

DRAINAGE LETTER REPORT

for

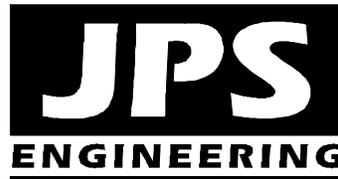
PARK VISTA ADDITION NO. 9 ANNEXATION

Prepared for:

Hammers Construction Inc.
1411 Woolsey Heights
Colorado Springs, CO 80915

December 10, 2020

Prepared by:



19 E. Willamette Ave.
Colorado Springs, CO 80903
(719)-477-9429
www.jpsengr.com

JPS Project No. 112001

Signature Page

Park Vista Addition No. 9 Annexation

Engineer's Statement

This report and plan for the drainage design of Park Vista Addition No. 9 Annexation was prepared by me (or under my direct supervision) and is correct to the best of my knowledge and belief. Said report and plan has been prepared in accordance with the City of Colorado Springs Drainage Criteria Manual and is in conformity with the master plan of the drainage basin. I understand that the City of Colorado Springs does not and will not assume liability for drainage facilities designed by others. I accept responsibility for liability caused by negligent acts, errors or omissions on my part in preparing this report.

SIGNATURE (Affix Seal): _____
Colorado P.E. No. _____ Date _____

Developer's Statement

Hammers Construction hereby certifies that the drainage facilities for Park Vista Addition No. 9 Annexation shall be constructed according to the design presented in this report. I understand that the City of Colorado Springs does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that are submitted to the City of Colorado Springs pursuant to section 7.7.906 of the City Code; and cannot, on behalf of Park Vista Addition No. 9 Annexation, guarantee that final drainage design review will absolve Hammers Construction and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design.

Hammers Construction
Name of Developer

Authorized Signature Date

Printed Name

Title

1411 Woolsey Heights, Colorado Springs, CO 80915
Address

City of Colorado Springs Statement:

Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

For City Engineer Date

Conditions:

I. INTRODUCTION

Lighthouse Baptist Church (Owner) is processing an annexation plat for the proposed “Park Vista Addition No. 9 Annexation” to annex seven (7) lots adjoining their existing church site into the City of Colorado Springs. The subject properties are described as Lots 1-7, Block 12, Park Vista Addition,” and these lots are currently located within an enclave of El Paso County surrounded by City of Colorado Springs limits. The properties are Zoned RM-30 (Residential Multi-Dwelling District). The seven proposed annexation lots are currently vacant, undeveloped properties with the exception of Lot 3, which is developed with an existing residential building.

The existing Lighthouse Baptist Church property (EPC Parcel No. 63261-02-001) is described as Lot 1, Block 1, Northridge Filing No. 2, which adjoins the east boundary of the planned annexation properties. Siferd Boulevard is a paved public street adjoining the west boundary of the annexation properties, and Hopeful Drive is a paved public street adjoining the north side of the annexation lots. The south boundary of the annexation area (Lot 7) adjoins a developed single-family residential property described as Lot 8-9, Block 12, Park Vista Addition.

This report is intended to meet the requirements of a Drainage Letter in support of the annexation submittal for the project. The proposed annexation action does not include any current plans for development. Any future development plans will require processing of a site development plan with an associated drainage report.

II. EXISTING / PROPOSED DRAINAGE CONDITIONS

Drainage planning for this general area was previously addressed in the “Drainage Report, A Restudy of a Portion of the Templeton Gap Drainage Basin Involving the Park Vista Estates Subdivision” by United Wester Engineers dated July, 1974. The previous report does not include any specific drainage recommendations impacting the proposed annexation area.

With the exception of the adjoining Lighthouse Baptist Church site, the annexation area is not impacted by any significant off-site drainage flows. The existing site generally slopes downward to the southwest, with average grades of 2-5 percent. According to the NRCS Web Soil Survey, the on-site soils are classified by SCS as “Nunn clay loam” soils. These soils generally have a slow infiltration rate and are classified as hydrologic soils group C.

Surface runoff from this site drains southwesterly into an existing roadside ditch along the east side of Siferd Boulevard, which flows south to the existing Templeton Gap drainage channel. As shown in the attached Drainage Plans (Sheets EX1 and D1), the off-site drainage area within the adjoining church property to the east has been delineated as Basin OA1 (1.77 acres). The proposed annexation area has been delineated as Basin A (1.16 acres), which sheet flows southwesterly into the roadside ditch along Siferd Boulevard. Existing and developed drainage from Basins OA1 and A flows southwesterly to Design Point #1, with peak flows calculated as $Q_5 = 3.9$ cfs and $Q_{100} = 10.0$ cfs.

