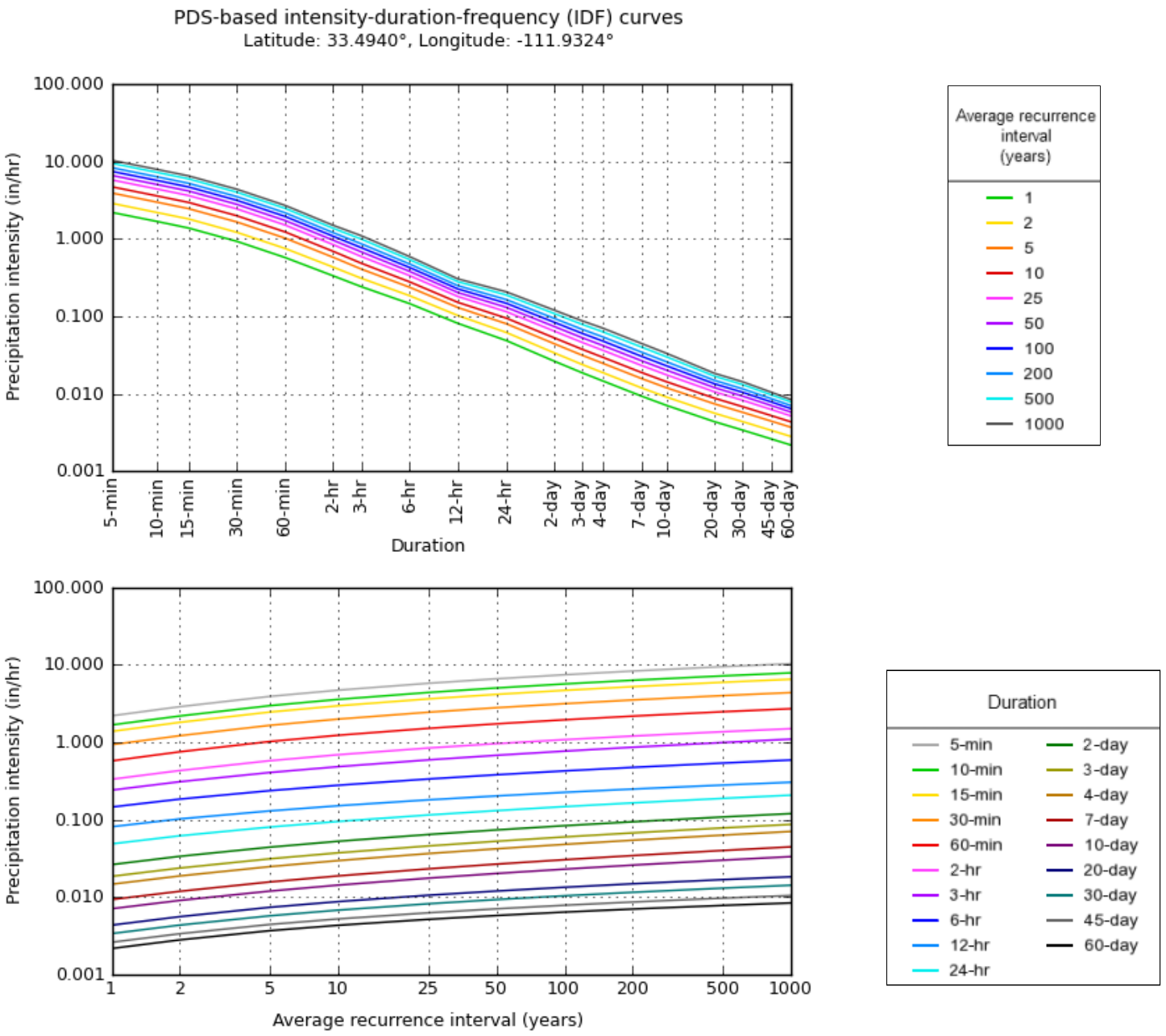
PF graphical



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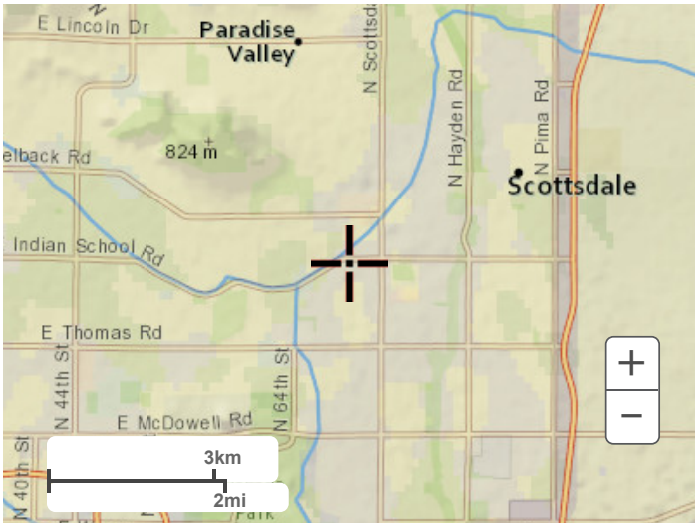
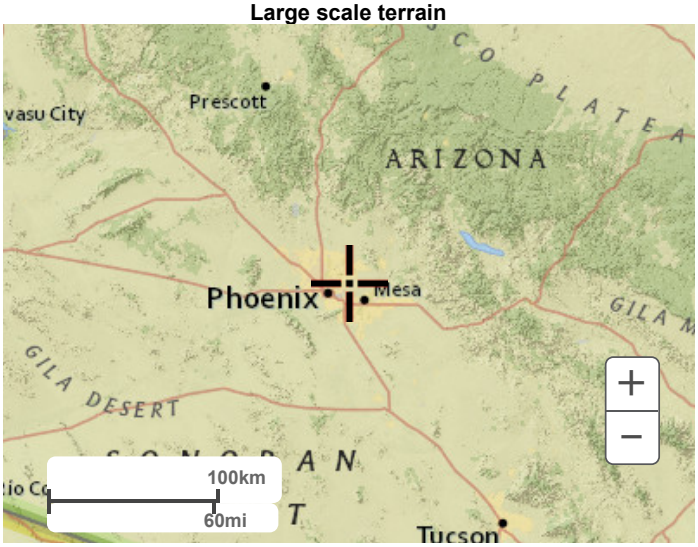
Maps & aerials

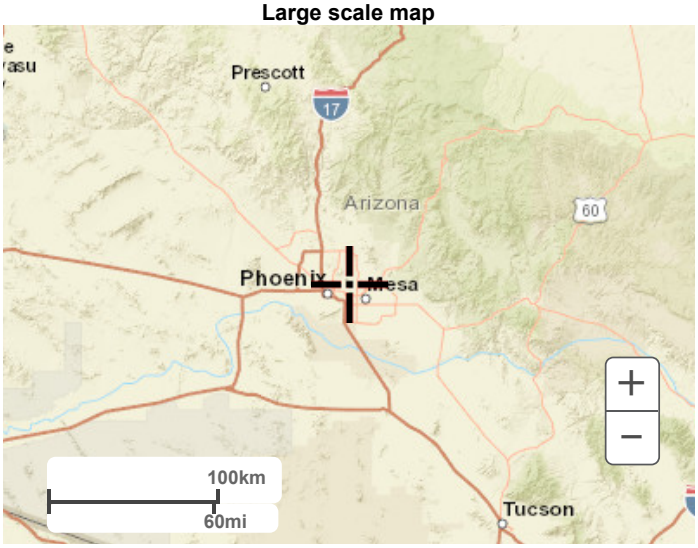
Small scale terrain



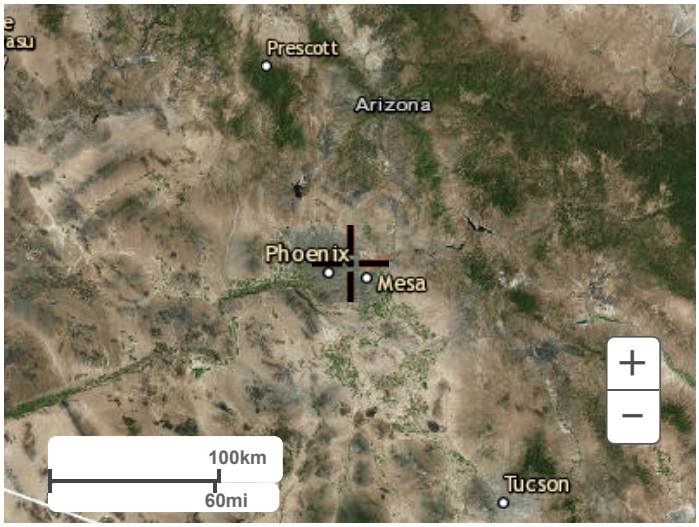
Large scale terrain



Large scale map



Large scale aerial



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

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.494°, Longitude: -111.9324°
Elevation: 1263.42 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	**0.183** (0.154-0.223)	**0.240** (0.202-0.291)	**0.326** (0.273-0.395)	**0.392** (0.326-0.472)	**0.481** (0.394-0.577)	**0.550** (0.444-0.657)	**0.620** (0.492-0.739)	**0.692** (0.540-0.824)	**0.788** (0.598-0.940)	**0.862** (0.641-1.03)
10-min	**0.279** (0.234-0.339)	**0.364** (0.307-0.443)	**0.495** (0.415-0.600)	**0.596** (0.496-0.719)	**0.732** (0.599-0.878)	**0.837** (0.676-1.00)	**0.944** (0.748-1.12)	**1.05** (0.821-1.25)	**1.20** (0.911-1.43)	**1.31** (0.976-1.57)
15-min	**0.345** (0.290-0.420)	**0.452** (0.381-0.549)	**0.614** (0.514-0.744)	**0.739** (0.614-0.891)	**0.907** (0.743-1.09)	**1.04** (0.838-1.24)	**1.17** (0.928-1.39)	**1.31** (1.02-1.55)	**1.49** (1.13-1.77)	**1.63** (1.21-1.94)
30-min	**0.465** (0.390-0.565)	**0.608** (0.513-0.740)	**0.827** (0.692-1.00)	**0.995** (0.827-1.20)	**1.22** (1.00-1.47)	**1.40** (1.13-1.67)	**1.58** (1.25-1.88)	**1.76** (1.37-2.09)	**2.00** (1.52-2.39)	**2.19** (1.63-2.61)
60-min	**0.575** (0.483-0.700)	**0.753** (0.635-0.915)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.51** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.32)	**2.18** (1.70-2.59)	**2.48** (1.88-2.95)	**2.71** (2.02-3.24)
2-hr	**0.666** (0.569-0.795)	**0.863** (0.736-1.03)	**1.16** (0.983-1.37)	**1.38** (1.16-1.64)	**1.69** (1.40-1.99)	**1.92** (1.57-2.26)	**2.16** (1.75-2.54)	**2.41** (1.91-2.82)	**2.74** (2.12-3.21)	**2.99** (2.27-3.54)
3-hr	**0.724** (0.614-0.870)	**0.929** (0.793-1.12)	**1.22** (1.04-1.47)	**1.45** (1.22-1.74)	**1.78** (1.47-2.11)	**2.04** (1.66-2.41)	**2.31** (1.85-2.73)	**2.59** (2.04-3.06)	**2.98** (2.28-3.52)	**3.29** (2.46-3.91)
6-hr	**0.873** (0.756-1.03)	**1.11** (0.962-1.30)	**1.42** (1.23-1.66)	**1.67** (1.43-1.95)	**2.01** (1.70-2.33)	**2.28** (1.90-2.63)	**2.56** (2.10-2.95)	**2.84** (2.28-3.28)	**3.23** (2.53-3.74)	**3.53** (2.71-4.11)
12-hr	**0.977** (0.855-1.13)	**1.23** (1.08-1.44)	**1.57** (1.36-1.81)	**1.82** (1.58-2.11)	**2.17** (1.86-2.50)	**2.44** (2.07-2.81)	**2.72** (2.27-3.13)	**3.00** (2.47-3.45)	**3.37** (2.71-3.91)	**3.67** (2.89-4.28)
24-hr	**1.17** (1.05-1.32)	**1.49** (1.33-1.68)	**1.93** (1.72-2.18)	**2.28** (2.02-2.56)	**2.76** (2.43-3.11)	**3.14** (2.75-3.53)	**3.54** (3.08-3.97)	**3.95** (3.41-4.44)	**4.53** (3.86-5.08)	**4.98** (4.20-5.60)
2-day	**1.26** (1.13-1.43)	**1.62** (1.44-1.82)	**2.12** (1.89-2.39)	**2.53** (2.24-2.84)	**3.09** (2.73-3.47)	**3.54** (3.11-3.98)	**4.02** (3.50-4.52)	**4.51** (3.90-5.08)	**5.21** (4.45-5.87)	**5.76** (4.88-6.51)
3-day	**1.34** (1.19-1.51)	**1.71** (1.52-1.93)	**2.25** (2.00-2.53)	**2.69** (2.38-3.02)	**3.30** (2.91-3.70)	**3.79** (3.32-4.25)	**4.32** (3.75-4.84)	**4.87** (4.20-5.47)	**5.64** (4.80-6.34)	**6.26** (5.28-7.06)
4-day	**1.41** (1.25-1.59)	**1.80** (1.60-2.04)	**2.38** (2.11-2.68)	**2.85** (2.52-3.20)	**3.51** (3.08-3.94)	**4.04** (3.53-4.53)	**4.61** (4.00-5.17)	**5.22** (4.49-5.86)	**6.07** (5.16-6.82)	**6.77** (5.69-7.61)
7-day	**1.57** (1.39-1.77)	**2.00** (1.78-2.26)	**2.64** (2.34-2.98)	**3.16** (2.80-3.56)	**3.90** (3.43-4.38)	**4.49** (3.92-5.04)	**5.12** (4.44-5.75)	**5.79** (4.98-6.51)	**6.73** (5.72-7.57)	**7.49** (6.30-8.45)
10-day	**1.70** (1.51-1.92)	**2.18** (1.94-2.45)	**2.87** (2.55-3.23)	**3.44** (3.04-3.86)	**4.22** (3.71-4.73)	**4.85** (4.24-5.43)	**5.52** (4.79-6.18)	**6.22** (5.36-6.98)	**7.21** (6.14-8.08)	**8.00** (6.74-8.99)
20-day	**2.09** (1.87-2.34)	**2.69** (2.40-3.01)	**3.55** (3.17-3.97)	**4.20** (3.74-4.69)	**5.08** (4.50-5.67)	**5.76** (5.08-6.42)	**6.44** (5.65-7.19)	**7.14** (6.23-7.98)	**8.08** (6.99-9.05)	**8.81** (7.56-9.88)
30-day	**2.44** (2.17-2.74)	**3.14** (2.80-3.52)	**4.14** (3.68-4.63)	**4.90** (4.35-5.47)	**5.92** (5.23-6.60)	**6.70** (5.89-7.47)	**7.51** (6.57-8.36)	**8.32** (7.25-9.27)	**9.42** (8.14-10.5)	**10.3** (8.81-11.5)
45-day	**2.83** (2.53-3.16)	**3.64** (3.26-4.07)	**4.80** (4.29-5.36)	**5.66** (5.04-6.32)	**6.78** (6.02-7.57)	**7.63** (6.76-8.52)	**8.49** (7.49-9.49)	**9.35** (8.21-10.5)	**10.5** (9.13-11.8)	**11.3** (9.82-12.7)
60-day	**3.13** (2.81-3.49)	**4.04** (3.63-4.51)	**5.32** (4.76-5.92)	**6.24** (5.58-6.95)	**7.45** (6.64-8.29)	**8.34** (7.41-9.29)	**9.24** (8.17-10.3)	**10.1** (8.91-11.3)	**11.3** (9.87-12.6)	**12.1** (10.6-13.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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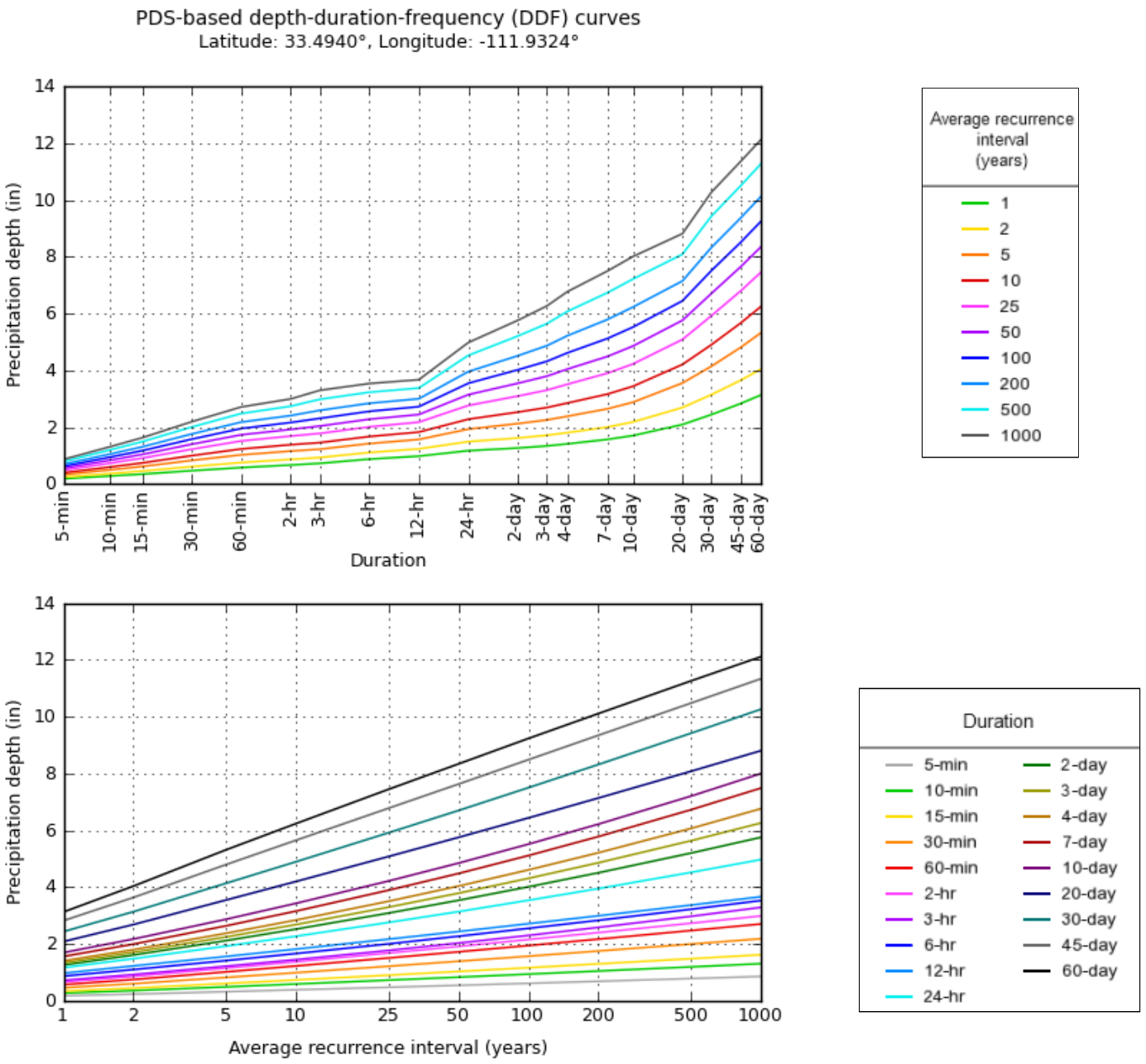
PF graphical



