

DRAINAGE LETTER FOR PANDA EXPRESS

PREPARED FOR

Panda Express, Inc.

Project Location:

**FALCON MARKET PLACE
FALCON, CO 80831**

**Lot 8, Falcon Marketplace
(SE Quarter, Section 1-Township 13 South - Range 65 West)**

**BHC Project # 031420.02.01
PCD File No. PPR2137**

**July 23, 2021
Rev. October 21, 2021**



**Eric Byrd
Colorado PE 0057965
October 21, 2021**



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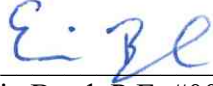
Appendix E – Proposed Watershed Map

E1 – Proposed Watersheds Map

Drainage Reports

Design Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.



Eric Byrd, P.E. #0057965

10/21/2021

Date

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan.

Alex Phelps, Sr. Project Manager
Panda Express, Inc.
1683 Walnut Grove Ave.
Rosemead, CA 91770]

Date

El Paso County:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

APPROVED
Engineering Department
06/28/2022 2:39:21 PM
dsdnijkamp
EPC Planning & Community
Development Department

County Engineer / ECM Administrator

Date

Conditions:

Executive Summary

BHC has been retained as the Civil Engineer for the development of the Panda Express restaurant located in Falcon, Colorado. The 1.37-acre site is located northwest of the intersection of East Woodman Road and Meridian Road. The project site is located within the Falcon Marketplace Development and is on Lot 8. Appendix A contains Display A1 – Vicinity Map which shows the project location. The proposed Panda Express includes the construction of a 2,381 square foot building, associated parking, underground service utilities, storm collection system, and a drive-through pick-up window. This report documents the compliance of the proposed Panda Express restaurant with the Falcon Marketplace drainage report requirements.

This development occurs in the Falcon CHWS1400 drainage basin.

1.0 Introduction

This Stormwater Management Study is prepared for the development of a Panda Express restaurant in Falcon, Colorado. The project is part of the larger Falcon Marketplace Development. The purpose of this study is to demonstrate the project's compliance to the Falcon Marketplace drainage requirements. The project will result in the construction of a 2,381 square foot building, associated parking, storm collection system and underground utilities. Appendix A contains Display A2 – Site Map which shows the project site within the Falcon Marketplace Development.

1.1 Design Criteria

Final Drainage Report for Falcon Marketplace, November 4, 2019.

Prepared by:

Drexel, Barrell & Co.

3 South 7th Street

Colorado Springs, CO 80905

Also Referenced:

Drainage Conformance Letter, June 15, 2021, for Slim Chicken's

Prepared by:

Point Consulting, LLC

El Paso County Drainage Criteria Manual

2.0 Existing Conditions

2.1 Project Site

The Panda Express will be constructed on Lot 8 of the Falcon Marketplace Development. Lot 8 is currently undeveloped. The road to the north, Falcon Market Place is constructed, and to the west on Lot 9 is a proposed Slim Chicken's restaurant. Lot 7 to the east is currently undeveloped. The south part of Lot 8 is occupied by water Quality Pond #2. All necessary infrastructure (roads, storm collection system, detention, water quality facilities, etc.) is already provided within the Falcon Marketplace Development. The soils report for the site is included in Appendix C and indicate the on-site soils belong to the Class A hydrologic soil group.

2.2 Hydrology

Lot 8 is within watershed B19 of the Falcon Marketplace Development. Appendix D contains Display D1 showing watershed B19 with Lot 8 highlighted (red). Appendix D contains Display D2 which are hydrology summaries for B19 from the Falcon Marketplace Drainage Report. As may be noted from this information, the part of Lot 8 north of Water Quality Pond #2 is intended to direct its runoff into an east-west 24-inch RCP located just north of Water Quality Pond #2. Watershed B19 is 2.57-acres and is intended to have a composite Rational Runoff Coefficient of 0.85 in the 100-year and 0.77 in the 5-year event. B19 has a 100-yr discharge of 18.8-cfs, and a 5-year discharge of 10.1-cfs. Runoff from B19 (and Lot 8) drains into Water Quality Pond #2.

This development occurs in the Falcon CHWS1400 drainage basin.

3.0 Proposed Condition

3.1 Project Site

The proposed development will include the construction of the Panda Express restaurant, parking lot, and storm collection system. The proposed storm collection system will connect into the east-west 24-inch RCP in accordance with the Falcon Marketplace Development Drainage Report.

There are six watersheds on the site labelled DA #1 – DA #6. DA #1 contains the drive-thru area. This drainage area drains into storm structure A2. Everything south of the sidewalk to the west of the building also drains to DA #1. DA #2 receives runoff from the parking lot and west drive aisle. This drainage area is collected in storm structure A3. DA #3 will receive runoff from the east drive aisle. This drainage area is collected in storm structure B1. Also, the roof drains from the building will tie into the storm pipe that structure B1 is connected to. DA #4 drains north to the Falcon Market Place road storm structures. This includes the landscape buffer along Falcon Market Place and the very north part of the east and west drive aisles. DA #5 is the landscape area on the south side of the site that drains directly to the detention pond. DA

#6 is the detention pond. Appendix A contains Display A3 showing the proposed watersheds and site development.

3.2 Hydrology

Hydrology parameters for the proposed watersheds is provided in Display B1 in Appendix B. For that part of Lot 8 north of Water Quality Pond #2, the overall impervious area will be 82% which is less than the 90% weighted average for watershed B19. Thus, the proposed Panda Express will comply with the impervious area requirements of the Falcon Marketplace Development.

Peak discharge calculations are also included for the proposed watersheds. Display B3 in Appendix B contains the rational method hydrology calculations for the proposed watersheds. These calculations utilize the NOAA Atlas Rainfall for the area shown in Display B2. The peak discharge calculations indicate:

- The composite weighted average rational curve numbers for the Panda Express are 0.75 for a 5-year event and 0.85 for a 100-year event – both of which are no more than the 0.77 for 5-year and 0.85 for 100-year allowed by the Falcon Marketplace Development.
- The total peak runoff from the Panda Express is 3.65-cfs for the 5-year event and 6.87-cfs in the 100-year event. These peak discharges are less than the 5-year 3.71-cfs and 100-year 6.90-cfs allowed by the Falcon Marketplace Development for Lot 8 proportioned by area ($0.944\text{-ac}/2.57\text{-ac} = 0.367$ or 36.7% of B19 area and peak flows). These peak runoff totals are calculated by simply summing the peak flows from each sub-basin. The peak flows from the sub-basins happen at different times, so the actual peak flow at one given time would be even less than these values shown.