There are no site improvements proposed as a part of this annexation submittal, so there will not be any developed drainage impact from the proposed annexation.

According to the annexation plat, the total area of the proposed annexation is 1.3 acres. This annexation submittal does not include any proposed site improvements or disturbed areas, so no stormwater detention or water quality facilities are required based on the City of Colorado Springs Drainage Criteria Manual Volumes 1 and 2 (2014).

III. GENERAL DRAINAGE RECOMMENDATIONS

The developed drainage plan for the site is to provide and maintain positive drainage away from structures and follow historic drainage patterns. JPS Engineering recommends that positive drainage be established and maintained away from all structures within the site, in conformance with applicable building codes and geotechnical engineering recommendations.

In general, we recommend a minimum of 6 inches clearance from the top of concrete foundation walls to adjacent finished site grades. Positive drainage slopes should be maintained away from all structures, with a minimum recommended slope of 5 percent for the first 10 feet away from buildings in landscaped areas, a minimum recommended slope of 2 percent for the first 10 feet away from buildings in paved areas, and a minimum slope of 1 percent for paved areas beyond buildings.

Proper erosion control best management practices should be implemented and maintained in conjunction with any improvements or disturbance to the site, and vegetated buffer strips should be maintained where feasible along the downstream perimeter of the property to minimize off-site transport of sediment.

IV. FLOODPLAIN IMPACTS

This site is located beyond the limits of any 100-year floodplain as shown in the FEMA floodplain map for this area, FIRM Panel No. 08041C0538G, dated December 7, 2018.

V. DRAINAGE BASIN FEES

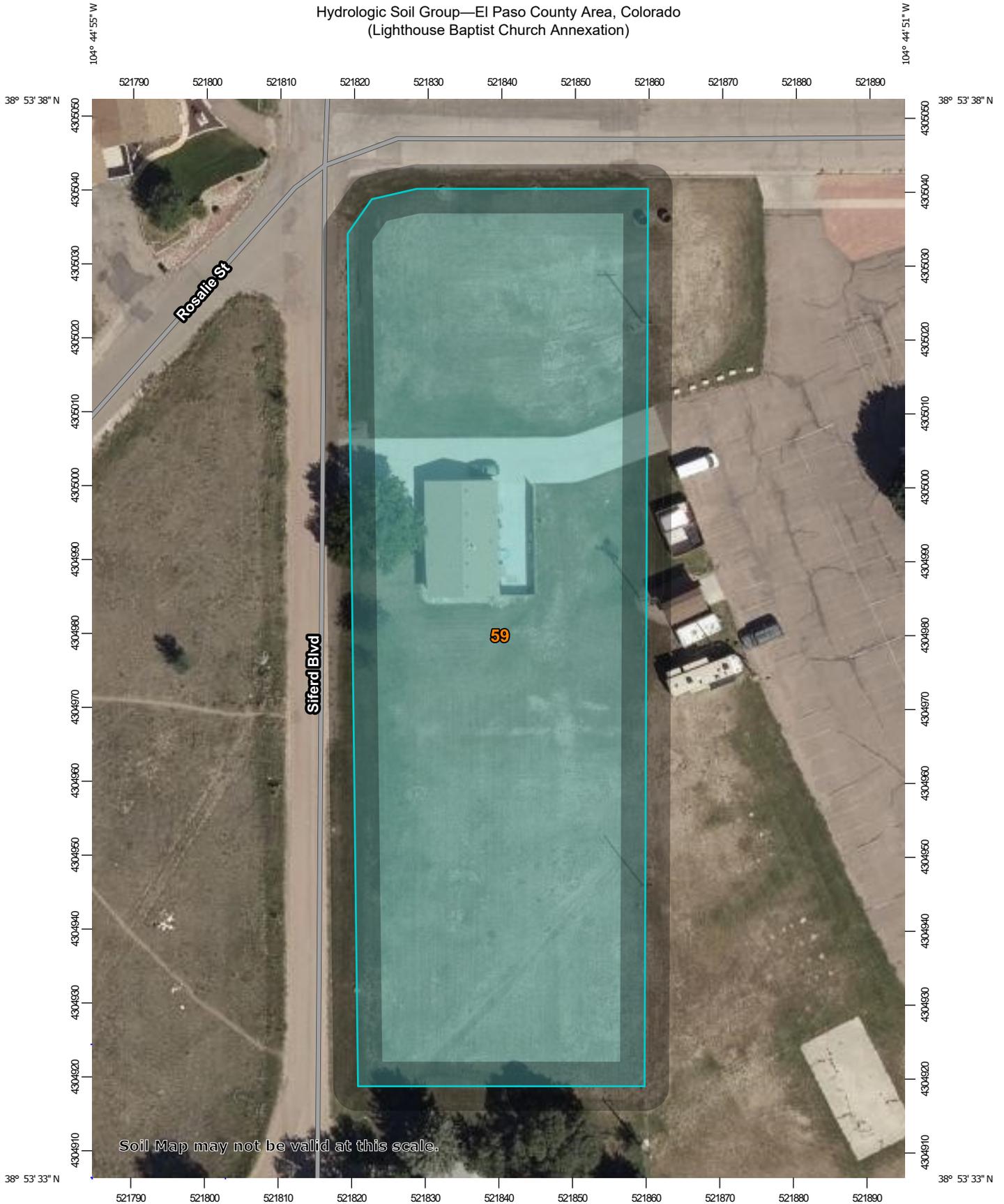
This property is located within the Templeton Gap Drainage Basin. No site development or drainage improvements are proposed as a part of the annexation. The annexation area consists of previously platted lots, so no drainage basin fees or bridge fees are applicable at this time.