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APPENDIX A-7
Request for Stormwater Storage Waiver

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 18 ____ - PP - ____ PC#_____

The applicant/developer must complete and submit this form to the city for processing and obtain approval of waiver request ***before submitting improvement plans***. Denial of the waiver may require the developer to submit a revised site plan to the Development Review Board.

Date 11/05/18 **Project Name** Fleetwood 6 Townhomes

Project Location NEC 1st Ave & 69th Street

Applicant Contact Lance Baker **Company Name** Synectic Design Incorporated

Phone 480 244 9204 Fax _____ E-mail lbaker@sdiaz.us

Address 1111 W. University Drive, Suite 104, Tempe, Arizona 85281

Waiver Criteria

A project must meet at least one of three criteria listed below for the city to consider waiving some or all required stormwater storage. **However, regardless of the criteria, a waiver will only be granted if the applicant can demonstrate that the effect of a waiver will not increase the potential for flooding on any property.** Check the applicable box and provide a signed engineering report and supporting engineering analysis that demonstrate the project meets the criteria and that the effect of a waiver will not increase the potential for flooding on any property.

If the runoff for the project has been included in a storage facility at another location, the applicant must demonstrate that the stormwater storage facility was specifically designed to accommodate runoff from the subject property and that the runoff will be conveyed to this location through an adequately designed conveyance facility.

☐ 1. The development is adjacent to a conveyance facility that an engineering analysis shows is designed and constructed to handle the additional runoff from the site as a result of development.

☐ 2. The development is on a parcel less than one-half acre in size.

☐ 3. Stormwater storage requirements conflict with requirements of the Environmentally Sensitive Lands Ordinance (ESLO).

For a full storage waiver, a conflict with ESLO is limited to:

- Property located in the hillside landform as defined in the city Zoning Ordinance
- Property in the upper desert landform that has a land slope steeper than 5% as defined in the city Zoning Ordinance
- Property within the ESL zoning overlay district where the only viable location for a stormwater storage basin requires blasting

This full waiver only applies to those portions of property meeting one of these three requirements.

Partial waivers are available for projects or portions of properties within the Environmentally Sensitive Lands Zoning Overlay District, not meeting any of the three full waiver criteria above, if post-development peak discharge rates do not exceed pre-development conditions, based on the 10- and 100-year storm events.

By signing below, I certify that the stated project meets the waiver criteria selected above as demonstrated by the attached documentation.

Nick Prodanov

Engineer

11/05/18

Date

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 2018 ____ - PP - ____ PC#_____

CITY STAFF TO COMPLETE THIS PAGE

Project Name _____

Check Appropriate Boxes:

☐ Meets waiver criteria (specify): ☐ 1 ☐ 2 ☐ 3

☐ Recommend approve waiver.

☐ Recommend deny waiver:
- ☐ None of waiver criteria met.
- ☐ Downstream conditions prohibit waiver of any storage.
- ☐ Other:

Explain: _____

_____

☐ Return waiver request:
- ☐ Insufficient data provided.
- ☐ Other: _____

Explain: _____

_____

Recommended Conditions of Waiver:
- ☐ All storage requirements waived.
- ☐ Post-development peak discharge rates do not exceed pre-development conditions.
- ☐ Other:

Explain: _____

_____

☐ **Waiver approved per above conditions.**

☐ **Waiver denied.**

_____ _____

Floodplain Administrator or Designee Date

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 35 - DR - 18 ____ - PP - ____ PC#_____

In-Lieu Fee and In-Kind Contributions

In-lieu fees are only applicable to projects where post-development peak discharge rates exceed pre-development levels, based on the 10- and 100-year storm events. If the city grants a waiver, the developer is required to calculate and contribute an in-lieu fee based on what it would cost the city to provide a storage basin, sized as described below, including costs such as land acquisition, construction, landscaping, design, construction management, and maintenance over a 75-year design life. The fee for this cost is $3.0 per cubic foot of stormwater storage for a virtual storage basin designed to mitigate the increase in runoff associated with the 100-year/2-hour storm event. The applicant may submit site-specific in-lieu fee calculations subject to the Floodplain Administrator's approval.

The Floodplain Administrator considers in-kind contributions on a case-by-case basis. An in-kind contribution can serve as part of or instead of the calculated in-lieu fee. In-kind contributions must be stormwater related and must constitute a public benefit. In-lieu fees and in-kind contributions are subject to the approval of the Floodplain Administrator or designee.

Project Name Fleetwood 6 Townhomes

The waived stormwater storage volume is calculated using a simplified approach as follows:

$V = \Delta CRA$; where

V = stormwater storage volume required, in cubic feet,
ΔC = increase in weighted average runoff coefficient over disturbed area ($C_{post} - C_{pre}$),
R = 100-year/2-hour precipitation depth, in feet (DSPM, Appendix 4-1D, page 11), and
A = area of disturbed ground, in square feet

Furthermore,

$V_w = V - V_p$; where
V_w = volume waived,
V = volume required, and
V_p = volume provided

R = 2.16
ΔC= 0.82-0.69=0.13
A = 13,150
V = 308
V_p= 0
V_w= 308

☑ An in-lieu fee will be paid, based on the following calculations and supporting documentation:
In-lieu fee ($) = V_w (cu. ft.) x $3.0 per cubic foot = $978

☐ An in-kind contribution will be made, as follows:

_____
_____
_____

☐ No in-lieu fee is required. Reason:

_____
_____

Approved by:

_____ _____
Floodplain Administrator or Designee Date

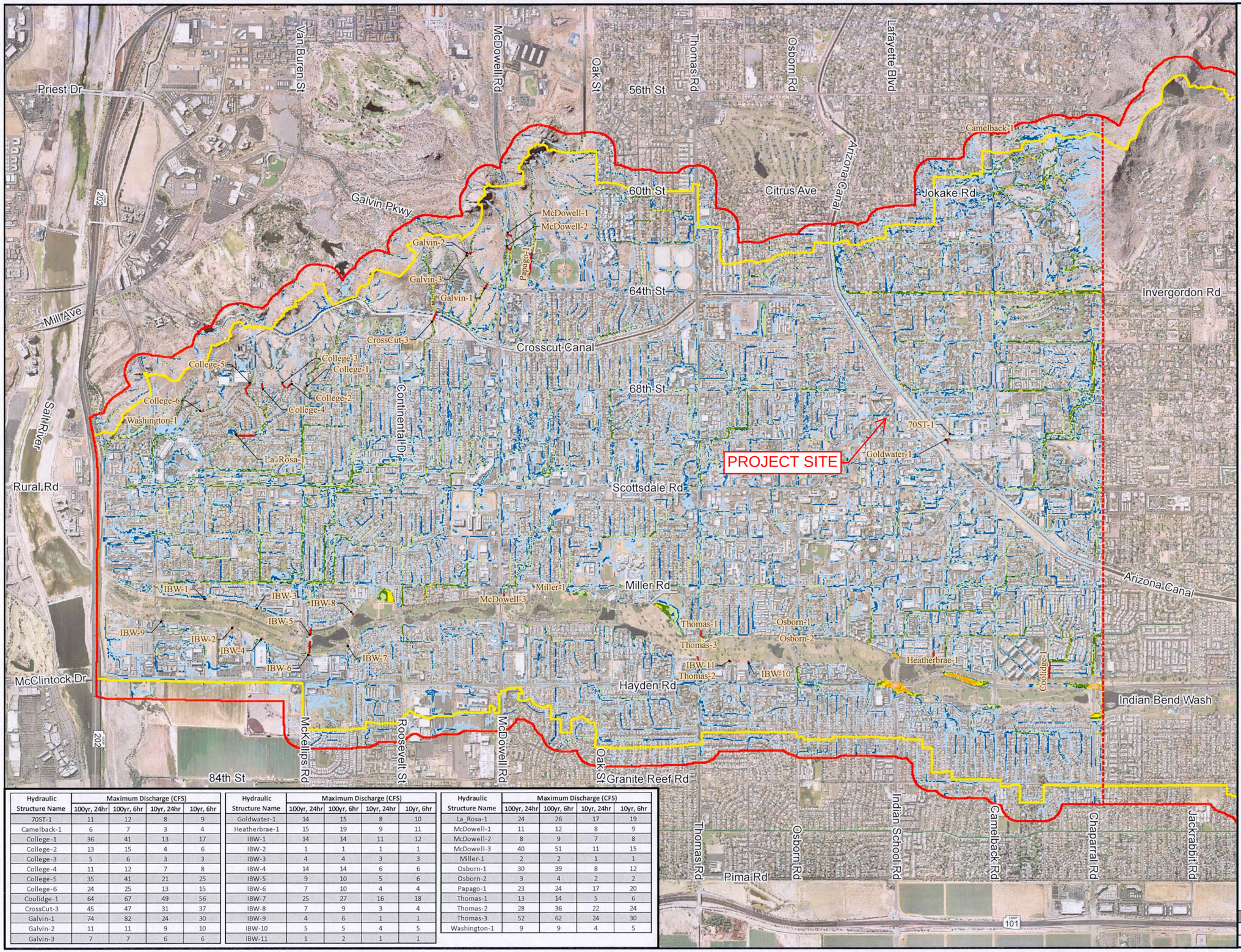
Planning, Neighborhood & Transportation Division
7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 ◆ Phone: 480-312-2500 ◆ Fax: 480-312-7781

APPENDIX A-8
Lower Indian Bend Wash ADMS Excerpt

LOWER INDIAN BEND WASH ADMS/P

STUDY AREA-SOUTH HYDRAULIC STRUCTURES RESULTS SUMMARY

EXHIBIT I1.2



Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
70ST-1	11	12	8	9
Camelback-1	6	7	3	4
College-1	36	41	13	17
College-2	13	15	4	6
College-3	5	6	3	3
College-4	11	12	7	8
College-5	35	41	21	25
College-6	24	25	13	15
Coolidge-1	64	67	49	56
CrossCut-3	45	47	31	37
Galvin-1	74	82	24	30
Galvin-2	11	11	9	10
Galvin-3	7	7	6	6

Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
Goldwater-1	14	15	8	10
Heatherbrae-1	15	19	9	11
IBW-1	14	14	11	12
IBW-2	1	1	1	1
IBW-3	4	4	3	3
IBW-4	14	14	6	6
IBW-5	9	10	5	6
IBW-6	7	10	4	4
IBW-7	25	27	16	18
IBW-8	7	9	3	4
IBW-9	4	6	1	1
IBW-10	5	5	4	5
IBW-11	1	2	1	1

Hydraulic Structure Name	Maximum Discharge (CFS)			
	100yr, 24hr	100yr, 6hr	10yr, 24hr	10yr, 6hr
La_Rosa-1	24	26	17	19
McDowell-1	11	12	8	9
McDowell-2	8	9	7	8
McDowell-3	40	51	11	15
Miller-1	2	2	1	1
Osborn-1	30	39	8	12
Osborn-2	3	4	2	2
Papago-1	23	24	17	20
Thomas-1	13	14	5	6
Thomas-2	28	36	22	24
Thomas-3	52	62	24	30
Washington-1	9	9	4	5

Legend

(100-YR, 6-HR Max Discharge in CFS)

- 0.00 - 1.00
- 1.01 - 5.00
- 5.01 - 10.00
- 10.01 - 25.00
- 25.01 - 50.00
- 50.01 - 100.00
- 100.01 - 200.00
- 200.01 - 500.00
- 500.01 - 1,000.00
- >1,000.00
- 70ST-1 Hydraulic Structures

Reference Features

- Study Area
- Model Area
- North & South Model Matchline

N

0 1,100 2,200

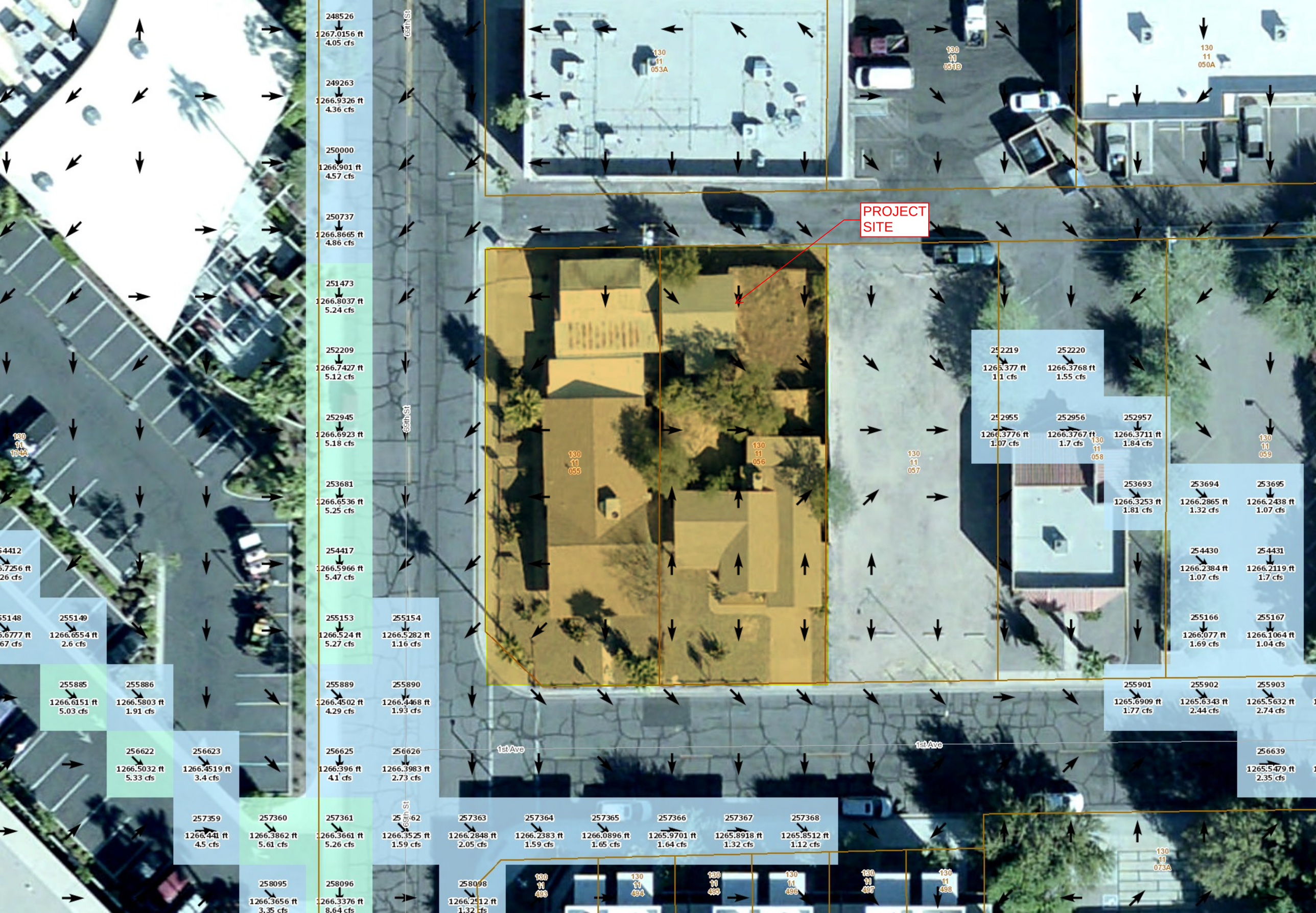
1 inch = 1,100 feet

Flood Control District of Maricopa County

Gavan & Barker Inc. Civil Engineering & Landscape Architecture 3030 North Central Avenue, Suite 1230 Phoenix, AZ 85012 Phone 602-200-0031