4.0 Drainage Fees

The project is a part of the Falcon Marketplace development and is in the Falcon Drainage Basin. The Final Plat for the development was recorded in December 2019. The drainage fee for the entire development was \$779,058.60. A note on the recorded Final Plat states that this fee is “Pre Credits for drainage improvements”. The Reimbursable Public Facilities Construction Cost Estimate was \$1,226,458.20, according to the Falcon Marketplace Drainage Report. The drainage fee was not paid at final plat recording; however, the drainage fee is to be credited when the public storm facilities are constructed.

5.0 Four-Step Process

The Four-Step Process, as outlined in DCM Volume 2 section 4.0, is considered for this development. The majority of site runoff is collected in inlets, then conveyed in underground storm pipes to limit sediment erosion. These storm pipes connect to the Falcon Marketplace

storm pipes that drain to the overall development's Pond #2. On-site drainageways are stabilized by using the inlets and underground storm pipes.

The water quality capture volume is provided by the Falcon Marketplace development's Pond #2.

A Stormwater Management Plan has been put together for the project that addresses source control BMPs, such as covering of storage/handling areas and spill containment and control.

6.0 Floodplain

The site is currently located within the Zone A shaded and inside of the 1% and 0.2% annual chance flood hazard, as shown on FEMA FIRM Map 08041C0553G, effective December 7, 2018. The FEMA Firmette for the project site can be found in Appendix A.

As a part of the Falcon Marketplace development, the majority of the development will be removed from the 1% annual chance flood hazard with a LOMR. That LOMR was issued on October 7, 2021 and becomes effective February 22, 2022. All improvements on the subject site will be out of the special flood hazard areas once the LOMR is effective.

7.0 Conclusion

The proposed development on Lot 8 will comply with the Falcon Marketplace drainage report requirements. Percent impervious area, the composite weighted runoff coefficients, and peak flow rates are all within the hydrology limits required by the Falcon Marketplace Drainage Report for Watershed B19. Therefore, the Panda Express development on Lot 8 is in conformance with approved drainage criteria.