VI. SUMMARY

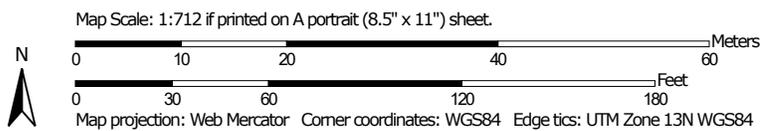
The drainage patterns associated with the proposed Park Vista Addition No. 9 Annexation will remain consistent with historic conditions and the established drainage plan for this area. The annexation does not include any proposed site development, so the annexation process will have no significant adverse drainage impact on the downstream and surrounding developments.

APPENDIX A
CALCULATIONS & FIGURES

Hydrologic Soil Group—El Paso County Area, Colorado
(Lighthouse Baptist Church Annexation)



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)	 C
 Area of Interest (AOI)	 C/D
Soils	 D
Soil Rating Polygons	 Not rated or not available
 A	Water Features
 A/D	 Streams and Canals
 B	Transportation
 B/D	 Rails
 C	 Interstate Highways
 C/D	 US Routes
 D	 Major Roads
 Not rated or not available	 Local Roads
Soil Rating Lines	Background
 A	 Aerial Photography
 A/D	
 B	
 B/D	
 C	
 C/D	
 D	
 Not rated or not available	
Soil Rating Points	
 A	
 A/D	
 B	
 B/D	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 18, Jun 5, 2020

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

Date(s) aerial images were photographed: Aug 19, 2018—Sep 23, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
59	Nunn clay loam, 0 to 3 percent slopes	C	1.2	100.0%
Totals for Area of Interest			1.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_r) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_r) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

PARK VISTA ADDITION NO. 9 ANNEXATION (LIGHTHOUSE BAPTIST CHURCH)
COMPOSITE RUNOFF COEFFICIENTS

EXISTING AND DEVELOPED CONDITIONS										
5-YEAR C VALUES										
BASIN	TOTAL AREA (AC)	SUB-AREA 1 DEVELOPMENT/ COVER (AC)	SUB-AREA 1 DEVELOPMENT/ COVER	C	AREA (AC)	SUB-AREA 2 DEVELOPMENT/ COVER	SUB-AREA 2 DEVELOPMENT/ COVER	C	(AC)	WEIGHTED C VALUE
OA1	1.77	1.77	CHURCH (NH BUSINESS)	0.53						0.530
A	1.16	0.17	RESIDENTIAL LOT	0.49	0.99	MEADOW		0.15		0.200
OA1.A	2.93									0.399
100-YEAR C VALUES										
BASIN	TOTAL AREA (AC)	SUB-AREA 1 DEVELOPMENT/ COVER (AC)	SUB-AREA 1 DEVELOPMENT/ COVER	C	AREA (AC)	SUB-AREA 2 DEVELOPMENT/ COVER	SUB-AREA 2 DEVELOPMENT/ COVER	C	(AC)	WEIGHTED C VALUE
OA1	1.77	1.77	CHURCH (NH BUSINESS)	0.68						0.680
A	1.16	0.17	RESIDENTIAL LOT	0.65	0.99	MEADOW		0.5		0.522
OA1.A	2.93									0.617
COMPOSITE IMPERVIOUS AREAS										
IMPERVIOUS AREAS										
BASIN	TOTAL AREA (AC)	SUB-AREA 1 DEVELOPMENT/ COVER (AC)	SUB-AREA 1 DEVELOPMENT/ COVER	PERCENT IMPERVIOUS	AREA (AC)	SUB-AREA 2 DEVELOPMENT/ COVER	SUB-AREA 2 DEVELOPMENT/ COVER	PERCENT IMPERVIOUS	(AC)	PERCENT IMPERVIOUS
OA1	1.77	1.77	CHURCH (NH BUSINESS)	70						70.000
A	1.16	0.17	RESIDENTIAL LOT	65	0.99	MEADOW		0		9.526
OA1.A	2.93									46.058