TY·LIN INTERNATIONAL engineers| planners| scientists

	By	Date
Prepared	AJA/OK	12/14/2017
Checked	MTG	12/14/2017


PROJECT SITE
63th St
63th St
1st Ave
1st Ave
248526
1267.0156 ft
4.05 cfs
249263
1266.9326 ft
4.36 cfs
250000
1266.901 ft
4.57 cfs
250737
1266.8665 ft
4.86 cfs
251473
1266.8037 ft
5.24 cfs
252209
1266.7427 ft
5.12 cfs
252945
1266.6923 ft
5.18 cfs
253681
1266.6536 ft
5.25 cfs
254417
1266.5966 ft
5.47 cfs
255153
1266.524 ft
5.27 cfs
255154
1266.5282 ft
1.16 cfs
255885
1266.6151 ft
5.03 cfs
255886
1266.5803 ft
1.91 cfs
255889
1266.4502 ft
4.29 cfs
255890
1266.4468 ft
1.93 cfs
256622
1266.5032 ft
5.33 cfs
256623
1266.4519 ft
3.4 cfs
256625
1266.396 ft
4.1 cfs
256626
1266.3983 ft
2.73 cfs
257359
1266.441 ft
4.5 cfs
257360
1266.3862 ft
5.61 cfs
257361
1266.3661 ft
5.26 cfs
257362
1266.3525 ft
1.59 cfs
257363
1266.2848 ft
2.05 cfs
257364
1266.2383 ft
1.59 cfs
257365
1266.0896 ft
1.65 cfs
257366
1265.9701 ft
1.64 cfs
257367
1265.8918 ft
1.32 cfs
257368
1265.8512 ft
1.12 cfs
258095
1266.3656 ft
3.35 cfs
258096
1266.3376 ft
8.64 cfs
258098
1266.2512 ft
1.32 cfs
252219
1266.377 ft
1.1 cfs
252220
1266.3768 ft
1.55 cfs
252955
1266.3776 ft
1.07 cfs
252956
1266.3767 ft
1.7 cfs
252957
1266.3711 ft
1.84 cfs
253693
1266.3253 ft
1.81 cfs
253694
1266.2865 ft
1.32 cfs
253695
1266.2438 ft
1.07 cfs
254430
1266.2384 ft
1.07 cfs
254431
1266.2119 ft
1.7 cfs
255166
1266.077 ft
1.69 cfs
255167
1266.1064 ft
1.04 cfs
255901
1265.6909 ft
1.77 cfs
255902
1265.6343 ft
2.44 cfs
255903
1265.5632 ft
2.74 cfs
256639
1265.5479 ft
2.35 cfs
130 11 053A
130 11 051D
130 11 050A
130 11 055
130 11 056
130 11 057
130 11 058
130 11 059
130 11 073A
130 11 174A
130 11 494
130 11 495
130 11 496
130 11 497
130 11 498

APPENDIX A-9
Warning and 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.

35-DR-2018	Nick Prodanov	11/12/18	
Plan Check No.	Owner or Agent	Date	

PRELIMINARY WATER AND SEWER BASIS OF DESIGN REPORT

FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

LDG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984

July 30, 2018

TABLE OF CONTENTS

APPENDICES

July 30, 2018

1. INTRODUCTION

This Preliminary Water and Sewer Basis of design report and related design have been developed in accordance with the current City of Scottsdale Design Standards & Policies Manual. It provides preliminary engineering analysis and assessment of the required water and sanitary sewer services for the proposed multifamily development.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes (three stories) with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Preliminary and final plats are being prepared as a part of the project development, subject to the City of Scottsdale review and approval. The plat shows location and area of each building and common elements in the community.

The site is located within the City of Scottsdale water and sewer service area. There are existing 12" DIP and 8” water mains that run in 69th Street. Another 6” CIP runs in 1st Avenue and it is connected to the 8” main in 69th Street. There is also an existing 4” DIP in the Alley running along the north property line. New services for the project are proposed to be connected to the 8” main in 69th Street.
There is an existing 8” PVC sanitary sewer main in the Alley. New sanitary sewer service and new manhole are proposed to connect to this 8” main.
Existing service taps located in the Alley are noted to be removed.

2. DOMESTIC WATER AND FIRE SUPPRESSION SYSTEM

Each residence of the Fleetwood 6 Townhomes will be serviced by a separate domestic water service tapped off the existing 8” water main in 69th Street. Fire sprinklers for each residence will be fed off the domestic water service. All existing water services not used for the site will be required to be removed per the City of Scottsdale requirements.

The fire hydrant coverage for this site is provided by an existing fire hydrant located at the southeast property corner of 69th Street and 1st Avenue. This hydrant is approximately 238-feet from the most remote portion of the buildings. Fire hydrant coverage around the building is in accordance with the City of Scottsdale Design Standards & Polices Manual requirements. Water demand calculations are provided in Appendix A-2.

3. SANITARY SEWER SYSTEM

New 6" sewer main is proposed to run in the common driveway serving the community. The 6” line will discharge into the existing 8” public sewer main in the Alley along the north property line. New manhole will be required to be installed at the point of the connection to the existing sewer main. Each townhome residence is serviced by a separate 4" service line. The sewer services are sized per IPC based on 256 anticipated plumbing fixture units from the site. Minimum slope of 2% will be used for the 4" services. Minimum slope of 1" will be used for the 6" line.

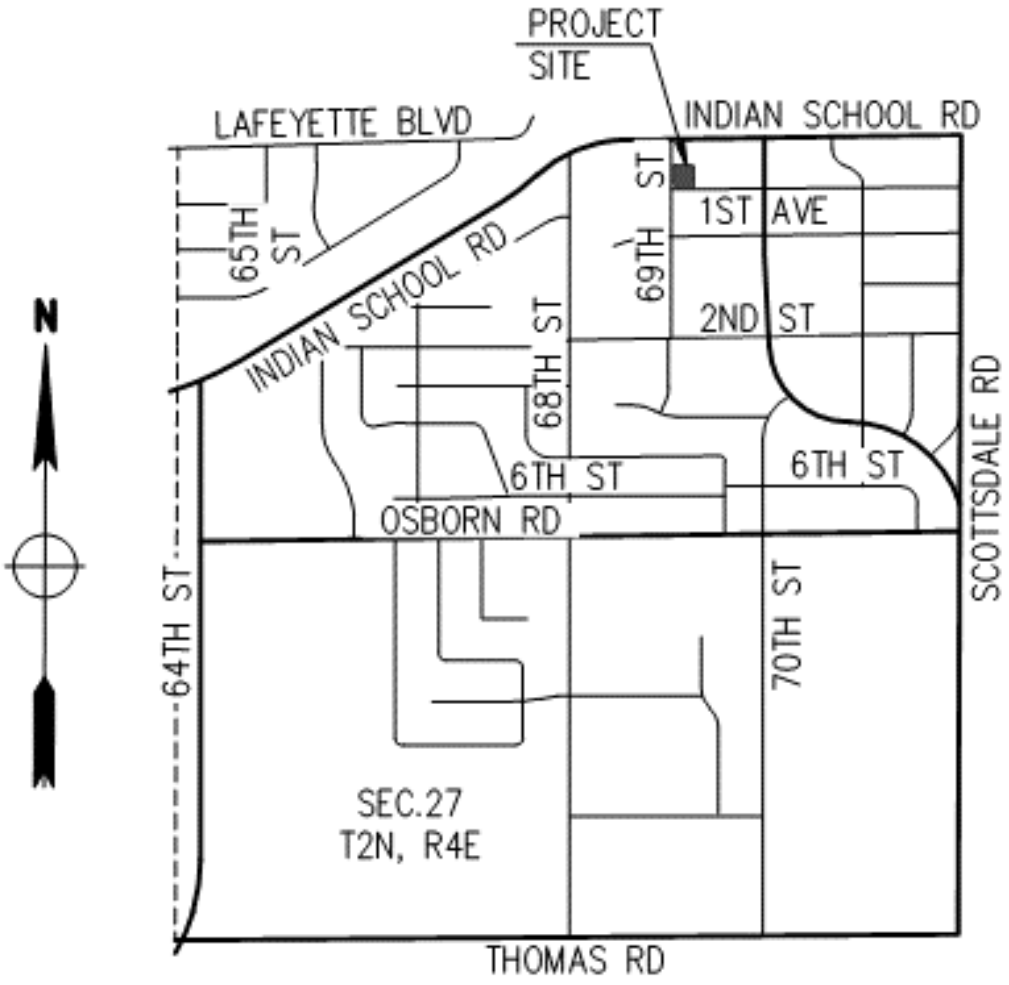
We have calculated that the peak daily discharge from this development will be 3.75 gpm. In our opinion the portion of 6” public sewer line that this site discharges to has an adequate capacity.

We have also estimated the sewer discharge from the site using The City of Scottsdale Design Standards & Polices Manual. The average daily flow was estimated at 0. 001857 cfs. The peak discharge was calculated by increasing the average daily flow by a factor of 4.5, which is a total of 0.00836 cfs. Using Manning’s Equation, we calculated that the proposed 6-inch sewer line at a minimum of 1.0% have a velocity of 2.865 fps flowing full with a capacity of 0.56 cfs. Refer to Sanitary Sewer System Design Calculations in Appendix A-4.

4. REFERENCES

- City of Scottsdale Design Standards & Policies Manual.
- 2015 International Fire Code, Appendix B, Fire Flow Requirements for Buildings.

APPENDIX A-1
Vicinity Map



APPENDIX A-2
Water System Design Calculations

RESIDENTIAL

Number of units:	6
Average day demand per dwelling unit:	185.3
Average day demand:	**6 x 185.3 = 1,112 gpd (0.772 gpm)**
Maximum daily peaking factor:	2.0
Maximum daily demand per dwelling unit:	370.60 gpd
Maximum day demand:	**6 x 370.60 = 2,224 gpd (1.544 gpm)**
Peak hour demand factor:	4.5
Peak hour demand per dwelling unit:	833.85 gpd
Peak hour demand:	**6 x 833.85 = 5,003 gpd (3.474 gpm)**

FIRE FLOW DEMAND

Building Area = 13,418 sf, Construction Type = V-B, Required Fire Flow = 3,000 gpm

Per 2015 International Fire Code, Appendix B, Section B105.2, up to a 75% reduction in the fire flow can be approved if an approved automatic sprinkler system is installed. The resulting fire flow shall not be less than the required minimum of 1,500 gpm. We are using a fire flow of 1,500 gpm since the 75% reduction would result in a fire flow less than the minimum required fire flow.

Fire hydrant flow test shall be submitted with the fire sprinkler design.

TOTAL SITE DEMAND

Fire flow demand (see demand calculation above):	1,500 gpm
Peak hour demand + Fire Flow Demand	**3.47 + 1,500 = 1,504 gpm**

APPENDIX A-3
Sanitary Sewer System Design Calculations

Manning's Formula

8" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.16667
A = 0.3490
S = 0.0052 ft/ft

Q = 0.86 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.16667
S = 0.0052 ft/ft

V = 2.45 fps

Manning's Formula

6" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.125
A = 0.1963
S = 0.010 ft/ft

Q = 0.56 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.125
S = 0.010 ft/ft

V = 2.86 fps

Sewer Demand Calculations

Average daily flow

Number of Units:	6
Average day demand per dwelling unit:	200
Average day demand:	**6 x 200 = 1,200 gpd**

Total average daily flow: **1,200 gpd = 0.001857 cfs**

Peak daily flow

0.001857 cfs x 4.5 = 0.00836 cfs or 3.75 gpm

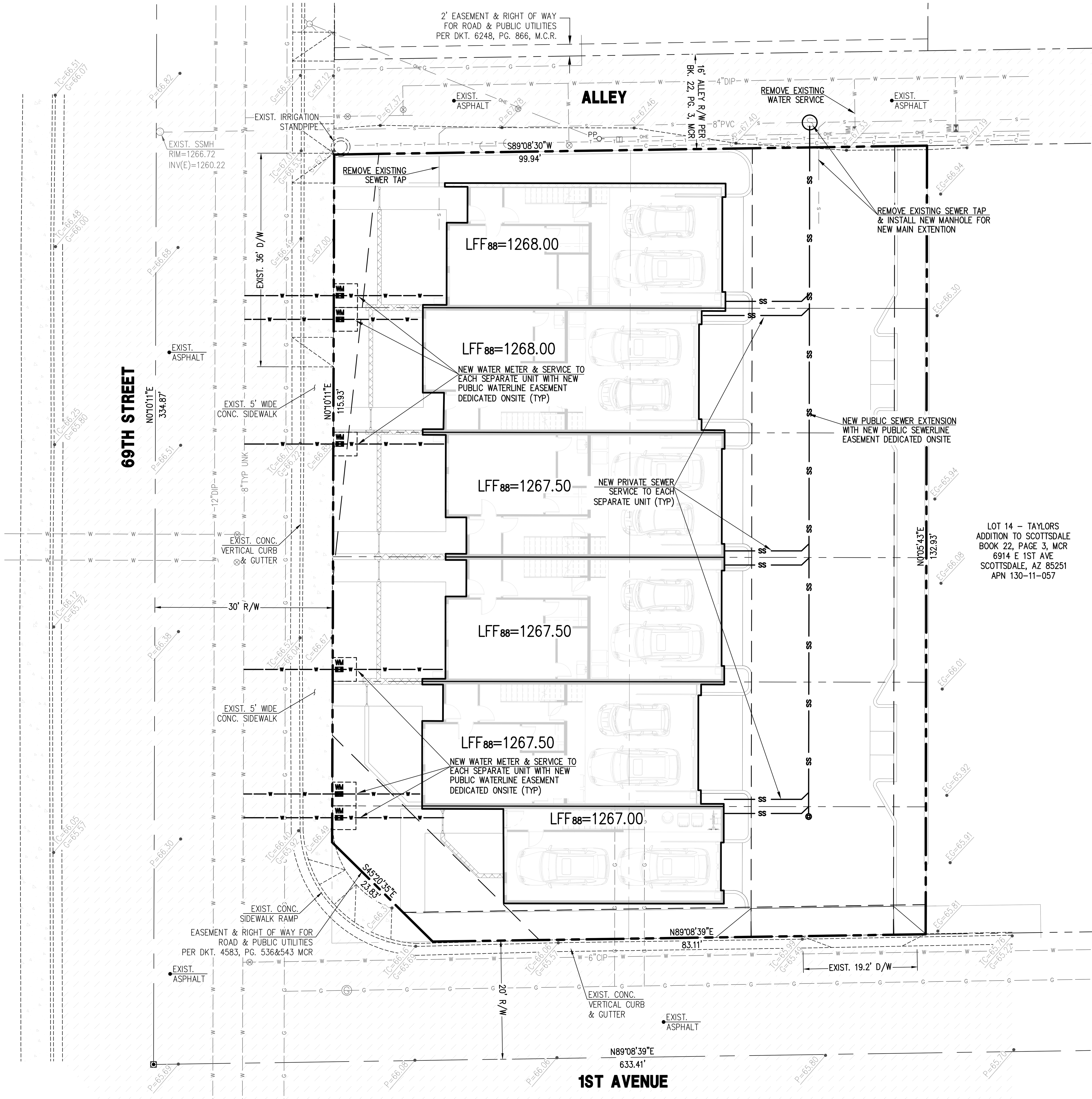
6" service lines are connected to a 6" sewer line that is tapped to the existing 8" public sewer main.