Appendix A – Reference Documents

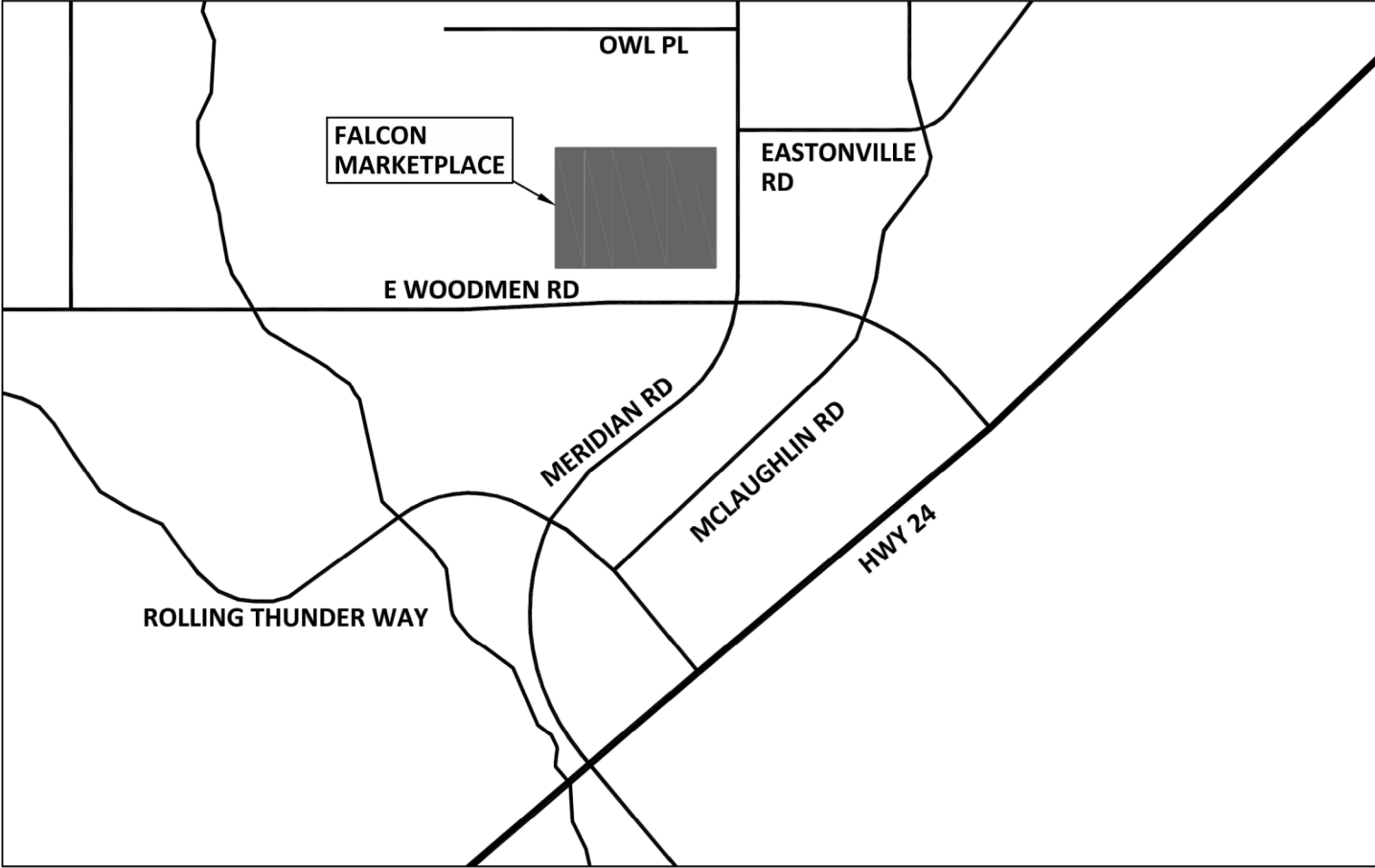
A1 – Vicinity Map

A2 – Site Map

A3 – FEMA FIRMette

A4 – FEMA LOMR

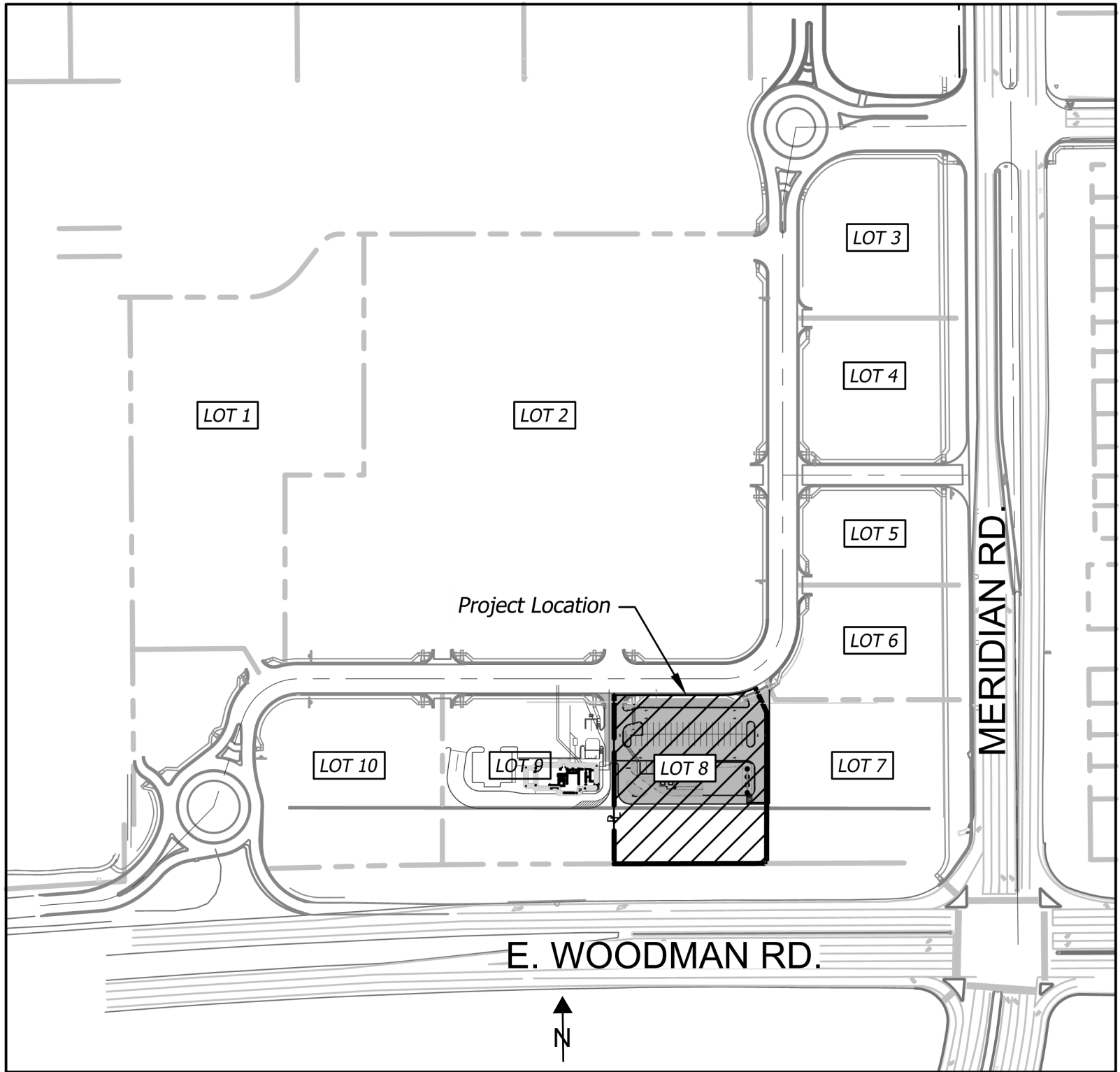
Display A1 - Vicinity Map



VICINITY MAP

NOT TO SCALE

Display A2 - Site Map



SITE MAP
1"=200'

National Flood Hazard Layer FIRMette



104°36'47"W 38°56'40"N

Display A3 - FEMA FIRMette



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	Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer	Levee, Dike, or Floodwall

OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation	Coastal Transect	Base Flood Elevation Line (BFE)	Limit of Study	Jurisdiction Boundary	Coastal Transect Baseline	Profile Baseline	Hydrographic Feature

MAP PANELS	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 **10/20/2021 at 4:24 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.

Follows Conditional Case No.: 17-08-0074R



Display A4 - FEMA LOMR
Federal Emergency Management Agency
 Washington, D.C. 20472

**LETTER OF MAP REVISION
 DETERMINATION DOCUMENT**

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	CHANNELIZATION CULVERT DETENTION BASIN FILL	1D HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Falcon Marketplace	APPROXIMATE LATITUDE AND LONGITUDE: 38.942, -104.610 SOURCE: Other DATUM: NAD 83	
ANNOTATED MAPPING ENCLOSURES		ANNOTATED STUDY ENCLOSURES	
TYPE: FIRM*	NO.: 08041C0553G DATE: December 7, 2018	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: December 07, 2018 PROFILE: 404P(a) SUMMARY OF DISCHARGE TABLE: 4	

Enclosures reflect changes to flooding sources affected by this revision.

* FIRM - Flood Insurance Rate Map

FLOODING SOURCE AND REVISED REACH

Unnamed Tributary to Black Squirrel Creek - from approximately the downstream side of Meridian Road to approximately 530 feet downstream of Owl Place

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Unnamed Tributary to Black Squirrel Creek	No BFEs*	BFEs	YES	NONE
	Zone A	Zone A	YES	YES
	Zone AE	Zone AE	YES	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/flood-insurance>.

Patrick "Rick" F. Sacbibt, P.E., Branch Chief
 Engineering Services Branch
 Federal Insurance and Mitigation Administration



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/flood-insurance>.

A handwritten signature in black ink, appearing to read "Rick F. Sacbibit".

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Jeanine D. Petterson
Director, Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/flood-insurance>.