PARK VISTA ADDITION NO. 9 ANNEXATION (LIGHTHOUSE BAPTIST CHURCH)
RATIONAL METHOD

EXISTING FLOWS

BASIN	DESIGN POINT	AREA (AC)	C			Overland Flow			Channel flow				TOTAL		INTENSITY ⁽⁵⁾		PEAK FLOW		
			5-YEAR	100-YEAR	T _{CO} ⁽¹⁾	LENGTH (FT)	SLOPE (FT/FT)	T _{CO} ⁽¹⁾	CHANNEL LENGTH (FT)	CONVEYANCE COEFFICIENT C	SLOPE (FT/FT)	SCS ⁽²⁾ VELOCITY (FT/S)	T _T ⁽³⁾	T _C ⁽⁴⁾	T _C ⁽⁴⁾	5-YR (IN/HR)	100-YR (IN/HR)	Q5 ⁽⁶⁾ (CFS)	Q100 ⁽⁶⁾ (CFS)
					(MIN)			(MIN)					(MIN)	(MIN)	(MIN)				
OA1	OA1	1.77	0.530	0.680	100	0.02	8.3	110	15	0.045	3.18	0.6	8.9	8.9	4.31	7.24	4.04	8.71	
A	A	1.16	0.200	0.522	100	0.02	13.1	380	15	0.01	1.50	4.2	17.3	17.3	3.31	5.55	0.77	3.36	
OA1.A	1	2.93	0.399	0.617									17.3	17.3	3.31	5.55	3.87	10.04	

DEVELOPED FLOWS

BASIN	DESIGN POINT	AREA (AC)	C			Overland Flow			Channel flow				TOTAL		INTENSITY ⁽⁵⁾		PEAK FLOW		
			5-YEAR	100-YEAR	T _{CO} ⁽¹⁾	LENGTH (FT)	SLOPE (FT/FT)	T _{CO} ⁽¹⁾	CHANNEL LENGTH (FT)	CONVEYANCE COEFFICIENT C	SLOPE (FT/FT)	SCS ⁽²⁾ VELOCITY (FT/S)	T _T ⁽³⁾	T _C ⁽⁴⁾	T _C ⁽⁴⁾	5-YR (IN/HR)	100-YR (IN/HR)	Q5 ⁽⁶⁾ (CFS)	Q100 ⁽⁶⁾ (CFS)
					(MIN)			(MIN)					(MIN)	(MIN)	(MIN)				
OA1	OA1	1.77	0.530	0.680	100	0.02	8.3	110	15	0.045	3.18	0.6	8.9	8.9	4.31	7.24	4.04	8.71	
A	A	1.16	0.200	0.522	100	0.02	13.1	380	15	0.01	1.50	4.2	17.3	17.3	3.31	5.55	0.77	3.36	
OA1.A	1	2.93	0.399	0.617									17.3	17.3	3.31	5.55	3.87	10.04	

1) OVERLAND FLOW T_{CO} = (0.395⁽¹⁾ * (1 - RUNOFF COEFFICIENT) * (OVERLAND FLOW LENGTH^(0.5)) / (SLOPE^(0.333))

2) SCS VELOCITY = C * ((SLOPE(FT/FT)^{0.5})

C = 2.5 FOR HEAVY MEADOW

C = 5 FOR TILLAGE/FIELD

C = 7 FOR SHORT PASTURE AND LAWNS

C = 10 FOR NEARLY BARE GROUND

C = 15 FOR GRASSED WATERWAY

C = 20 FOR PAVED AREAS AND SHALLOW PAVED SWALES

3) MANNING'S CHANNEL TRAVEL TIME = LV (WHEN CHANNEL VELOCITY IS KNOWN)

4) T_C = T_{CO} + T_T

*** IF TOTAL TIME OF CONCENTRATION IS LESS THAN 5 MINUTES, THEN 5 MINUTES IS USED

5) INTENSITY BASED ON I-D-F EQUATIONS IN CITY OF COLORADO SPRINGS DRAINAGE CRITERIA MANUAL

$$I_5 = -1.5 * \ln(T_c) + 7.583$$

$$I_{100} = -2.52 * \ln(T_c) + 12.735$$

6) Q = C * I * A

Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 1

Designer: JPS
Company: JPS
Date: December 9, 2020
Project: PARK VISTA ADDITION NO. 9 ANNEXATION (LIGHTHOUSE BAPTIST CHURCH)
Location: SIFERD BLVD., COLORADO SPRINGS, CO

SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth = 0.60 inches
 Depth of Average Runoff Producing Storm, d_6 = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

Area Type	DCIA	SPA	DCIA	SPA								
Area ID	OA1-D	OA1-S	A-D	A-S								
Downstream Design Point ID	OA1	OA1	A	A								
Downstream BMP Type	None	None	None	None								
DCIA (ft ²)	53,971	--	4,813	--								
UIA (ft ²)	--	--	--	--								
RPA (ft ²)	--	--	--	--								
SPA (ft ²)	--	23,130	--	45,717								
HSG A (%)	--	0%	--	0%								
HSG B (%)	--	0%	--	0%								
HSG C/D (%)	--	100%	--	100%								
Average Slope of RPA (ft/ft)	--	--	--	--								
UIA:RPA Interface Width (ft)	--	--	--	--								

CALCULATED RUNOFF RESULTS

Area ID	OA1-D	OA1-S	A-D	A-S								
UIA:RPA Area (ft ²)	--	--	--	--								
L / W Ratio	--	--	--	--								
UIA / Area	--	--	--	--								
Runoff (in)	0.50	0.00	0.50	0.00								
Runoff (ft ³)	2249	0	201	0								
Runoff Reduction (ft ³)	0	1157	0	2286								

CALCULATED WQCV RESULTS

Area ID	OA1-D	OA1-S	A-D	A-S								
WQCV (ft ³)	2249	0	201	0								
WQCV Reduction (ft ³)	0	0	0	0								
WQCV Reduction (%)	0%	0%	0%	0%								
Untreated WQCV (ft ³)	2249	0	201	0								

CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

Downstream Design Point ID	OA1	A										
DCIA (ft ²)	53,971	4,813										
UIA (ft ²)	0	0										
RPA (ft ²)	0	0										
SPA (ft ²)	23,130	45,717										
Total Area (ft ²)	77,101	50,530										
Total Impervious Area (ft ²)	53,971	4,813										
WQCV (ft ³)	2,249	201										
WQCV Reduction (ft ³)	0	0										
WQCV Reduction (%)	0%	0%										
Untreated WQCV (ft ³)	2,249	201										

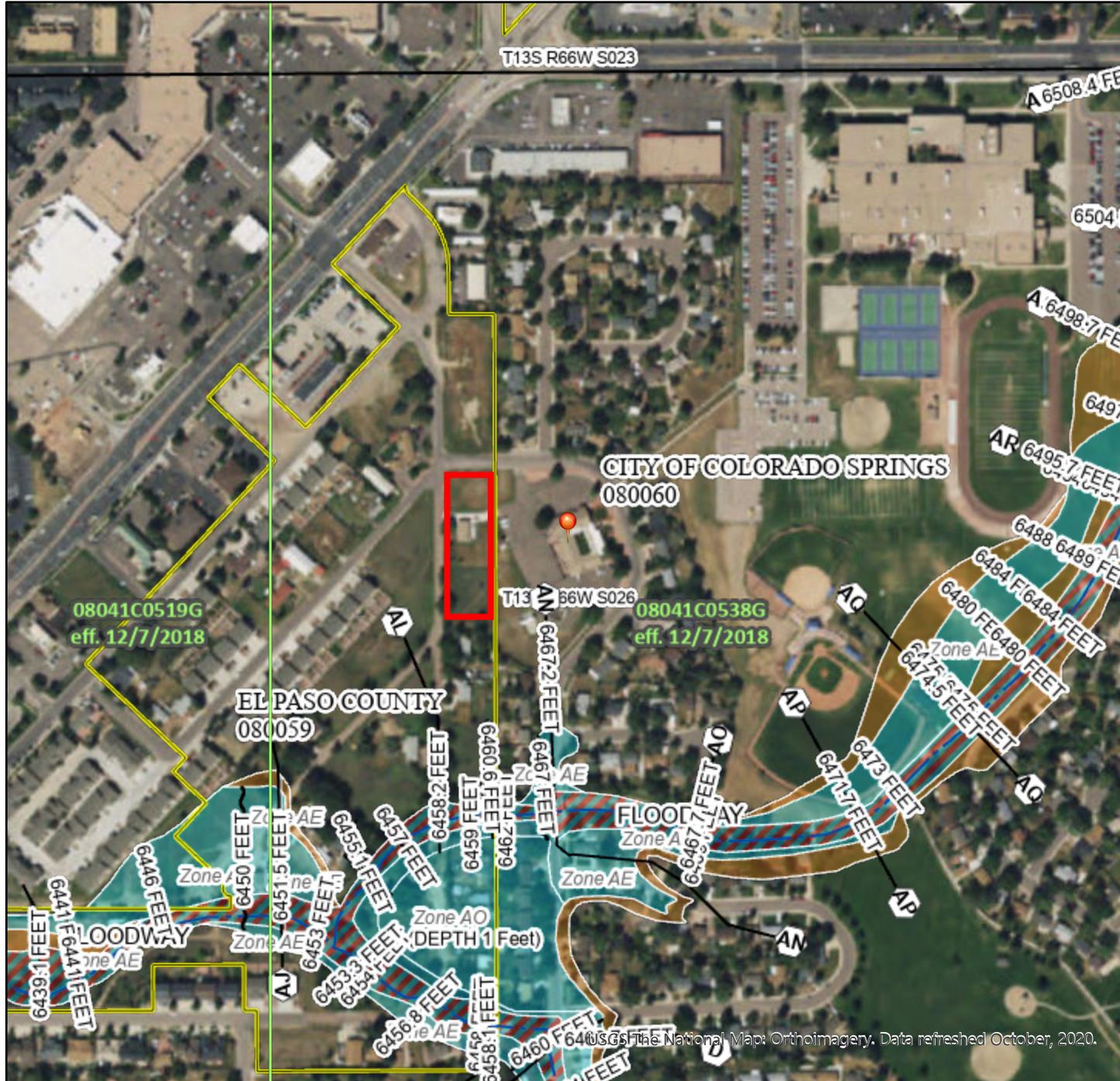
CALCULATED SITE RESULTS (sums results from all columns in worksheet)