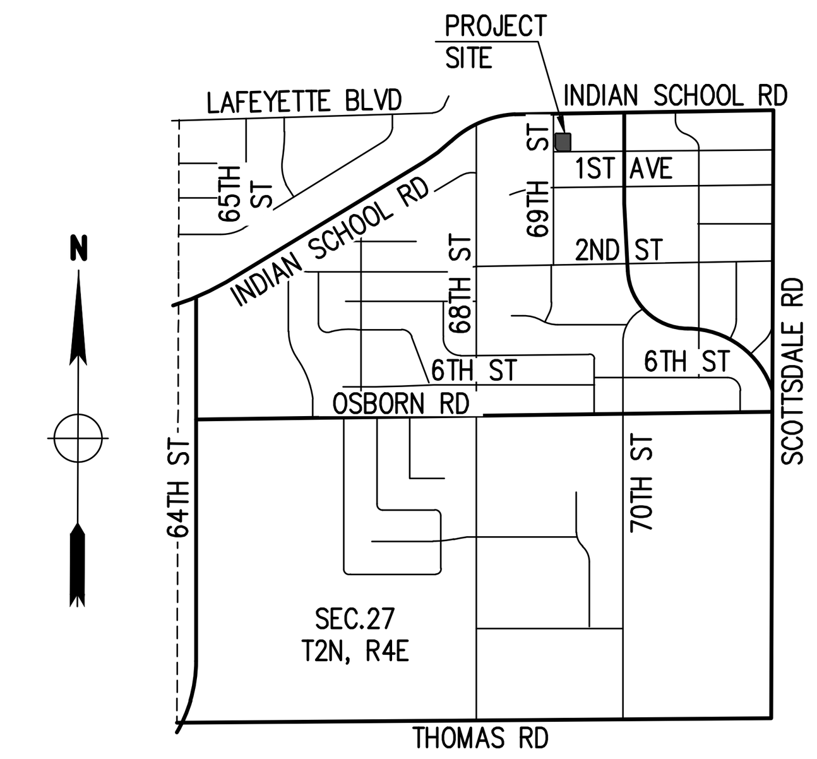
Capacity of 6" sewer line is **0.56** cfs > Peak Demand of **0.00836 cfs**

APPENDIX A-4

Conceptual Private Water and Sanitary Sewer Layout

PRELIMINARY WATER & SEWER PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA





VICINITY MAP
NTS

LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
- CALCULATED POINT
- PROPERTY LINE
- EASEMENT LINE
- MONUMENT LINE
- SIGN
- LIGHT POLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- CABLE TV RISER
- WATER METER BOX
- SEWER MANHOLE
- TELEPHONE PEDESTAL
- CATV, PHONE
- SEWER LINE
- WATER LINE
- ELECTRIC LINE
- COMMUNICATIONS LINE
- GAS LINE
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION

ABBREVIATIONS

ARV	AIR RELEASE VALVE
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
FL	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER

SITE DATA

APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 13,150 S.F. (0.302 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER

LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT

SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS

THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

BENCHMARK

BRASS CAP IN HANDHOLE AT THE INTERSECTION OF INDIAN SCHOOL AND SCOTTSDALE ROAD HAVING AN ELEVATION OF 1260.34 CITY OF SCOTTSDALE DATUM, NAVD 88

LEGAL DESCRIPTION

LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

FLOOD INSURANCE RATE MAP (FIRM) DATA

COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES

WATER: CITY OF SCOTTSDALE
SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

DATE: 08/01/18
JOB: 1805133
VERSION: 1.1
PLOT DATE: 08/01/18
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
DATE:
REVISIONS:

PRELIMINARY WATER & SEWER PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

P-WS

APPENDIX A-5

City of Scottsdale Water and Sewer Map

17-44

16-43

16-45

15-44

PROJECT SITE

Detail A
Detail B
Detail C
Detail D
Detail E
Detail H
Detail J
Detail O
Detail R
Detail U
Detail V
Detail W
Detail X

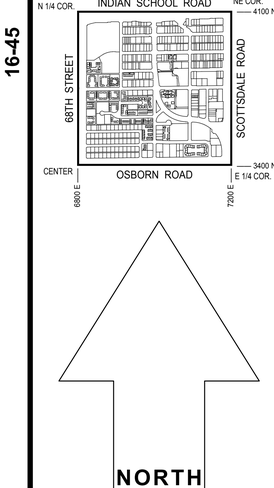
GENERAL NOTES:

- 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:

- Water Valve
- Non-potable Water Valve
- Fire Hydrant
- Water Blowoff
- Water Main Reducer
- Water Sample Station
- Water Air Release Valve
- Non-potable Water Air Release Valve
- Water Pressure Reducing Valve
- Water Vault
- Water Manhole
- Non-Potable Water Manhole
- Water Pump
- Water Main
- Non-Potable Water Main
- Fire Line
- Water Service
- Non-Scottsdale Water Main
- Sewer Manhole
- Sewer Cleanout
- Sewer Lift Station
- Sewer Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Non-Scottsdale Sewer Main
- Sewer Service

VICINITY MAP



WATER & SEWER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

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

10-JUN-18

Request for Stormwater Storage Waiver

CITY OF SCOTTSDALE

35-DR-18 City of Scottsdale Plan/Case Numbers:

35 - DR - 18 ____ - PP - ____ PC#_____

Requests for stormwater storage waivers are reviewed as part of case submittals for the associated project. This form should be included in the preliminary drainage report with the applicant's portion completed. The preliminary drainage report shall include supporting documentation and analysis as needed to support the requested wavier.

Date 1/14/19 Project Name Fleetwood 6 Townhomes

Project Location NEC 1st Ave & 69th Street

Applicant Contact Lance Baker Company Name Synectic Design Incorporated

Phone 480 244 9204 E-mail lbaker@sdiaz.us

Address 1111 W. University Drive, Suite 104, Tempe, Arizona 85281

Waiver Criteria

A project must meet at least one of three criteria listed below for the city to consider waiving some or all required stormwater storage. **However, regardless of the criteria, a waiver will only be granted if the applicant can demonstrate that the effect of a waiver will not increase the potential for flooding on any property.** Check the applicable box and provide a signed and sealed engineering report and supporting engineering analysis that demonstrate the project meets the criteria and that the effect of a waiver will not increase the potential for flooding on any property.

If the runoff for the project has been included in a storage facility at another location, the applicant must demonstrate that the stormwater storage facility was specifically designed to accommodate runoff from the subject property and that the runoff will be conveyed to this location through an adequately designed conveyance facility.

It should be noted that reductions in stormwater storage relating to

☐ 1. The development is adjacent to a conveyance facility that an engineering analysis shows is designed and constructed to handle the additional runoff from the site as a result of development.

☑ 2. The development is on a parcel less than one-half acre in size.

☐ 3. Stormwater storage requirements conflict with requirements of the Environmentally Sensitive Lands Ordinance (ESLO).

For a full storage waiver, a conflict with ESLO is limited to:

- Property located in the hillside landform as defined in the city Zoning Ordinance
- Property in the upper desert landform that has a land slope steeper than 5% as defined in the city Zoning Ordinance
- Property within the ESL zoning overlay district where the only viable location for a stormwater storage basin requires blasting

This full waiver only applies to those portions of property meeting one of these three requirements.

100-year/2-hour storage is allowed, but not required for redevelopment projects and development within the ESL zoning overlay. Rather, these projects must store enough stormwater to attenuate post-development flows to predevelopment levels, considering the 10- and 100-year storm events (S.R.C. Sections 37-50 and 37-51).

By signing below, I certify that the stated project meets the waiver criteria selected above as demonstrated by the attached documentation.

Nick Rodanov 1/14/19

Stormwater Management Department

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500

Request for Stormwater Storage Waiver

CITY OF SCOTTSDALE

City of Scottsdale Plan/Case Numbers:

35 - DR - 18 ____ - PP - ____ PC#_____

CITY STAFF TO COMPLETE THIS PAGE

Project Name Fleetwood 6 Townhomes

Check Appropriate Boxes:

☐ Meets waiver criteria (specify): ☐ 1 ☒ 2 ☐ 3

Recommended Conditions of Waiver:

☒ All storage requirements waived.

☐ Post-development peak discharge rates do not exceed pre-development conditions.

☐ Other:

Explain: _____

_____

☑ **Waiver approved per above conditions.**

C. Ashley Couch

Floodplain Administrator or Designee

14/JAN/2019

Date

Stormwater Management Department

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500

Request for Stormwater Storage Waiver

CITY OF SCOTTSDALE

35-DR-18 City of Scottsdale Plan/Case Numbers:

35 - DR - 18 ____ - PP - ____ PC#_____

In-Lieu Fee and In-Kind Contributions

In-lieu fees are only applicable to projects where post-development peak discharge rates exceed pre-development levels, based on the 10- and 100-year storm events. If the city grants a waiver, the developer is required to calculate and contribute an in-lieu fee based on what it would cost the city to provide a storage basin, sized as described below, including costs such as land acquisition, construction, landscaping, design, construction management, and maintenance over a 75-year design life. The fee for this cost is $3.00 per cubic foot of stormwater storage for a virtual storage basin designed to mitigate the increase in runoff associated with the 100-year/2-hour storm event. The applicant may submit site-specific in-lieu fee calculations subject to the Floodplain Administrator's approval.

The Floodplain Administrator considers in-kind contributions on a case-by-case basis. An in-kind contribution can serve as part of or instead of the calculated in-lieu fee. In-kind contributions must be stormwater-related and must constitute a public benefit. In-lieu fees and in-kind contributions are subject to the approval of the Floodplain Administrator or designee.

Project Name Fleetwood 6 Townhomes

The waived stormwater storage volume is calculated using a simplified approach as follows:

$V = \Delta CRA$; where
V = stormwater storage volume required, in cubic feet,
ΔC = increase in weighted average runoff coefficient over disturbed area ($C_{post} - C_{pre}$),
R = 100-year/2-hour precipitation depth, in feet (DSPM, Appendix 4-1D, page 11), and
A = area of disturbed ground, in square feet

Furthermore,

$V_w = V - V_p$; where
V_w = volume waived,
V = volume required, and
V_p = volume provided

R =	2.16	2.16in = 0.18 ft
ΔC =	0.82-0.69=0.13	0.13
A =	13,150	13,150 ft²
V =	308	308 ft³
V_p =	0	0
V_w =	308	308 ft³

☑ An in-lieu fee will be paid, based on the following calculations and supporting documentation:
In-lieu fee ($) = V_w (cu. ft.) x $3.00 per cubic foot = ~~$924~~ $924

☐ An in-kind contribution will be made, as follows:

_____

_____

_____

☐ No in-lieu fee is required. Reason:

_____

_____

Approved by:

C. Ashley Couch
Floodplain Administrator or Designee

14/JAN/2019
Date

Stormwater Management Department
7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500

PRELIMINARY GRADING & DRAINAGE PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA

LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
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- CABLE TV RISER
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- SEWER MANHOLE
- TELEPHONE PEDESTAL
- CATV, PHONE
- SEWER LINE
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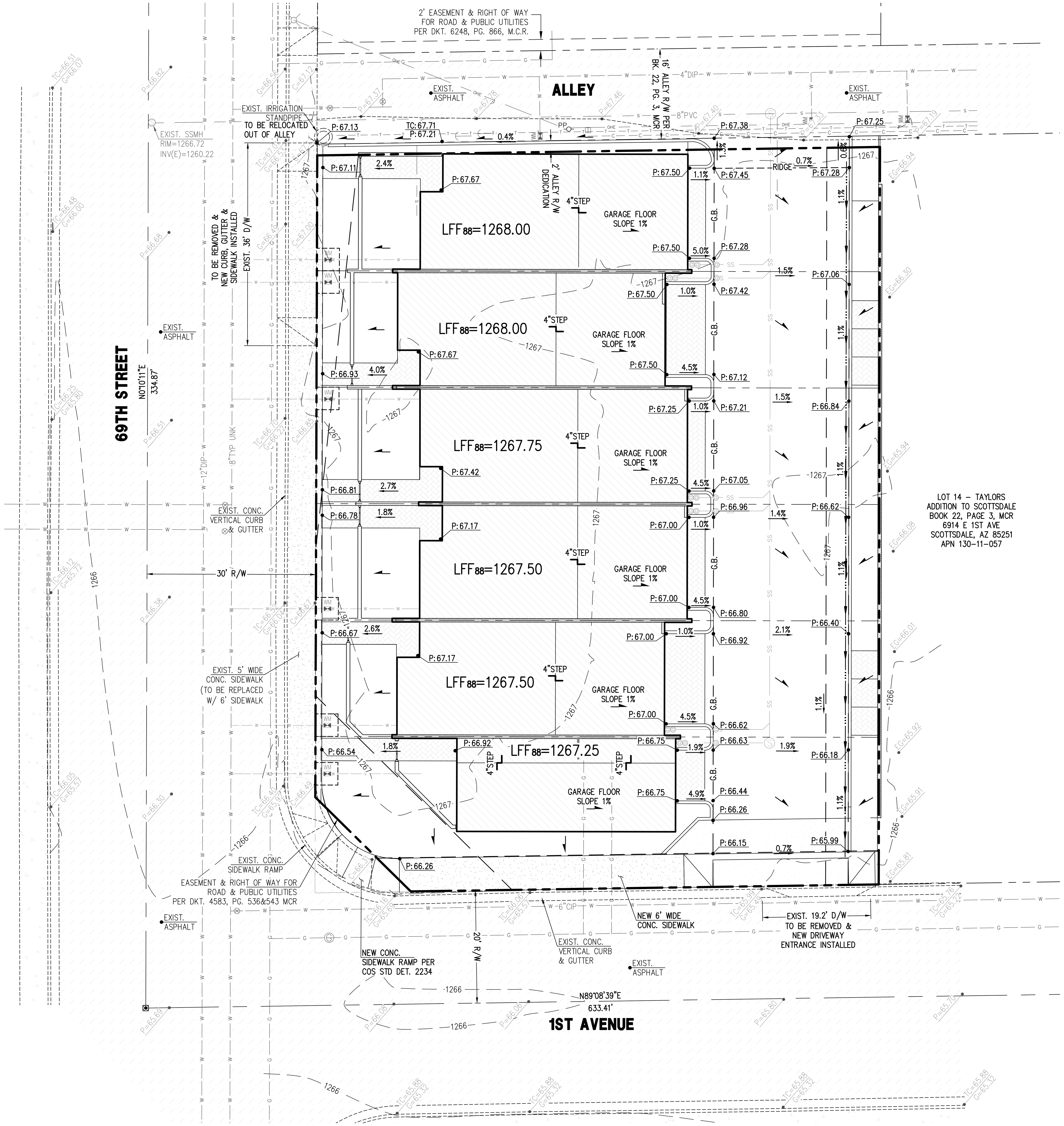
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION
- SLOPE DIRECTION
- 22.25 PROPOSED SPOT ELEVATION
- 1121 PROPOSED CONTOUR
- FLOW LINE



ABBREVIATIONS

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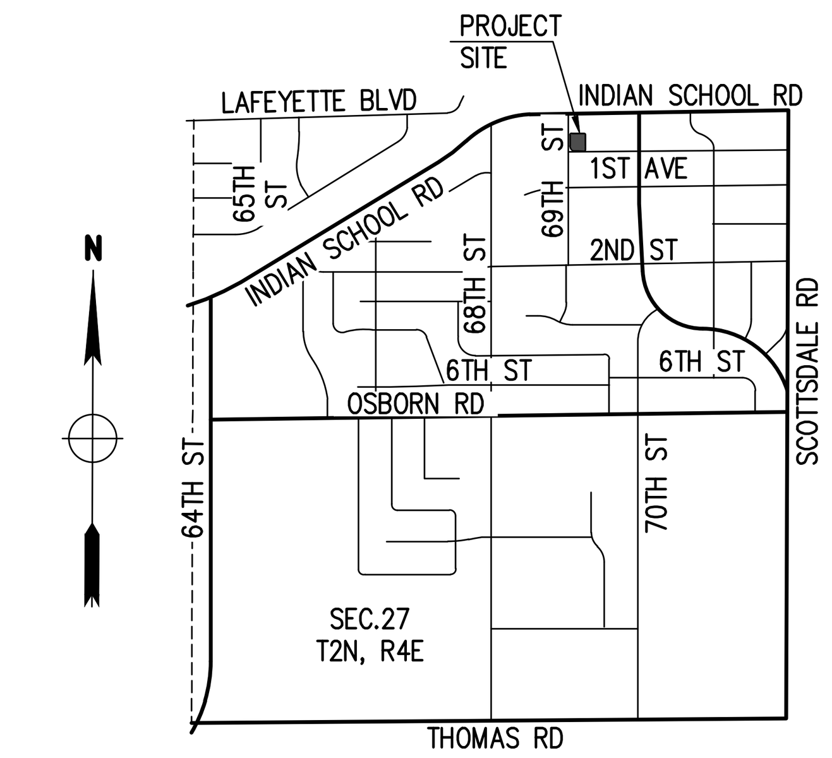
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
FL	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER



VICINITY MAP
NTS

SITE DATA
APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 12,950 S.F. (0.297 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER
LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT
SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER
BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS
THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

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LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

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COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES
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SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

RETENTION CALCULATIONS
PRE VS. POST DEVELOPMENT RUNOFF FROM 100-YEAR, 2-HOUR STORM EVENT

$V_r = D \times A \times (C - C_E)/12$

V_r=VOLUME REQUIRED
V_p=VOLUME PROVIDED
D=RAINFALL DEPTH=2.16, INCHES (100-YR, 2HR RAINFALL DEPTH – NOAA ATLAS 14, VOL.1, VER. 5)
C=0.85 (PER PROPOSED SITE CONDITIONS)
C_E=0.71 (PER EXIST. SITE CURRENT CONDITIONS)
A=AREA IN S.F. (12,950)
V_w=VOLUME WAIVED
V_r=326 C.F. *V_p=0 C.F.
*STORM WATER STORAGE WAIVER IN-LIEU FEE: V_w (308 C.F.) x \$3.00=\$978

CALL TWO WORKING DAYS BEFORE YOU DIG
(602) 263 1100
BLUE STAKE CENTER

DATE: 01/25/19
JOB: 1805133
VERSION: 1.1
PLOT DATE: 01/25/19
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
DATE:
REVISIONS:

PRELIMINARY GRADING & DRAINAGE PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

P-GD
1 OF 1

FINAL WATER AND SEWER BASIS OF DESIGN REPORT

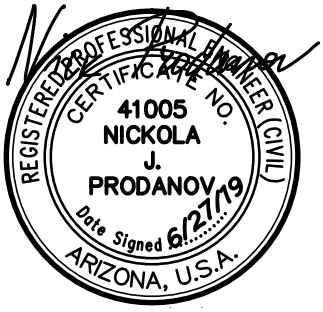
FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

LDG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

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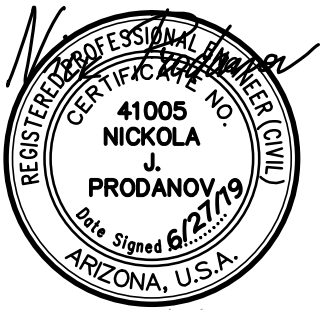
APPENDICES



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

1. INTRODUCTION

This Water and Sewer Basis of design report and related design have been developed in accordance with the current City of Scottsdale Design Standards & Policies Manual. It provides engineering analysis and assessment of the required water and sanitary sewer services for the proposed multifamily development.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes (three stories) with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Preliminary and final plats are being prepared as a part of the project development, subject to the City of Scottsdale review and approval. The plat shows location and area of each building and common elements in the community.

The site is located within the City of Scottsdale water and sewer service area. There are existing 12" DIP and 8” water mains that run in 69th Street. Another 6” CIP runs in 1st Avenue and it is connected to the 8” main in 69th Street. There is also an existing 4” DIP in the Alley running along the north property line. New services for the project are proposed to be connected to the 8” main in 69th Street.
There is an existing 8” PVC sanitary sewer main in the Alley. New sanitary sewer service and new manhole are proposed to connect to this 8” main.
Existing sewer service taps located in the Alley are noted to be permanently capped at the property line and abandoned. Water meters and services to be removed by City staff upon payment of abandonment fees.

2. DOMESTIC WATER AND FIRE SUPPRESSION SYSTEM

Each residence of the Fleetwood 6 Townhomes will be serviced by a separate domestic water service tapped off the existing 8” water main in 69th Street. Fire sprinklers for each residence will be fed off the domestic water service. All existing water services not used for the site will be required to be removed per the City of Scottsdale requirements.

Existing 4” water line in the alley along the northern frontage of the project will be replaced with a new 6” water line.

The fire hydrant coverage for this site is provided by an existing fire hydrant located at the southeast property corner of 69th Street and 1st Avenue. This hydrant is approximately 238-feet from the most remote portion of the buildings. Fire hydrant coverage around the building is in accordance with the City of Scottsdale Design Standards & Polices Manual requirements. Water demand calculations are provided in Appendix A-2. Hydrant fire flow test is provided in Appendix A-6.

3. SANITARY SEWER SYSTEM

New 8" sewer main is proposed to run in the common driveway serving the community. The 8” line will discharge into the existing 8” public sewer main in the Alley along the north property line. New manhole will be required to be installed at the point of the connection to the existing sewer main. Each townhome residence is serviced by a separate 4" service line. The sewer services are sized per IPC based on 256 anticipated plumbing fixture units from the site. Minimum slope of 2% will be used for the 4" services. Minimum slope of 1% will be used for the 8" line.

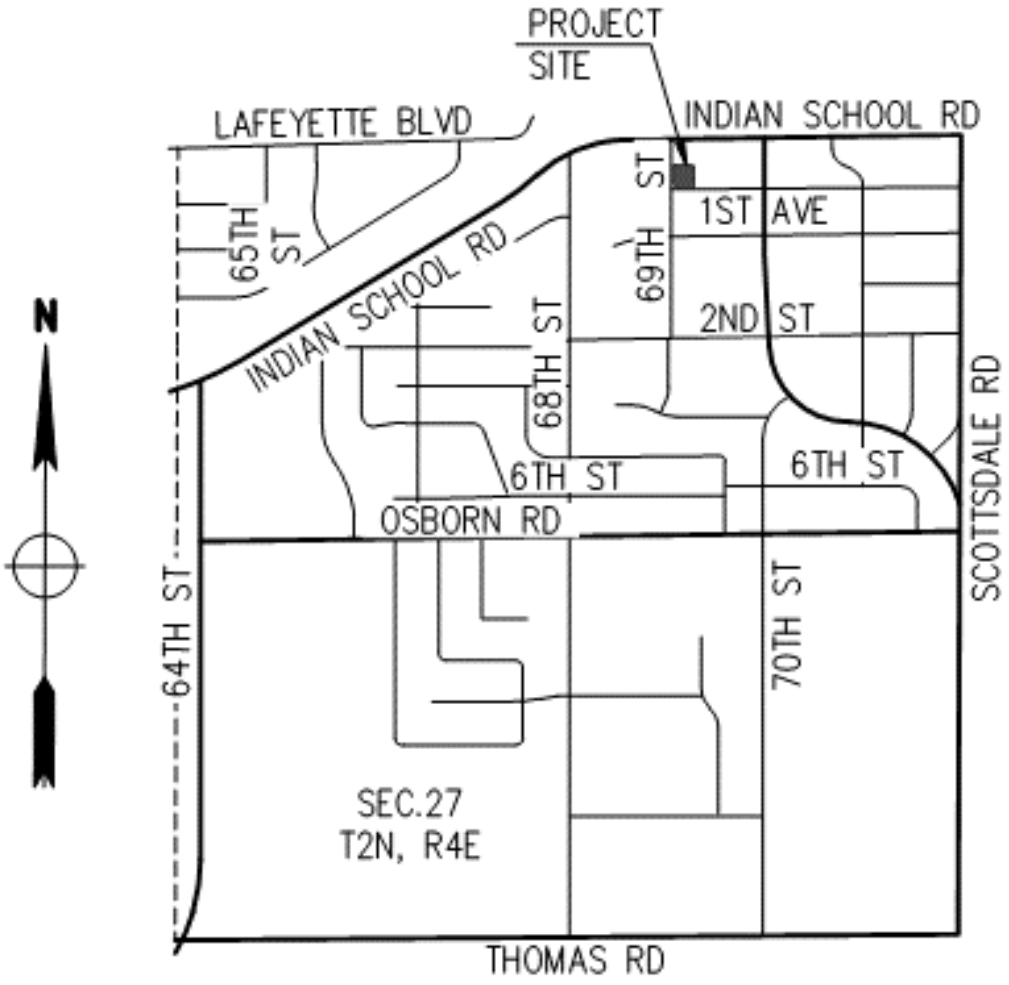
We have calculated that the peak daily discharge from this development will be 3.75 gpm. In our opinion the portion of 8” public sewer line that this site discharges to has an adequate capacity.

We have also estimated the sewer discharge from the site using The City of Scottsdale Design Standards & Polices Manual. The average daily flow was estimated at 0. 001857 cfs. The peak discharge was calculated by increasing the average daily flow by a factor of 4.5, which is a total of 0.00836 cfs. Using Manning’s Equation, we calculated that the proposed 8-inch sewer line at a minimum of 1.0% have a velocity of 3.81 fps flowing at depth to diameter ration of d/D=0.65 with a capacity of 0.91 cfs. Refer to Sanitary Sewer System Design Calculations in Appendix A-4.

4. REFERENCES

- City of Scottsdale Design Standards & Policies Manual.
- 2015 International Fire Code, Appendix B, Fire Flow Requirements for Buildings.

APPENDIX A-1
Vicinity Map



APPENDIX A-2
Water System Design Calculations

RESIDENTIAL

Number of units:	6
Average day demand per dwelling unit:	185.3
Average day demand:	**6 x 185.3 = 1,112 gpd (0.772 gpm)**
Maximum daily peaking factor:	2.0
Maximum daily demand per dwelling unit:	370.60 gpd
Maximum day demand:	**6 x 370.60 = 2,224 gpd (1.544 gpm)**
Peak hour demand factor:	4.5
Peak hour demand per dwelling unit:	833.85 gpd
Peak hour demand:	**6 x 833.85 = 5,003 gpd (3.474 gpm)**

FIRE FLOW DEMAND

Building Area = 13,418 sf, Construction Type = V-B, Required Fire Flow = 3,000 gpm

Per 2015 International Fire Code, Appendix B, Section B105.2, up to a 75% reduction in the fire flow can be approved if an approved automatic sprinkler system is installed. The resulting fire flow shall not be less than the required minimum of 1,500 gpm. We are using a fire flow of 1,500 gpm since the 75% reduction would result in a fire flow less than the minimum required fire flow.

Fire hydrant flow test shall be submitted with the fire sprinkler design.

TOTAL SITE DEMAND

Fire flow demand (see demand calculation above):	1,500 gpm
Peak hour demand + Fire Flow Demand	**3.47 + 1,500 = 1,504 gpm**

APPENDIX A-3
Sanitary Sewer System Design Calculations

Manning's Formula

8" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.16667
A = 0.3490
S = 0.0052 ft/ft

Q = 0.86 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.16667
S = 0.0052 ft/ft

V = 2.45 fps

Manning's Formula

6" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.125
A = 0.1963
S = 0.010 ft/ft

Q = 0.56 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.125
S = 0.010 ft/ft

V = 2.86 fps

Sewer Demand Calculations

Average daily flow

Number of Units:	6
Average day demand per dwelling unit:	200
Average day demand:	**6 x 200 = 1,200 gpd**

Total average daily flow: **1,200 gpd = 0.001857 cfs**

Peak daily flow

0.001857 cfs x 4.5 = 0.00836 cfs or 3.75 gpm

6" service lines are connected to a 6" sewer line that is tapped to the existing 8" public sewer main.

Capacity of 6" sewer line is **0.56** cfs > Peak Demand of **0.00836 cfs**

APPENDIX A-4

Private Water and Sanitary Sewer Layout

PRELIMINARY WATER & SEWER PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
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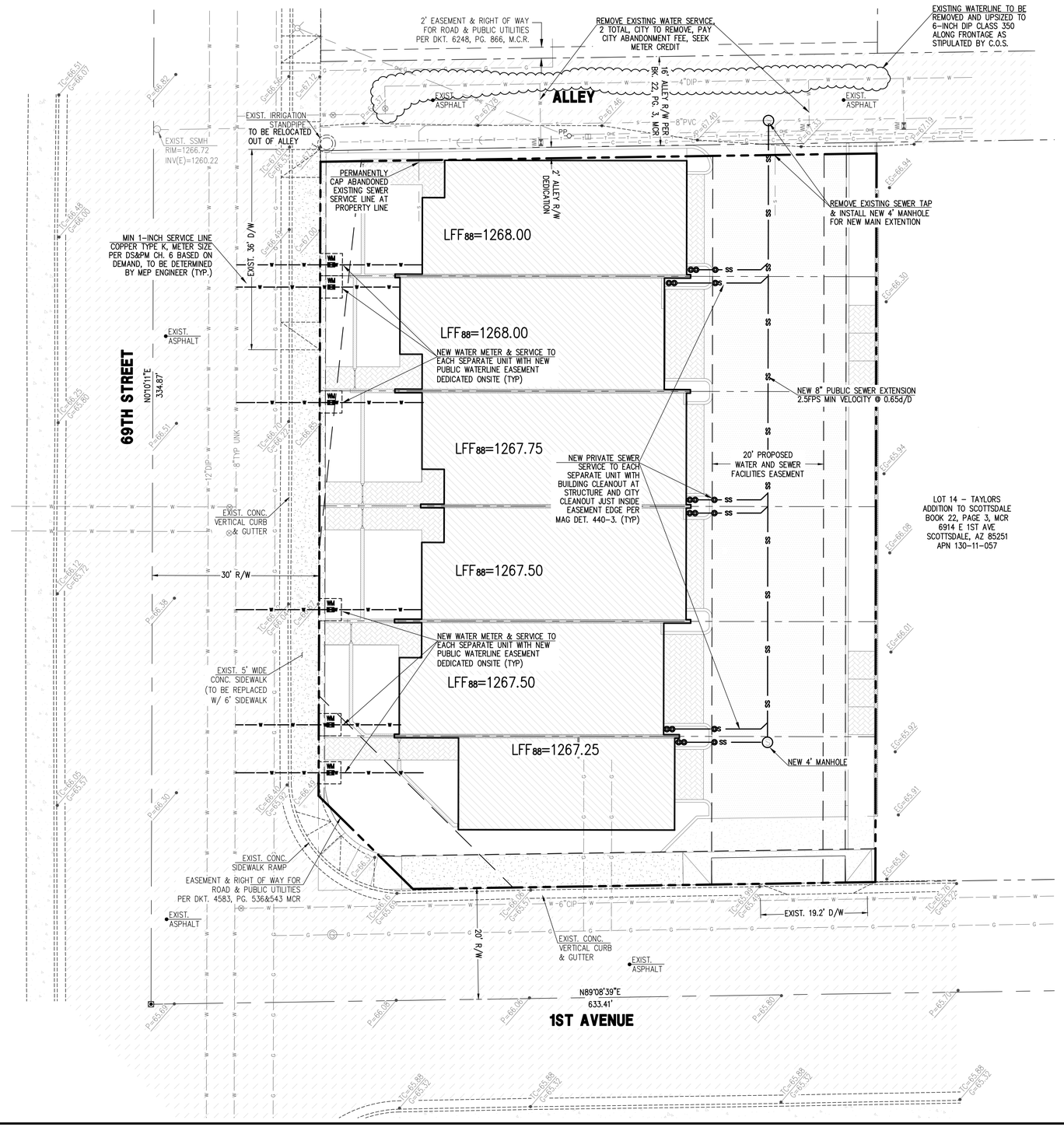

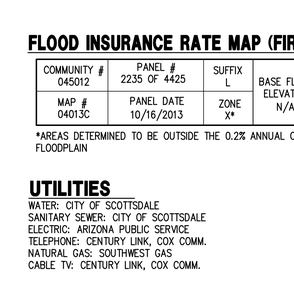

VICINITY MAP
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OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

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NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

SCALE 1" = 10'

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

DATE: 01/25/19
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
JOB: 1805133
VERSION: 1.1
PLOT DATE: 01/25/19
REVISIONS: DATE:

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PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

P-WS
1 OF 1

APPENDIX A-5

City of Scottsdale Water and Sewer Map

17-44

16-43

16-45

15-44

PROJECT SITE

Detail A
Detail B
Detail C
Detail D
Detail E
Detail H
Detail J
Detail O
Detail R
Detail U
Detail V
Detail W
Detail X

GENERAL NOTES:

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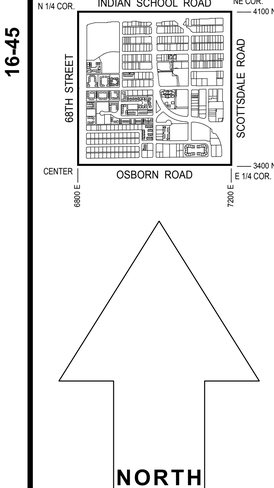
LEGEND:

- Water Valve
- Non-potable Water Valve
- Fire Hydrant
- Water Blowoff
- Water Main Reducer
- Water Sample Station
- Water Air Release Valve
- Non-potable Water Air Release Valve
- Water Pressure Reducing Valve
- Water Vault
- Water Manhole
- Non-Potable Water Manhole
- Water Pump
- Water Main
- Non-Potable Water Main
- Fire Line
- Water Service
- Non-Scottsdale Water Main
- Sewer Manhole
- Sewer Cleanout
- Sewer Lift Station
- Sewer Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Non-Scottsdale Sewer Main
- Sewer Service

VICINITY MAP



WATER & SEWER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

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

10-JUN-18

FINAL WATER AND SEWER BASIS OF DESIGN REPORT

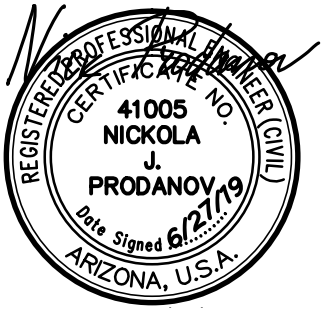
FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

LDG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

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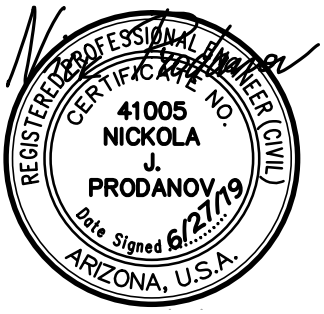
APPENDICES



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

1. INTRODUCTION

This Water and Sewer Basis of design report and related design have been developed in accordance with the current City of Scottsdale Design Standards & Policies Manual. It provides engineering analysis and assessment of the required water and sanitary sewer services for the proposed multifamily development.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes (three stories) with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Preliminary and final plats are being prepared as a part of the project development, subject to the City of Scottsdale review and approval. The plat shows location and area of each building and common elements in the community.