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Patrick "Rick" F. Sacbbit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

PUBLIC NOTIFICATION OF REVISION

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below, and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/bfe_status/bfe_main.asp

LOCAL NEWSPAPER

Name: *The Colorado Springs Gazette*

Dates: October 18, 2021 and October 25, 2021

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard determination presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/flood-insurance>.

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Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Table 4. Summary of Discharges (cont.)

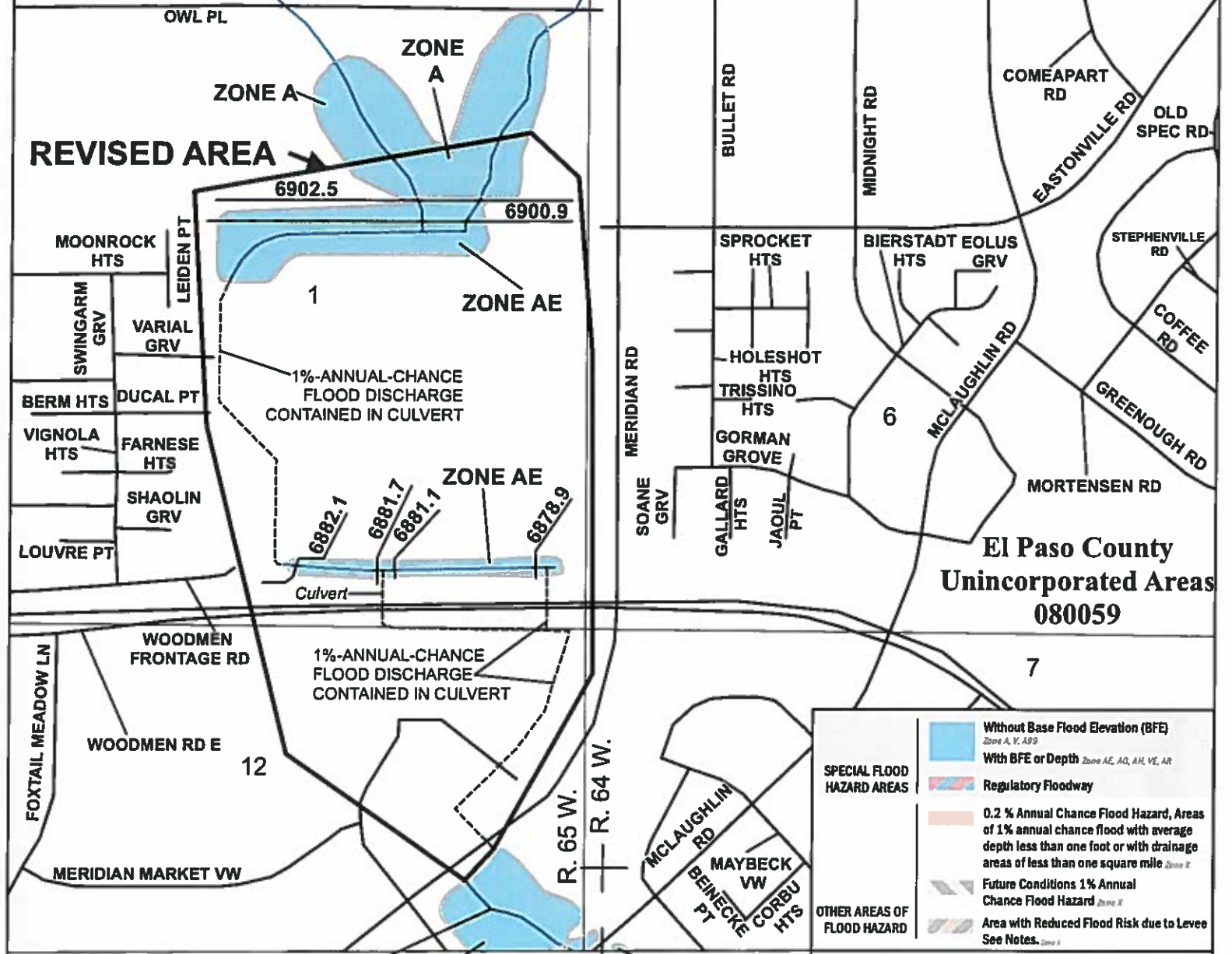
<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharges (Cubic Feet Per Second)</u>			
		<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>	<u>500-Year</u>
Spring Creek At confluence with Fountain Creek	6.7	960	1,790	2,340	4,340
Spring Run At Interstate 25	3.63	890	1,350	1,660	2,340
Sutherland Creek At confluence with Fountain Creek	5.09	1,810	3,400	4,700	7,500
Teachout Creek At Santa Fe Trail Railroad	1.72	--	--	794	--
Telephone Exchange At confluence with Black Squirrel Creek	--	--	--	3,230	--
At River Station 4,447	--	--	--	3,100	--
At River Station 8,068	--	--	--	2,570	--
At River Station 19,971	--	--	--	1,800	--
At River Station 29,131	--	--	--	1,030	--
Templeton Gap Floodway At Academy Boulevard	2.49	2,820	4,180	5,040	6,800
Approximately 2,300 feet above Academy Boulevard	2.14	2,440	3,610	4,340	5,850
Tributary to East Cherry Creek At Confluence with East Cherry Creek	0.15	--	--	289	--
Tributary to Sand Creek East Fork (Reach No. 6) At confluence with East Fork of Sand Creek	1.13	--	--	551	--
Unnamed Tributary to Black Squirrel Creek At mouth	1.62	--	--	675	--
At East Woodmen Road ²	1.36	--	--	761	--
Approximately 1,700 feet downstream of Owl Road	1.16	--	--	1,016	--

REVISED
DATA

¹Data not available

²Peak discharges reduced by effects of detention pond

**REVISED TO
REFLECT LOMR
EFFECTIVE: February 22, 2022**



**El Paso County
Unincorporated Areas
080059**

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AQ, AH, VE, AR
- Regulatory Floodway
- 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

OTHER AREAS OF FLOOD HAZARD

SCALE

Map Projection:
Universal Transverse Mercator NAD 1983 UTM Zone 13N
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 62.5 125 250 Meters