Total Area (ft ²)	127,631
Total Impervious Area (ft ²)	58,784
WQCV (ft ³)	2,449
WQCV Reduction (ft ³)	0
WQCV Reduction (%)	0%
Untreated WQCV (ft ³)	2,449

National Flood Hazard Layer FIRMMette



104°45'9"W 38°53'50"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|------------------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
Zone A, V, A99 |
| | | With BFE or Depth Zone AE, AO, AH, VE, AR
Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
| | | Future Conditions 1% Annual Chance Flood Hazard Zone X |
| | | Area with Reduced Flood Risk due to Levee. See Notes. Zone X |
| | | Area with Flood Risk due to Levee Zone D |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard Zone X |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard Zone D |
| | | Channel, Culvert, or Storm Sewer |
| OTHER FEATURES | | Levee, Dike, or Floodwall |
| | | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
| MAP PANELS | | 17.5 Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/5/2020 at 5:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

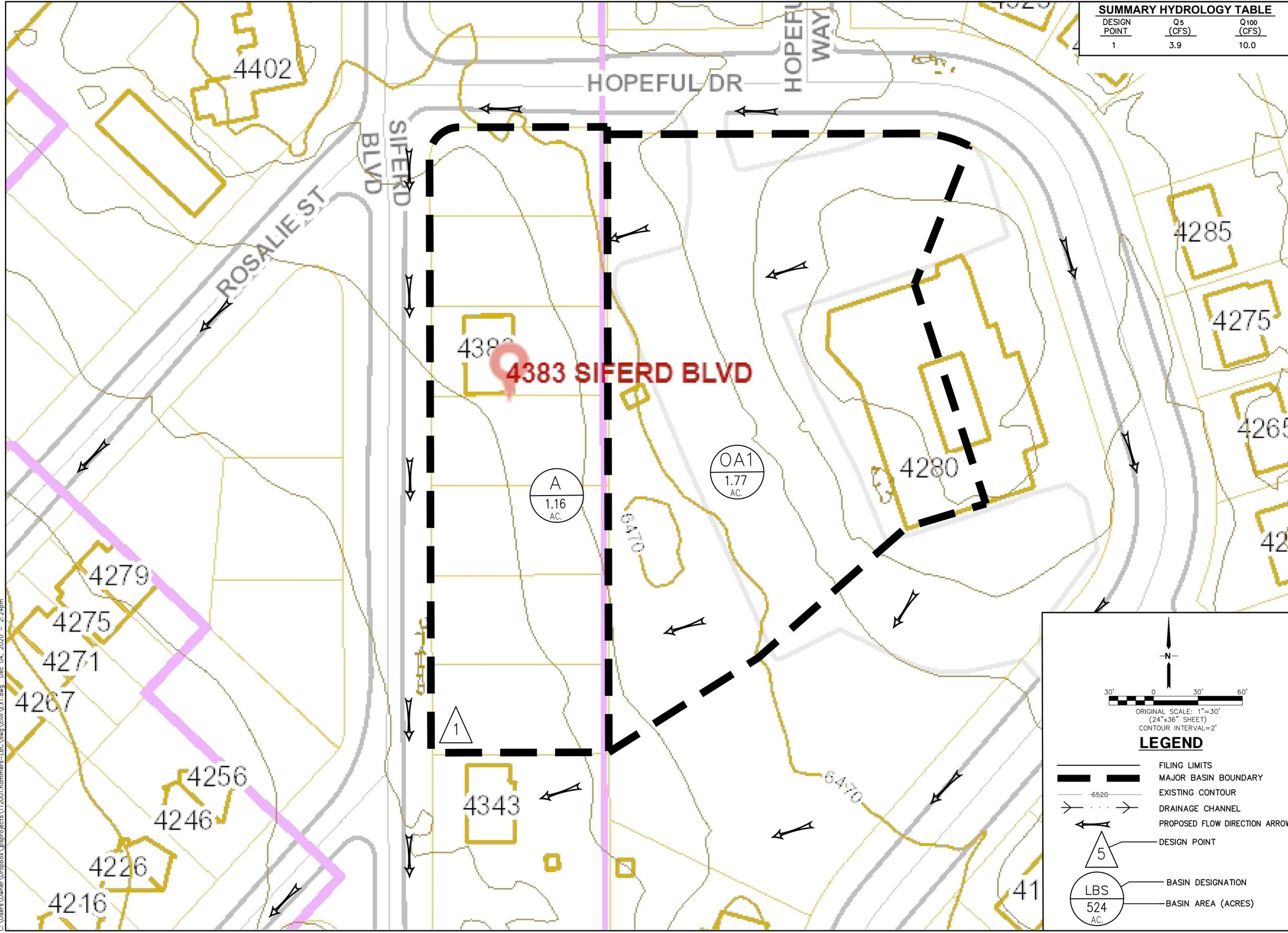
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