The site is located within the City of Scottsdale water and sewer service area. There are existing 12" DIP and 8” water mains that run in 69th Street. Another 6” CIP runs in 1st Avenue and it is connected to the 8” main in 69th Street. There is also an existing 4” DIP in the Alley running along the north property line. New services for the project are proposed to be connected to the 8” main in 69th Street.
There is an existing 8” PVC sanitary sewer main in the Alley. New sanitary sewer service and new manhole are proposed to connect to this 8” main.
Existing sewer service taps located in the Alley are noted to be permanently capped at the property line and abandoned. Water meters and services to be removed by City staff upon payment of abandonment fees.

2. DOMESTIC WATER AND FIRE SUPPRESSION SYSTEM

Each residence of the Fleetwood 6 Townhomes will be serviced by a separate domestic water service tapped off the existing 8” water main in 69th Street. Fire sprinklers for each residence will be fed off the domestic water service. All existing water services not used for the site will be required to be removed per the City of Scottsdale requirements.

Existing 4” water line in the alley along the northern frontage of the project will be replaced with a new 6” water line.

The fire hydrant coverage for this site is provided by an existing fire hydrant located at the southeast property corner of 69th Street and 1st Avenue. This hydrant is approximately 238-feet from the most remote portion of the buildings. Fire hydrant coverage around the building is in accordance with the City of Scottsdale Design Standards & Polices Manual requirements. Water demand calculations are provided in Appendix A-2. Hydrant fire flow test is provided in Appendix A-6.

3. SANITARY SEWER SYSTEM

New 8" sewer main is proposed to run in the common driveway serving the community. The 8” line will discharge into the existing 8” public sewer main in the Alley along the north property line. New manhole will be required to be installed at the point of the connection to the existing sewer main. Each townhome residence is serviced by a separate 4" service line. The sewer services are sized per IPC based on 256 anticipated plumbing fixture units from the site. Minimum slope of 2% will be used for the 4" services. Minimum slope of 1% will be used for the 8" line.

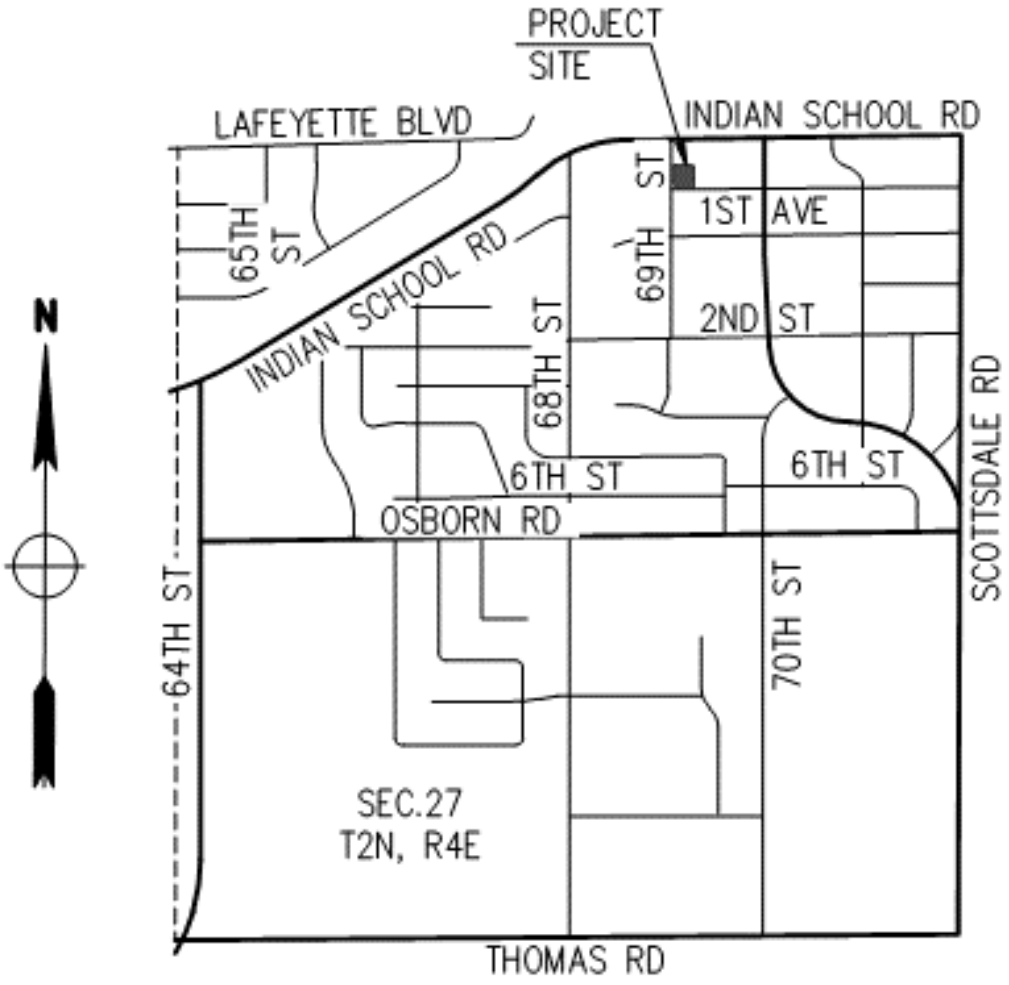
We have calculated that the peak daily discharge from this development will be 3.75 gpm. In our opinion the portion of 8” public sewer line that this site discharges to has an adequate capacity.

We have also estimated the sewer discharge from the site using The City of Scottsdale Design Standards & Polices Manual. The average daily flow was estimated at 0. 001857 cfs. The peak discharge was calculated by increasing the average daily flow by a factor of 4.5, which is a total of 0.00836 cfs. Using Manning’s Equation, we calculated that the proposed 8-inch sewer line at a minimum of 1.0% have a velocity of 3.81 fps flowing at depth to diameter ration of d/D=0.65 with a capacity of 0.91 cfs. Refer to Sanitary Sewer System Design Calculations in Appendix A-4.

4. REFERENCES

- City of Scottsdale Design Standards & Policies Manual.
- 2015 International Fire Code, Appendix B, Fire Flow Requirements for Buildings.

APPENDIX A-1
Vicinity Map



APPENDIX A-2
Water System Design Calculations

RESIDENTIAL

Number of units:	6
Average day demand per dwelling unit:	185.3
Average day demand:	**6 x 185.3 = 1,112 gpd (0.772 gpm)**
Maximum daily peaking factor:	2.0
Maximum daily demand per dwelling unit:	370.60 gpd
Maximum day demand:	**6 x 370.60 = 2,224 gpd (1.544 gpm)**
Peak hour demand factor:	4.5
Peak hour demand per dwelling unit:	833.85 gpd
Peak hour demand:	**6 x 833.85 = 5,003 gpd (3.474 gpm)**

FIRE FLOW DEMAND

Building Area = 13,418 sf, Construction Type = V-B, Required Fire Flow = 3,000 gpm

Per 2015 International Fire Code, Appendix B, Section B105.2, up to a 75% reduction in the fire flow can be approved if an approved automatic sprinkler system is installed. The resulting fire flow shall not be less than the required minimum of 1,500 gpm. We are using a fire flow of 1,500 gpm since the 75% reduction would result in a fire flow less than the minimum required fire flow.

Fire hydrant flow test shall be submitted with the fire sprinkler design.

TOTAL SITE DEMAND

Fire flow demand (see demand calculation above):	1,500 gpm
Peak hour demand + Fire Flow Demand	**3.47 + 1,500 = 1,504 gpm**

APPENDIX A-3
Sanitary Sewer System Design Calculations

Manning's Formula

8" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.16667
A = 0.3490
S = 0.0052 ft/ft

Q = 0.86 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.16667
S = 0.0052 ft/ft

V = 2.45 fps

Manning's Formula

6" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.125
A = 0.1963
S = 0.010 ft/ft

Q = 0.56 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.125
S = 0.010 ft/ft

V = 2.86 fps

Sewer Demand Calculations

Average daily flow

Number of Units:	6
Average day demand per dwelling unit:	200
Average day demand:	**6 x 200 = 1,200 gpd**

Total average daily flow: **1,200 gpd = 0.001857 cfs**

Peak daily flow

0.001857 cfs x 4.5 = 0.00836 cfs or 3.75 gpm

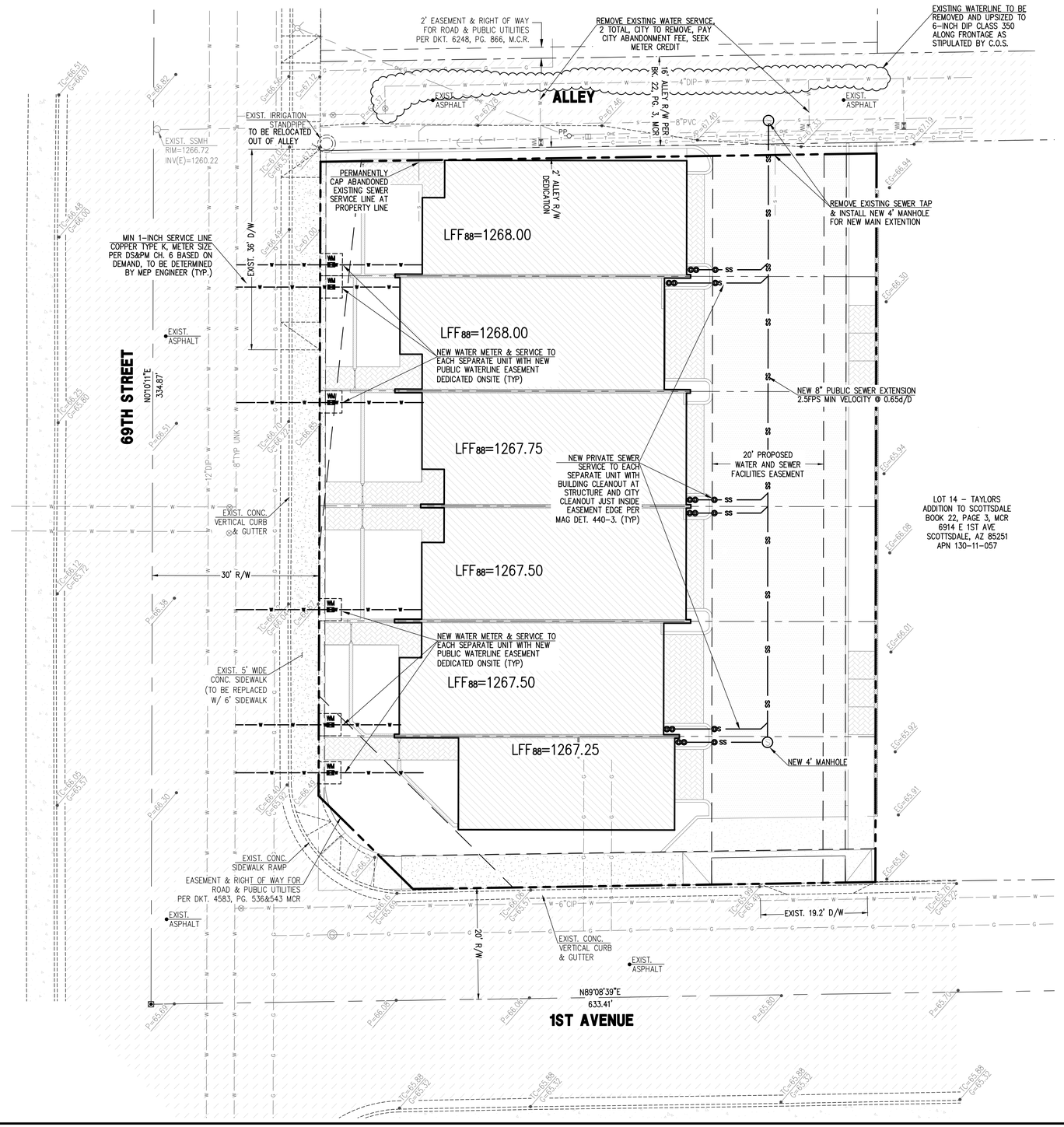
6" service lines are connected to a 6" sewer line that is tapped to the existing 8" public sewer main.

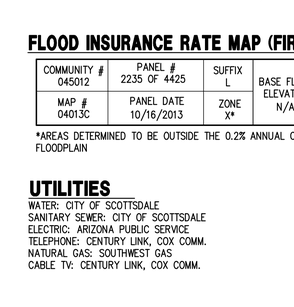
Capacity of 6" sewer line is **0.56** cfs > Peak Demand of **0.00836 cfs**

APPENDIX A-4

Private Water and Sanitary Sewer Layout

PRELIMINARY WATER & SEWER PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA





VICINITY MAP
NTS

LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
- CALCULATED POINT
- PROPERTY LINE
- EASEMENT LINE
- MONUMENT LINE
- SIGN
- LIGHT POLE
- WM WATER METER
- WATER VALVE
- FIRE HYDRANT
- CTV CABLE TV RISER
- WATER METER BOX
- SEWER MANHOLE
- TELEPHONE PEDESTAL
- T CATV, PHONE
- S SEWER LINE
- W WATER LINE
- E ELECTRIC LINE
- C COMMUNICATIONS LINE
- G GAS LINE
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION

ABBREVIATIONS

ARV	AIR RELEASE VALVE
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
℄	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER

SITE DATA

APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 13,150 S.F. (0.302 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER

LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT

SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS

THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

BENCHMARK

BRASS CAP IN HANDHOLE AT THE INTERSECTION OF INDIAN SCHOOL AND SCOTTSDALE ROAD HAVING AN ELEVATION OF 1260.34 CITY OF SCOTTSDALE DATUM, NAVD 88

LEGAL DESCRIPTION

LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

FLOOD INSURANCE RATE MAP (FIRM) DATA

COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES

WATER: CITY OF SCOTTSDALE
SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

SCALE 1" = 10'

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

DATE: 01/25/19
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
JOB: 1805133
VERSION: 1.1
PLOT DATE: 01/25/19
REVISIONS: DATE:

PRELIMINARY WATER & SEWER PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

P-WS
1 OF 1

APPENDIX A-5

City of Scottsdale Water and Sewer Map

17-44

16-43

16-45

15-44

PROJECT SITE

Detail A
Detail B
Detail C
Detail D
Detail E
Detail H
Detail J
Detail O
Detail R
Detail U
Detail V
Detail W
Detail X

GENERAL NOTES:

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- Non-potable Water Valve
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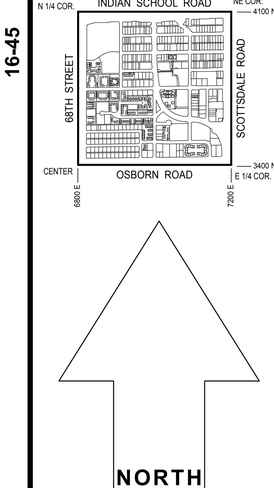
VICINITY MAP



WATER & SEWER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

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

10-JUN-18

STREET LIGHT MAY HAVE TO BE MOVED TO CREATE SAFE CONDITIONS EXITING THE ALLEYWAY.