FEMA
National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP**

EL PASO COUNTY, COLORADO
and Incorporated Areas

PANEL 553 OF 1300

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0553	0

REVISED TO REFLECT LOMR EFFECTIVE: February 22, 2022

VERSION NUMBER
1.1.1.0
MAP NUMBER
08041C0553G
MAP REVISED
DECEMBER 7, 2018

OWL PL

ZONE A

REVISED AREA

6902.5 6900.9

MOONROCK HTS

LEIDL PT

ZONE AE

1

1% - ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT

6882.1 6881.7 6881.1 6878.9

ZONE AE

Culvert

WOODMEN FRONTAGE RD

1% - ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT

12

WOODMEN RD E

FOXTAIL MEADOW LN

MERIDIAN MARKET VW

R. 65 W. R. 64 W.

MCLAUGHLIN RD

MAYBECK VW

BEINECKE PT

CORBU HTS

UNNAMED TRIBUTARY TO BLACK SQUIRREL CREEK

534000m E

ZONE A

ZONE A

JOINING PANEL 0561

Appendix B – Hydrology Calculations

B1 – Table 1: Proposed Watersheds Summary

B2 – Rational Method Hydrology

Display B1 - Proposed Watersheds Summary

Table 1: Proposed Watersheds Summary (all Class A soils)

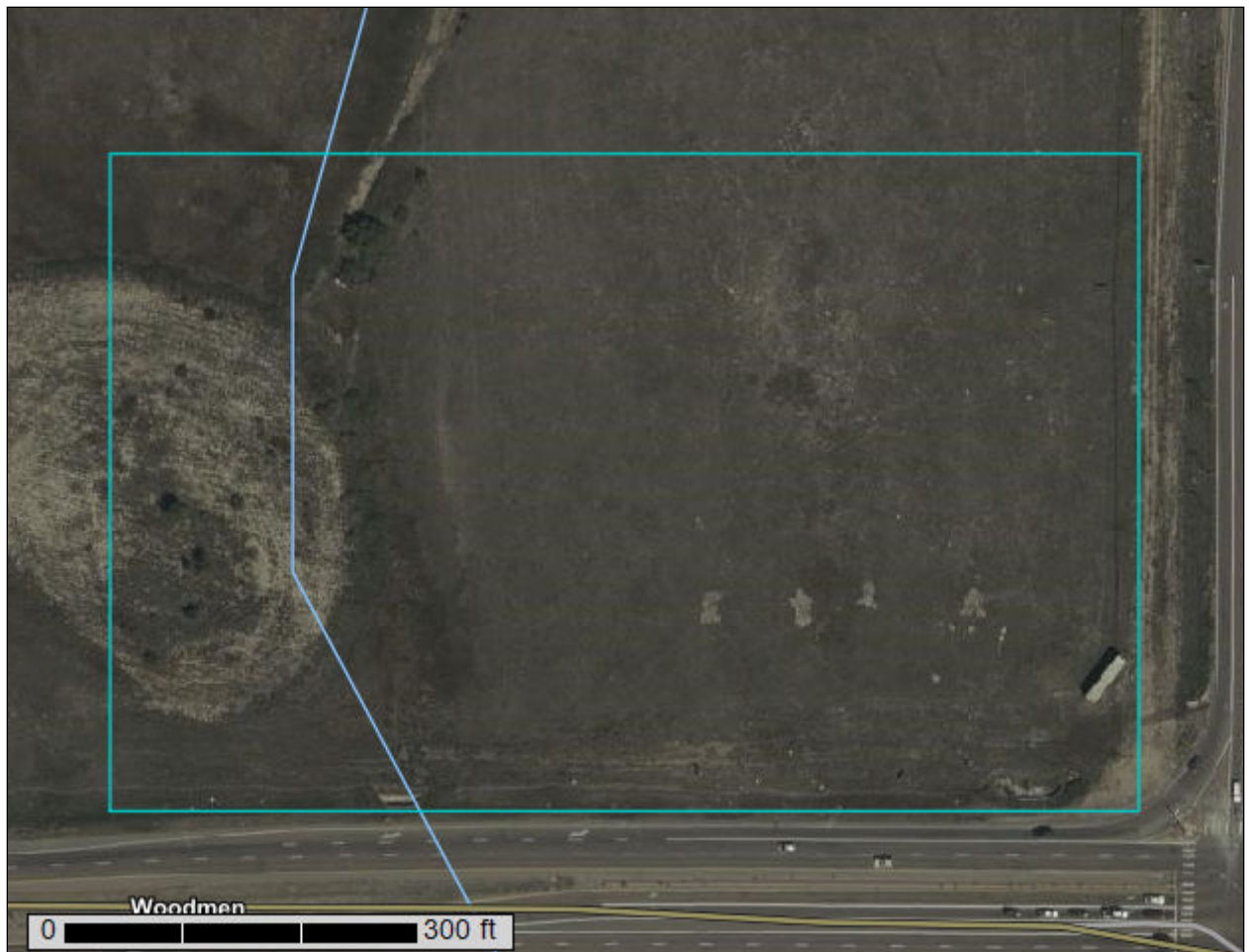
Watershed	Total Area (sq.ft)	Pervious Area (sq.ft)	Impervious Area (sq.ft)	Percent Impervious (%)	Total Area (acres)
DA 1	6,180.22	1,832.52	4,347.70	70	0.142
DA 2	20,558.57	304.35	20,254.22	99	0.472
DA 3	7,619.25	387.35	7,231.90	95	0.175
DA 4	3,835.65	1,997.07	1,838.58	48	0.088
DA 5	2,925.42	2,853.42	72.00	2	0.067
Totals:	41,119.11	7,374.71	33,744.40	82	0.944

Appendix C – USDA NRCS Soils Report

C1 – Soils Report

Custom Soil Resource Report for El Paso County Area, Colorado

Display C1 - Soils Report



Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.