104°44'31"W 38°53'22"N

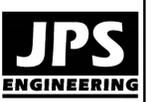
© USGS The National Map: Orthoimagery. Data refreshed October, 2020.

C:\Users\Owner\Desktop\psprojects\112001\hommers-LBC\dwg\civil\EX1.dwg Dec 04, 2020 - 2:24pm



SUMMARY HYDROLOGY TABLE		
DESIGN POINT	Q5 (CFS)	Q100 (CFS)
1	3.9	10.0

LIGHTHOUSE BAPTIST CHURCH ANNEXATION
LOTS 1-7, BLK 12, PARK VISTA ADDITION



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 80903
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 DAMAGE TO UNDERGROUND
 UTILITIES

No.	REVISION	BY	DATE

EXISTING CONDITIONS
DRAINAGE PLAN

HORZ. SCALE: 1"=30'
 VERT. SCALE: N/A
 SURVEYED: N/A
 CREATED: 11/25/20
 PROJECT NO: 112001
 SHEET: EX1

DRAWN: BJJ
 DESIGNED: JPS
 CHECKED: JPS
 LAST MODIFIED: 12/04/20
 MODIFIED BY: BJJ

LEGEND

- FILING LIMITS
- MAJOR BASIN BOUNDARY
- EXISTING CONTOUR
- DRAINAGE CHANNEL
- PROPOSED FLOW DIRECTION ARROW
- DESIGN POINT
- BASIN DESIGNATION
- BASIN AREA (ACRES)