EXISTING STAND PIPE TO BE RELOCATED OUT OF ALLEY

M.H.

ALLEY ENTRANCE MUST MEET COS STANDARD DETAIL 2250. PORTION OF THE SIDEWALK OUTSIDE OF RIGHT OF WAY WILL REQUIRE A PUBLIC NON-MOTORIZED ACCESS EASEMENT.

COMMERCIAL ZONED PROPERTY ACROSS STREET

69th STREET

APN 130-11-053A
C-2

EXISTING WATER VALVE

EDGE OF EXISTING ALLEY PAVING

PER SRC SECTION 47-80 ELECTRIC FACILITIES SHALL BE INSTALLED UNDERGROUND. POWER POLES ALONG THE ALLEY FRONTAGE/PROPERTY LINE SHALL BE PLACED UNDERGROUND

ALLEY

16' - 0"

EXISTING WATER METER

10' - 0" T.E.

S89° 06' 12"W
100.00'

EXISTING WATER METER. ALL WATER METERS NOT USED AS A RESULT OF THIS PLAT SHALL BE IDENTIFIED BY ASSET NUMBER AND NOTED TO BE REMOVED BY COS WATER RESOURCES

Meters

Description	Data
Premise Code	20039006
Status	Linked To UB
Asset ID	309427

Meters

Description	Data
Premise Code	20023974
Status	Linked To UB
Asset ID	309594

EXISTING G STUB

6' - 0"

3' - 6 1/2" TYP.

YARD

UNIT 6
1 BEDROOM

PLAT 6

UNIT 5
2 BEDROOMS

PLAT 5

30' - 0"
1/2 R.W.

PROPOSED 19'-0" BLDG SETBACK

UNIT 4
2 BEDROOMS

PLAT 4

N 0° 00' 00" E
116.00'

UNIT 3
2 BEDROOMS

PLAT 3

EXISTING GAS METER

EXISTING GAS STUB

APN 130-11-057
C-2

S 0° 00' 00" W
133.00'

16' - 8"

20' - 2"

20' - 2"

20' - 2"

UNIT 2
2 BEDROOMS

PLAT 2

5' - 0" B.S.L.

16' - 8"

UNIT 1
1 BEDROOM

PLAT 1

PUBLIC NON-MOTORIZED ACCESS EASEMENT IS REQUIRED FOR SIDEWALK OUTSIDE OF RIGHT OF WAY

N45° 00' 00"W
23.67'

EXISTING SIDEWALK TO BE REPLACED

10' - 0" T.E.

6' - 0"

S89° 06' 12"W
83.26'

BLDG. SETBACK

15' - 0" PROPOSED

NEW DRIVEWAY IS TO MEET COS STANDARD DETAIL 2250, 2256

1/2 R.W.
20' - 0"

30' - 0"

ADA RAMP MUST MEET CURRENT ADA COMPLIANCE

D/DMU-2 DOWNTOWN MULTIPLE USE PROPERTY ACROSS STREET

1ST AVENUE

SHOW/CALL OUT/NOTE ON THE SITE PLAN TO BE APPROVED WITH THIS CASE THE FOLLOWING;
ALL EXISTING WATER AND SEWER MAINS ADJACENT TO THE SITE WITH SIZE.
ALL EXISTING WATER/SEWER MAINS TO BE CONSTRUCTED WITH THE IMPROVEMENT PLANS.
SHOW THE LOCATION OF THE WATER METERS FOR EACH LOT.
LOCATION OF THE SEWER SERVICES FOR EACH LOT.
CALL OUT PROPOSED WATER AND SEWER FACILITIES (WSF) EASEMENTS TO BE DEDICATED WITH THIS PLAT.
CALL OUT OR NOTE ON THE SITE PLAN THE MILL AND REPAVE OF 69TH STREET, 1ST AVENUE, AND THE ALLEYWAY.
SHOW THE DRIVEWAY SITE TRIANGLES PER DSPM SECTION 5-3.123 and FIGURE 5-3.26, DEDICATION MAY BE REQUIRED.

5 0 8 16

PROJECT DATA

BUILDING AND SITE BASICS:

PROJECT ADDRESS: 6902 E 1ST AVENUE
SCOTTSDALE, AZ, 85251

ASSESSORS PARCEL #: 130-11-055
130-11-056

NET LOT AREA: 13,150 S.F., 0.302 ACRES
GROSS LOT AREA: 20,926 S.F., 0.480 ACRES

BUILDING AREA (FOOTPRINT): 5,178 S.F.
TOTAL GROSS SQ. FT.: 12,310 S.F.

No. OF DWELLING UNITS
2 BEDROOM 4
1 BEDROOM 2
TOTAL 6

SITE INFORMATION:

ZONING: C-2 DO (DOWNTOWN)
FLOOR AREA RATIO: MAX 1.30
12,310 / 13,150 = .91

PROPOSED SETBACKS:
FRONT 19'
NORTH SIDE 0'
SOUTH SIDE 16'
REAR 5'

MAX DENSITY: 23 DWELLING UNITS / ACRE
23 x 0.480 = 11.04 UNITS MAX
PROPOSED DENSITY: 6 UNITS

OPEN SPACE
PRIVATE OPEN SPACE
REQUIRED: 12,310 x 0.10 = 1,231SF
PROVIDED: 4,491 SF
FRONTAGE OPEN SPACE
PROVIDED: 1,127 SF

BUILDING CODE INFORMATION:

BUILDING OCCUPANCY: R-1 (RESIDENTIAL)
CONSTRUCTION TYPE: V-B

STORIES: 3
BUILDING HEIGHT:
ALLOWED: 66'
PROPOSED: 42'

MAXIMUM BUILDING
AREA (TABULAR): 7,000 S.F. (R-2)
AREA MODIFICATIONS: SPRINKLER INCREASE 200%
ALLOWABLE BLDG AREA: 14,000 SF
BUILDING AREA: 11,867 SF

AREA SEPARATIONS
REQUIRED: 2 HR (TABLE 706.4)

FIRE SPRINKLERS REQUIRED: YES
FIRE SPRINKLERS PROVIDED: YES

FIRE ALARM REQUIRED: NO
FIRE ALARM PROVIDED: NO

PARKING REQUIRED: 1.7 SPACES PER UNIT=10.2
PARKING PROVIDED: 10 STANDARD SPACES
*NOTE: NO ACCESSIBLE OR BICYCLE PARKING REQUIRED OR PROVIDED

PROJECT NARRATIVE

PROJECT CONSISTS OF A NEW BUILDING WITH SIX (6) SINGLE FAMILY ATTACHED UNITS. EACH UNIT CONSISTS OF A THREE STORY RESIDENTIAL UNIT WITH GARAGE ON THE GROUND FLOOR.

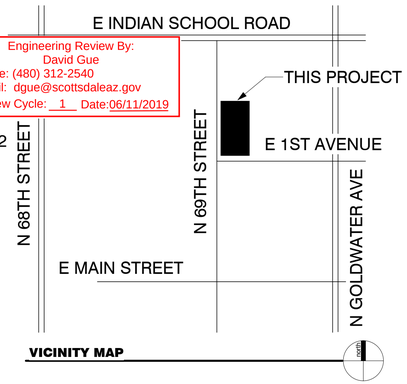
KEYNOTES

1 PROPERTY LINE
2 EXISTING SIGHT LINE VIEW EASEMENT
3 EXISTING UTILITY POLE
4 EXISTING SIDEWALK
5 NEW 6' WIDE CONCRETE SIDEWALK
6 DEMO EXISTING DRIVEWAY, CURB, GUTTER, AND SIDEWALK IN THIS AREA. REPLACE WITH NEW CURB, GUTTER, AND SIDEWALK TO MATCH ADJACENT.
7 DEMO CURB, GUTTER, AND SIDEWALK IN THIS AREA. REPLACE WITH NEW CURB, GUTTER, AND SIDEWALK INCORPORATING ADA COMPLIANT RAMP
8 DEMO EXISTING DRIVEWAY, CURB AND GUTTER AT THIS LOCATION. REPLACE WITH NEW DRIVE ENTRY.
9 EXISTING STREET LAMP
10 NEW 6" CONCRETE CURB
11 8" CMU COURTYARD WALL - SEE ELEVATIONS FOR FINISHES
12 PAVER DRIVEWAY APPROACH
13 10-FOOT ALLEY DEDICATION
14 NEW ASPHALT DRIVEWAY
15 PAVER WALKWAY
16 THIS AREA OF LANDSCAPING TO BE RESERVED FOR TRASH BINS. DO NOT PLACE VEGETATION THAT WILL INTERFERE WITH TRASH COLLECTION

SITE PLAN GENERAL NOTES

A. CONTRACTOR SHALL IMMEDIATELY INFORM THE ARCHITECT IN WRITING OF ANY DISCREPANCY BETWEEN THE SITE CONDITIONS AND THESE DOCUMENTS THAT WILL IMPACT COMPLIANCE WITH THESE DOCUMENTS.
B. FINISH FLOOR SHALL BE A MINIMUM OF 6" ABOVE ADJACENT GRADE U.O.N.
C. FINISH GRADE SHALL SLOPE 5% FOR A DISTANCE OF 10' TO AN APPROVED WATER DISPOSAL AREA. U.O.N.
D. FIRE TRUCK TURNING RADIUS SHALL COMPLY WITH FIRE ORDINANCE 4045, 503.2.1 AND PROVIDE UNOBSTRUCTED VERTICAL CLEARANCE OF NOT LESS THAN 13 FEET 6 INCHES.
E. INTERNAL DRIVE AISLE TO SUPPORT 83,000 LBS OF GROSS VEHICLE WEIGHT (PER SECTION 2-1.802 OF DSPM)
F. NO PROTECTED TREES ON SITE.
G. EXISTING OVERHEAD UTILITIES ADJACENT TO SITE TO BE RELOCATED UNDERGROUND PER SECTION 47-10 SRC.
H. PROVIDE MINIMUM 6" DIAMETER TAP FOR SEWER.

Engineering Review By:
David Gue
Phone: (480) 312-2540
e-mail: dgue@scottsdaleaz.gov
Review Cycle: 1 Date:06/11/2019



VICINITY MAP

SYNECTIC DESIGN
1111 West University Drive, Suite 104, Tempe, AZ 85281
t:480.948.9766
f:480.948.9211

FLEETWOOD 6 TOWNHOMES
SINGLE FAMILY/ ATTACHED DEVELOPMENT
6902-6908 EAST 1ST AVE
SCOTTSDALE, ARIZONA 85251

REGISTERED ARCHITECT
CERTIFICATE
35529
LANCE D. BAKER
Date Signed 05/06/19
ARIZONA, U.S.A.
EXP. 12/31/2021

REVISIONS

Phase:	DRB
Drawn By:	NYK
Reviewd By:	LDB
SDI Project No:	3876
Date:	05/02/2019
Sheet:	DR0.1

ARCHITECTURAL SITE PLAN

FINAL WATER AND SEWER BASIS OF DESIGN REPORT

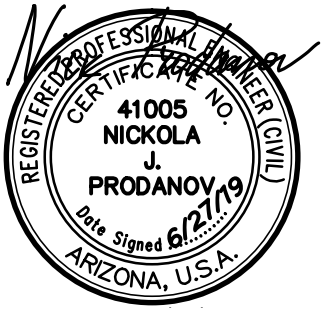
FLEETWOOD 6 TOWNHOMES
NEC 1st Ave. & 69th St.

LDG PROJECT #1805133

Prepared for:
Mr. Lance D. Baker, AIA
Synectic Design Incorporated
1111 W. University Drive, Suite 104
Tempe, Arizona 85281

Submitted to:
City of Scottsdale
Stormwater Management
7447 E Indian School Road, Suite #125
Scottsdale, Arizona 85251

Prepared by:
Land Development Group, LLC
8808 N Central Ave., Ste 288
Phoenix, Arizona 85020
Contact: Nick Prodanov, PE, PMP
P: 602 889 1984



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

ACCEPTED FOR:

City of Scottsdale
Water Resources Department
9379 E. San Salvador
Scottsdale, Arizona

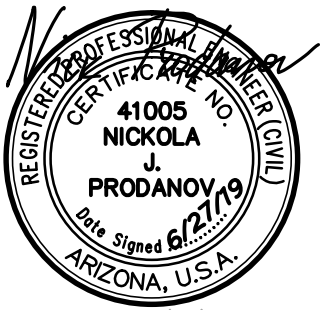
BY: dgue

FOR: Levi Dillion

DATE: 08/30/2019

TABLE OF CONTENTS

APPENDICES



July 30, 2018
Rev. 1 December 10, 2018
Rev. 2 June 26, 2019

1. INTRODUCTION

This Water and Sewer Basis of design report and related design have been developed in accordance with the current City of Scottsdale Design Standards & Policies Manual. It provides engineering analysis and assessment of the required water and sanitary sewer services for the proposed multifamily development.

The site consists of two developed parcels, with a total area of 0.480 acres, located at 6902 & 6908 E 1st Ave, Scottsdale, AZ 85251 (APNs 130-11-055 & 130-11-056). The property is bounded by 69th Street on the west, 1st Avenue on the south, an alley on the north and a vacant lot on the east side. The parcels are located within the Scottsdale Q.S. 16-44 and are being a part of previously approved plat – Taylors Addition, recorded in book 22 of maps, page 3, MCR, being a portion of the NE ¼ of the NW ¼ of the NE ¼ Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
Refer to Appendix A-1 – Vicinity Map.

The proposed multifamily project will consist of six townhomes (three stories) with common walls and shared driveway access on the east side. New site improvements include new site walls for privacy, paving, and landscape.

Preliminary and final plats are being prepared as a part of the project development, subject to the City of Scottsdale review and approval. The plat shows location and area of each building and common elements in the community.

The site is located within the City of Scottsdale water and sewer service area. There are existing 12" DIP and 8” water mains that run in 69th Street. Another 6” CIP runs in 1st Avenue and it is connected to the 8” main in 69th Street. There is also an existing 4” DIP in the Alley running along the north property line. New services for the project are proposed to be connected to the 8” main in 69th Street.
There is an existing 8” PVC sanitary sewer main in the Alley. New sanitary sewer service and new manhole are proposed to connect to this 8” main.
Existing sewer service taps located in the Alley are noted to be permanently capped at the property line and abandoned. Water meters and services to be removed by City staff upon payment of abandonment fees.

2. DOMESTIC WATER AND FIRE SUPPRESSION SYSTEM

Each residence of the Fleetwood 6 Townhomes will be serviced by a separate domestic water service tapped off the existing 8” water main in 69th Street. Fire sprinklers for each residence will be fed off the domestic water service. All existing water services not used for the site will be required to be removed per the City of Scottsdale requirements.

Existing 4” water line in the alley along the northern frontage of the project will be replaced with a new 6” water line.

The fire hydrant coverage for this site is provided by an existing fire hydrant located at the southeast property corner of 69th Street and 1st Avenue. This hydrant is approximately 238-feet from the most remote portion of the buildings. Fire hydrant coverage around the building is in accordance with the City of Scottsdale Design Standards & Polices Manual requirements. Water demand calculations are provided in Appendix A-2. Hydrant fire flow test is provided in Appendix A-6.

3. SANITARY SEWER SYSTEM

New 8" sewer main is proposed to run in the common driveway serving the community. The 8” line will discharge into the existing 8” public sewer main in the Alley along the north property line. New manhole will be required to be installed at the point of the connection to the existing sewer main. Each townhome residence is serviced by a separate 4" service line. The sewer services are sized per IPC based on 256 anticipated plumbing fixture units from the site. Minimum slope of 2% will be used for the 4" services. Minimum slope of 1% will be used for the 8" line.