Map Scale: 1:1,460 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

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: Sep 11, 2018—Oct 20, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Blakeland-Fluvaquentic Haplaquolls	8.0	71.4%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	3.2	28.6%
Totals for Area of Interest		11.2	100.0%

Map Unit Descriptions

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

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

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

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

El Paso County Area, Colorado

9—Blakeland-Fluvaquentic Haplaquolls

Map Unit Setting

National map unit symbol: 36b6
Elevation: 3,500 to 5,800 feet
Mean annual precipitation: 13 to 17 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 110 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 60 percent
Fluvaquentic haplaquolls and similar soils: 38 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Hills, flats
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose and/or eolian deposits derived from arkose

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Description of Fluvaquentic Haplaquolls

Setting

Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: variable

Properties and qualities

Slope: 1 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent

Minor components: 3 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, flood plains, fan terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam

C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R049XB215CO - Gravelly Foothill

Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

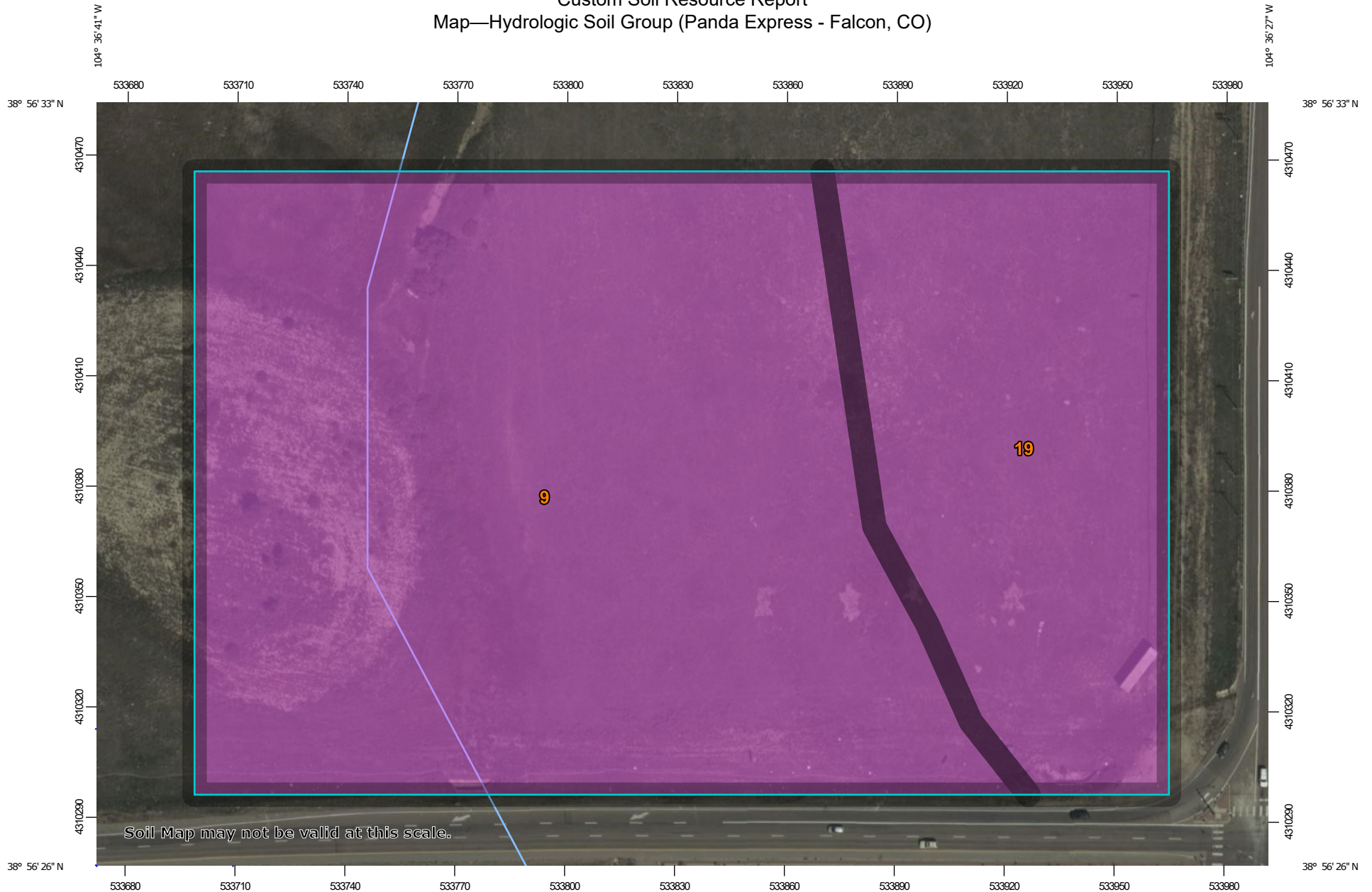
Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales

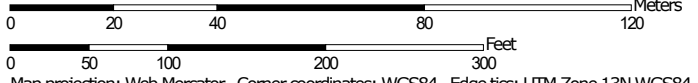
Hydric soil rating: Yes

Custom Soil Resource Report
Map—Hydrologic Soil Group (Panda Express - Falcon, CO)



Soil Map may not be valid at this scale.

Map Scale: 1:1,460 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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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: Sep 11, 2018—Oct 20, 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.

Table—Hydrologic Soil Group (Panda Express - Falcon, CO)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Blakeland-Fluvaquentic Haplaquolls	A	8.0	71.4%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	3.2	28.6%
Totals for Area of Interest			11.2	100.0%

Rating Options—Hydrologic Soil Group (Panda Express - Falcon, CO)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