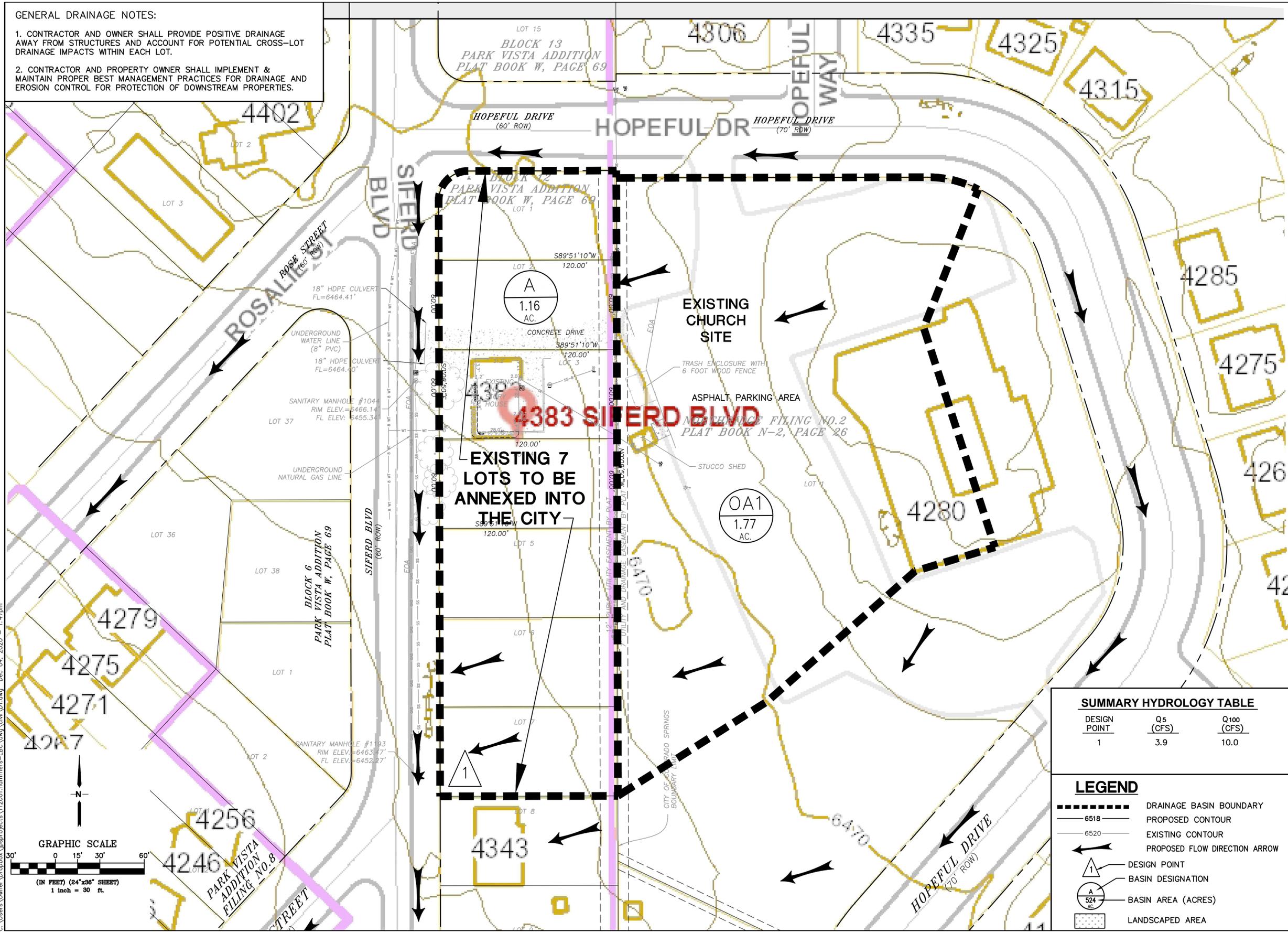
ORIGINAL SCALE: 1"=30'
 (24"x36" SHEET)
 CONTOUR INTERVAL=2'

EX1

GENERAL DRAINAGE NOTES:

1. CONTRACTOR AND OWNER SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND ACCOUNT FOR POTENTIAL CROSS-LOT DRAINAGE IMPACTS WITHIN EACH LOT.
2. CONTRACTOR AND PROPERTY OWNER SHALL IMPLEMENT & MAINTAIN PROPER BEST MANAGEMENT PRACTICES FOR DRAINAGE AND EROSION CONTROL FOR PROTECTION OF DOWNSTREAM PROPERTIES.

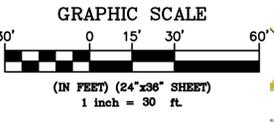
C:\Users\Owner\Desktop\psprojects\112001\homers-LBC\dwg\civil\D1.dwg, Dec. 04, 2020 - 1:47pm



SUMMARY HYDROLOGY TABLE		
DESIGN POINT	Q5 (CFS)	Q100 (CFS)
1	3.9	10.0

LEGEND

- DRAINAGE BASIN BOUNDARY
- PROPOSED CONTOUR
- EXISTING CONTOUR
- PROPOSED FLOW DIRECTION ARROW
- DESIGN POINT
- BASIN DESIGNATION
- BASIN AREA (ACRES)
- LANDSCAPED AREA



LIGHTHOUSE BAPTIST CHURCH ANNEXATION
LOTS 1-7, BLK 12, PARK VISTA ADDITION

DEVELOPED DRAINAGE PLAN

HORIZ. SCALE: 1"=30'	DRAWN: BJJ
VERT. SCALE: N/A	DESIGNED: JPS
SURVEYED: RIDGELINE	CHECKED: JPS
CREATED: 11/25/20	LAST MODIFIED: 12/04/20
PROJECT NO: 112001	MODIFIED BY: BJJ
SHEET:	D1



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No.	REVISION	BY	DATE