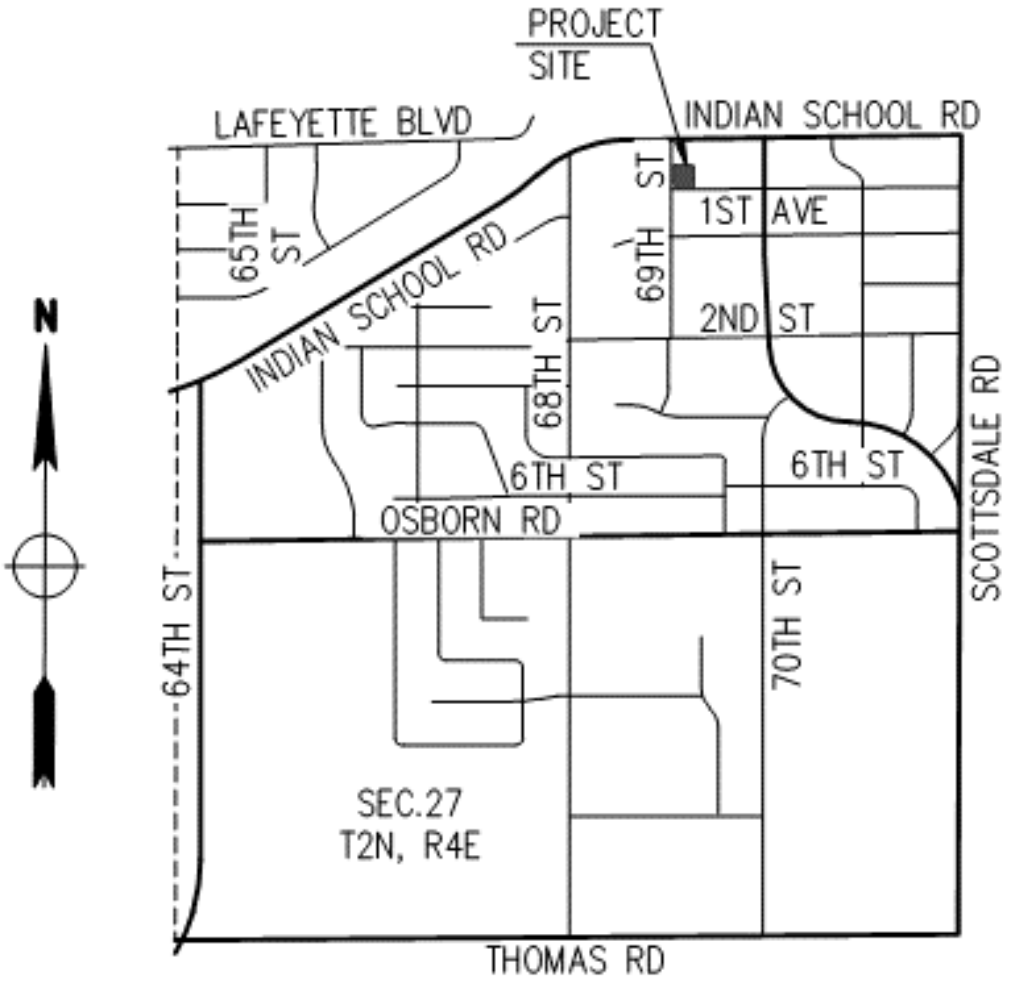
We have calculated that the peak daily discharge from this development will be 3.75 gpm. In our opinion the portion of 8” public sewer line that this site discharges to has an adequate capacity.

We have also estimated the sewer discharge from the site using The City of Scottsdale Design Standards & Polices Manual. The average daily flow was estimated at 0. 001857 cfs. The peak discharge was calculated by increasing the average daily flow by a factor of 4.5, which is a total of 0.00836 cfs. Using Manning’s Equation, we calculated that the proposed 8-inch sewer line at a minimum of 1.0% have a velocity of 3.81 fps flowing at depth to diameter ration of d/D=0.65 with a capacity of 0.91 cfs. Refer to Sanitary Sewer System Design Calculations in Appendix A-4.

4. REFERENCES

- City of Scottsdale Design Standards & Policies Manual.
- 2015 International Fire Code, Appendix B, Fire Flow Requirements for Buildings.

APPENDIX A-1
Vicinity Map



APPENDIX A-2
Water System Design Calculations

RESIDENTIAL

Number of units:	6
Average day demand per dwelling unit:	185.3
Average day demand:	**6 x 185.3 = 1,112 gpd (0.772 gpm)**
Maximum daily peaking factor:	2.0
Maximum daily demand per dwelling unit:	370.60 gpd
Maximum day demand:	**6 x 370.60 = 2,224 gpd (1.544 gpm)**
Peak hour demand factor:	4.5
Peak hour demand per dwelling unit:	833.85 gpd
Peak hour demand:	**6 x 833.85 = 5,003 gpd (3.474 gpm)**

FIRE FLOW DEMAND

Building Area = 13,418 sf, Construction Type = V-B, Required Fire Flow = 3,000 gpm

Per 2015 International Fire Code, Appendix B, Section B105.2, up to a 75% reduction in the fire flow can be approved if an approved automatic sprinkler system is installed. The resulting fire flow shall not be less than the required minimum of 1,500 gpm. We are using a fire flow of 1,500 gpm since the 75% reduction would result in a fire flow less than the minimum required fire flow.

Fire hydrant flow test shall be submitted with the fire sprinkler design.

TOTAL SITE DEMAND

Fire flow demand (see demand calculation above):	1,500 gpm
Peak hour demand + Fire Flow Demand	**3.47 + 1,500 = 1,504 gpm**

APPENDIX A-3
Sanitary Sewer System Design Calculations

Manning's Formula

8" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.16667
A = 0.3490
S = 0.0052 ft/ft

Q = 0.86 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.16667
S = 0.0052 ft/ft

V = 2.45 fps

Manning's Formula

6" Pipe Flowing Full

Capacity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2} * A$$

n = 0.013
R = 0.125
A = 0.1963
S = 0.010 ft/ft

Q = 0.56 cfs

Velocity

$$Q = \frac{1.49}{n} * R^{2/3} * S^{1/2}$$

n = 0.013
R = 0.125
S = 0.010 ft/ft

V = 2.86 fps

Sewer Demand Calculations

Average daily flow

Number of Units:	6
Average day demand per dwelling unit:	200
Average day demand:	**6 x 200 = 1,200 gpd**

Total average daily flow: **1,200 gpd = 0.001857 cfs**

Peak daily flow

0.001857 cfs x 4.5 = 0.00836 cfs or 3.75 gpm

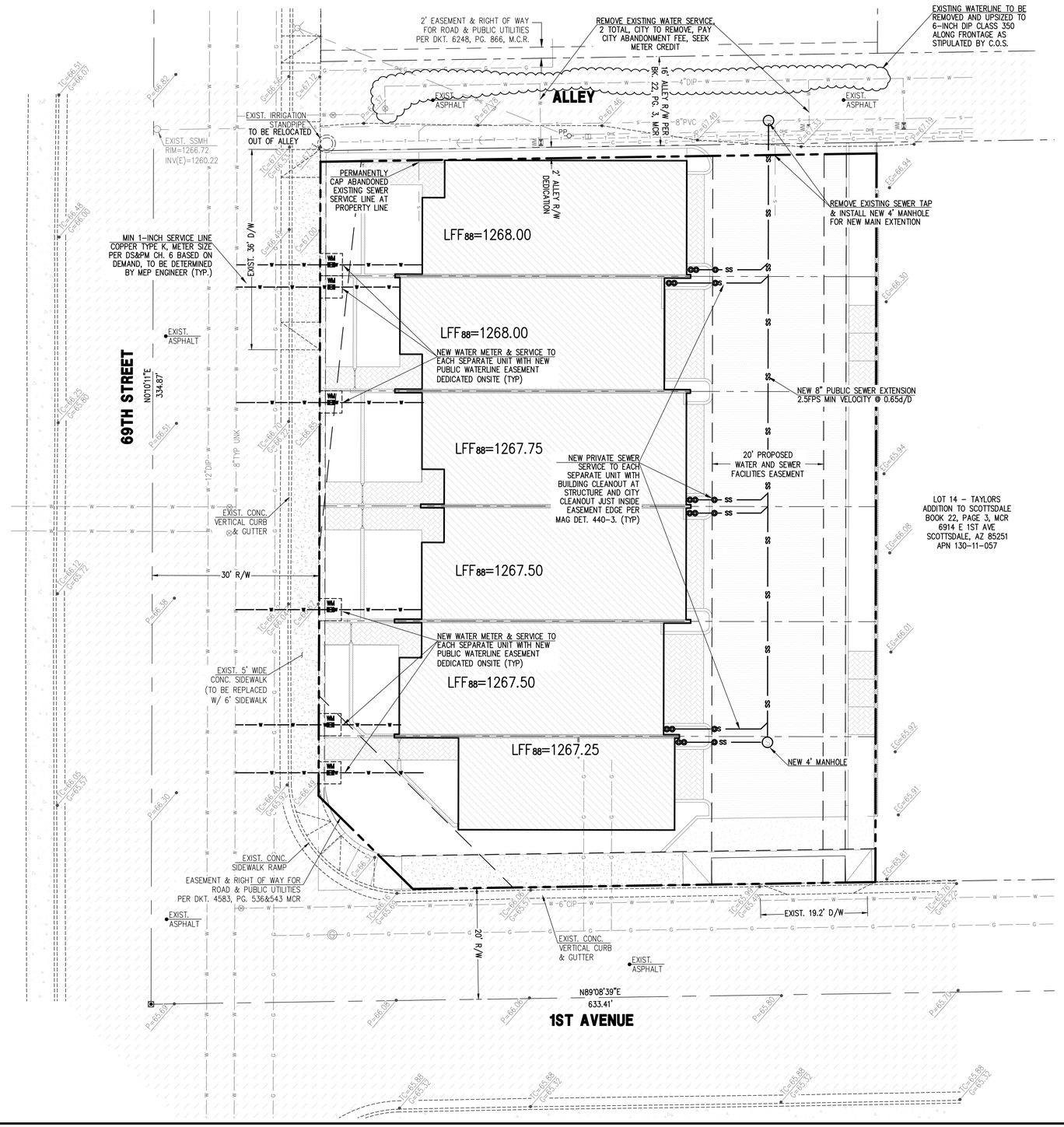
6" service lines are connected to a 6" sewer line that is tapped to the existing 8" public sewer main.

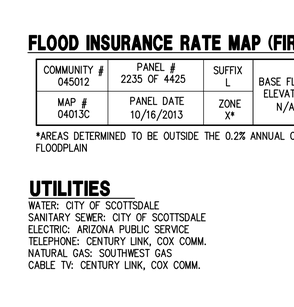
Capacity of 6" sewer line is **0.56** cfs > Peak Demand of **0.00836 cfs**

APPENDIX A-4

Private Water and Sanitary Sewer Layout

PRELIMINARY WATER & SEWER PLAN
"FLEETWOOD 6 TOWNHOMES"
6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
LOCATED IN A PORTION OF THE NE 1/4 OF THE NW 1/4 OF THE NE 1/4 OF SECTION 27, T.2N, R.4E OF THE GILA & SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA





VICINITY MAP
NTS

LEGEND

- SECTION CORNER
- 1/4 QUARTER
- SCRIBED "X" IN CONCRETE
- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- FOUND 1" IRON PIPE
- SET 1/2" REBAR & TAG OR AS NOTED
- CALCULATED POINT
- PROPERTY LINE
- EASEMENT LINE
- MONUMENT LINE
- SIGN
- LIGHT POLE
- WM WATER METER
- WATER VALVE
- FIRE HYDRANT
- CTV CABLE TV RISER
- WATER METER BOX
- SEWER MANHOLE
- TELEPHONE PEDESTAL
- T CATV, PHONE
- S SEWER LINE
- W WATER LINE
- E ELECTRIC LINE
- C COMMUNICATIONS LINE
- G GAS LINE
- 1421 EXISTING CONTOUR
- EXIST. DRAINAGE FLOW
- x21.12 EXIST. SPOT ELEVATION

ABBREVIATIONS

ARV	AIR RELEASE VALVE
BC	BACK OF CURB
BSL	BUILDING SETBACK LINE
C11	CURVE LABEL
C.B.	CATCH BASIN
℄	CENTERLINE
COS	CITY OF SCOTTSDALE
DE	DRAINAGE EASEMENT
DG	DECOMPOSED GRANITE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ESMT	EASEMENT
EX, EXIST.	EXISTING
FCDMC	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FG	FINISH GRADE
℄	FLOW LINE
FND	FOUND
G	GUTTER, GAS
INV	INVERT
L11	LINE LABEL
(M)	MEASURED
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MCR	MARICOPA COUNTY RECORDER
MH	MANHOLE
P, PVMT	PAVEMENT
PUE	PUBLIC UTILITY EASEMENT
(R), REC.	RECORDED
R	RADIUS
R/W	RIGHT OF WAY
SD	STORM DRAIN
T	TANGENT, TELEPHONE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
V.G.	VALLEY GUTTER
W	WEST, WATERLINE
WDO	WALL DRAINAGE OPENING
WM	WATER METER

SITE DATA

APN: 130-11-055 & 130-11-056
ADDRESS: 6902 & 6908 E 1ST AVE., SCOTTSDALE, AZ 85251
ZONING: C-2
NET AREA: 13,150 S.F. (0.302 AC.)
GROSS AREA: 20,926 S.F. (0.480 AC.)
QS #: 16-44

CIVIL ENGINEER

LAND DEVELOPMENT GROUP, LLC
8808 N CENTRAL AVE, SUITE 288
PHOENIX, AZ 85020
CONTACT: NICK PRODANOV, PE
P: 602-889-1984

ARCHITECT

SYNECTIC DESIGN, INC.
1111 W UNIVERSITY DRIVE, SUITE 104
TEMPE, AZ 85281
P: 480-948-9766
F: 480-948-9211
CONTACT: LANCE BAKER

OWNER

BLUEPRINT 6902, LLC,
P.O. BOX 16438,
SEATTLE, WA 98116

BASIS OF BEARINGS

THE MONUMENT LINE OF INDIAN SCHOOL ROAD, ALSO BEING THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, USING A BEARING OF NORTH 89 DEGREES 08 MINUTES 22 SECONDS EAST, PER THE RECORD OF SURVEY, RECORDED N BOOK 1176, PAGE 41, M.C.R.

BENCHMARK

BRASS CAP IN HANDHOLE AT THE INTERSECTION OF INDIAN SCHOOL AND SCOTTSDALE ROAD HAVING AN ELEVATION OF 1260.34 CITY OF SCOTTSDALE DATUM, NAVD 88

LEGAL DESCRIPTION

LOTS TWELVE (12) AND THIRTEEN (13), BLOCK ONE (1), TAYLORS ADDITION TO SCOTTSDALE, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE MARICOPA COUNTY RECORDER IN BOOK 22 OF MAPS, PAGE 3.

FLOOD INSURANCE RATE MAP (FIRM) DATA

COMMUNITY # 045012	PANEL # 2235 OF 4425	SUFFIX L	BASE FLOOD ELEVATION N/A
MAP # 04013C	PANEL DATE 10/16/2013	ZONE X*	

*AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

UTILITIES

WATER: CITY OF SCOTTSDALE
SANITARY SEWER: CITY OF SCOTTSDALE
ELECTRIC: ARIZONA PUBLIC SERVICE
TELEPHONE: CENTURY LINK, COX COMM.
NATURAL GAS: SOUTHWEST GAS
CABLE TV: CENTURY LINK, COX COMM.

SCALE 1" = 10'

CALL TWO WORKING DAYS BEFORE YOU DIG (602) 263 1100 BLUE STAKE CENTER

DATE: 01/25/19
SCALE: 1"=10'
DESIGNED BY: NP
DRAWN BY: DW
CHECKED BY: JF
JOB: 1805133
VERSION: 1.1
PLOT DATE: 01/25/19
REVISIONS: DATE:

PRELIMINARY WATER & SEWER PLAN

FLEETWOOD 6 TOWNHOMES
6902 & 6908 E 1ST AVE
SCOTTSDALE, AZ 85251

P 602 889 1984 | F 602 445 9482
8808 N CENTRAL AVE., SUITE 288
PHOENIX, AZ 85020
PHOENIX @ LDGENG.COM
Land DEVELOPMENT GROUP

PRELIMINARY NOT FOR CONSTRUCTION
Expires 06/30/2019

P-WS
1 OF 1

APPENDIX A-5

City of Scottsdale Water and Sewer Map

17-44

16-43

16-45

15-44

PROJECT SITE

Detail A
Detail B
Detail C
Detail D
Detail E
Detail H
Detail J
Detail O
Detail R
Detail U
Detail V
Detail W
Detail X

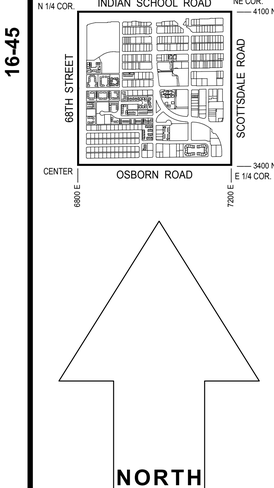
GENERAL NOTES:

- 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:

- Water Valve
- Non-potable Water Valve
- Fire Hydrant
- Water Blowoff
- Water Main Reducer
- Water Sample Station
- Water Air Release Valve
- Non-potable Water Air Release Valve
- Water Pressure Reducing Valve
- Water Vault
- Water Manhole
- Non-Potable Water Manhole
- Water Pump
- Water Main
- Non-Potable Water Main
- Fire Line
- Water Service
- Non-Scottsdale Water Main
- Sewer Manhole
- Sewer Cleanout
- Sewer Lift Station
- Sewer Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Non-Scottsdale Sewer Main
- Sewer Service

VICINITY MAP



WATER & SEWER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

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

10-JUN-18