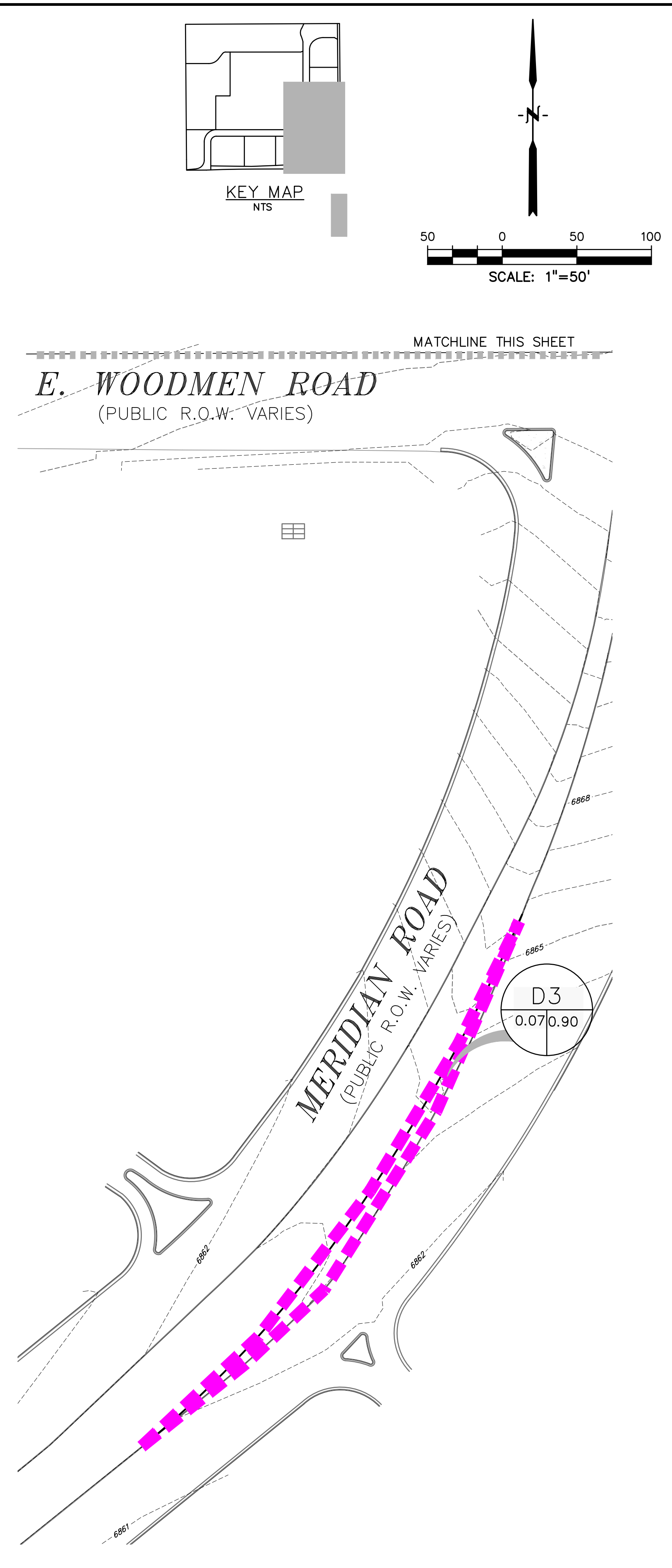
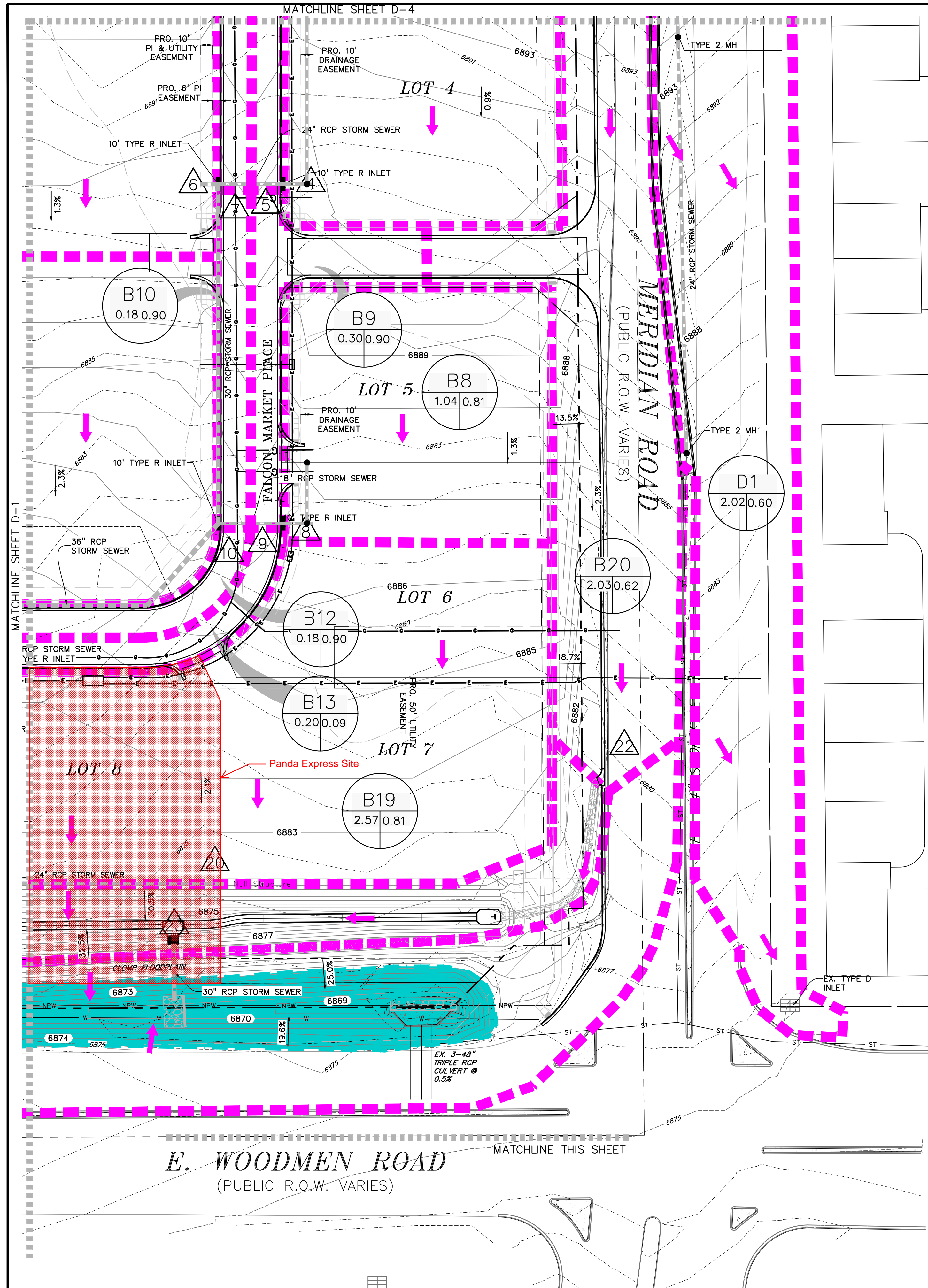
Tie-break Rule: Higher

Appendix D – Supporting Documents

D1 – Basin B19 Falcon Marketplace Watersheds

D2 – Basin B19 Falcon Marketplace Report Pages

Display D1 - Basin B19 Falcon Marketplace Watershed (2 of 2)



RUNOFF SUMMARY

BASIN	DP	Area (Ac.)	Q ₂ (CFS)	Q ₁₀₀ (CFS)
A1	DP1	1.81	3.4	7.7
	DP2	1.81	3.4	7.7
A2		4.82	1.4	10.2
	DP3	6.63	4.6	17.3
B4	DP4	2.35	7.5	14.6
B5		0.63	2.8	5.1
	DP5	2.99	10.0	19.3
B6	DP6	3.19	12.8	23.6
B7		0.46	2.0	3.7
	DP7	6.63	23.8	28.0
B8	DP8	1.04	3.5	6.9
B9		0.30	1.4	2.5
	DP9	1.35	4.9	9.3
B10		0.18	0.8	1.4
	DP10	8.16	29.2	38.1
B11	DP11	2.01	7.8	14.6
B12		0.18	0.8	1.5
	DP12	10.35	36.4	51.9
B13		0.20	0.9	1.6
	DP13	10.55	37.1	53.2
B14	DP14	2.49	9.1	17.0
B15	DP15	5.73	20.3	38.0
B16		0.35	1.6	2.9
	DP16	8.56	30.6	57.1
B17		0.33	1.5	2.7
	DP17	8.89	31.9	59.3
	DP18	19.44	52.1	88.2
B18	DP19	2.18	7.8	15.0
B19	DP20	2.57	10.1	18.8
	DP21	24.19	67.6	117.5
B20	DP22	2.03	5.6	11.4
		1.62	0.5	4.0
	DP23	27.85	67.4	121.8
C1	DP24	0.35	1.3	2.6
C2		0.23	0.8	1.5
	DP25	0.59	2.0	3.8
C3		1.88	0.6	4.2
C4		2.19	6.9	13.8
	DP26	4.08	5.4	13.7
C5	DP27	0.64	0.5	1.9
C6		0.45	0.2	1.2
	DP28	5.31	7.4	18.3
C7	DP29	0.19	0.7	1.3
C8		1.14	2.5	5.5
	DP30	1.33	3.1	6.6
C9		3.43	7.3	16.2
D1		2.62	4.1	8.8
D2		0.07	0.3	0.6
D3		0.07	0.3	0.6
DPO1		32.50	10.3	30.2

PREPARED BY:

DREXEL, BARRELL & CO.
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DRAINAGE PLAN FOR
FALCON MARKETPLACE
 FALCON, COLORADO

ISSUE	DATE
INITIAL ISSUE	6-28-19
REVISED	7-19-19

DESIGNED BY: TDM
 DRAWN BY: KGV
 CHECKED BY: TDM
 FILE NAME:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.

DRAWING SCALE:
 HORIZONTAL: 1"=50'
 VERTICAL: N/A

PROPOSED DRAINAGE CONDITIONS

PROJECT NO. 20988-00CSCV
 DRAWING NO.

D-2

SHEET: 2 OF 5

Display D2 - Basin B19 Falcon Marketplace Report Pages

Rational Method Runoff Summary

BASIN	DP	Area (Ac.)	Q ₅ (CFS)	Q ₁₀₀ (CFS)
A1	DP1	1.81	3.4	7.7
	DP2	1.81	3.4	7.7
A2		4.82	1.4	10.2
	DP3	6.63	4.6	17.3
B4	DP4	2.35	7.5	14.6
B5		0.63	2.8	5.1
	DP5	2.99	10.0	19.3
B6	DP6	3.19	12.8	23.6
B7		0.46	2.0	3.7
	DP7	6.63	23.8	28.0
B8	DP8	1.04	3.5	6.9
B9		0.30	1.4	2.5
	DP9	1.35	4.9	9.3
B10		0.18	0.8	1.4
	DP10	8.16	29.2	38.1
B11	DP11	2.01	7.8	14.6
B12		0.18	0.8	1.5
	DP12	10.35	36.4	51.9
B13		0.20	0.9	1.6
	DP13	10.55	37.1	53.2
B14	DP14	2.49	9.1	17.0
B15	DP15	5.73	20.3	38.0
B16		0.35	1.6	2.9
	DP16	8.56	30.6	57.1
B17		0.33	1.5	2.7

BASIN	DP	Area (Ac.)	Q ₅ (CFS)	Q ₁₀₀ (CFS)
	DP17	8.89	31.9	59.3
	DP18	19.44	52.1	88.2
B18	DP19	2.18	7.8	15.0
B19	DP20	2.57	10.1	18.8
	DP21	24.19	67.6	117.5
B20	DP22	2.03	5.6	11.4
B21		1.62	0.5	4.0
	DP23	27.85	67.4	121.8
C1	DP24	0.35	1.3	2.6
C2		0.23	0.8	1.5
	DP25	0.59	2.0	3.8
C3		1.88	0.6	4.2
C4		2.19	6.9	13.8
	DP26	4.08	5.4	13.7
C5	DP27	0.64	0.5	1.9
C6		0.45	0.2	1.2
	DP28	5.31	7.4	18.3
C7	DP29	0.19	0.7	1.3
C8		1.14	2.5	5.5
	DP30	1.33	3.1	6.6
C9		3.43	7.3	16.2
D1		2.62	4.1	8.8
D2		0.07	0.3	0.6
D3		0.07	0.3	0.6
	DPO1	32.50	10.3	30.2

B-GROUP basins represent the bulk of the site, with flows generally travelling southwards via curb and gutter, and storm sewer towards Pond #2. Pond #2 has been designed as a 3.5 ac-ft basin, sufficient to detain and release the WQCV generated by the site.

Basin B4 covers proposed lots 3 and 4 at the northeast corner of the Falcon Marketplace site. Flows generated by this basin Q₅ =7.5 cfs, Q₁₀₀ =14.6 cfs are intended to culminate at **Design Point 4** where a proposed private 24" RCP storm sewer stub is provided to allow for storm sewer connection as needed by the future lot developer(s). Design of the internal storm sewer/drainage configuration for lots 3 and 4 will be determined by the individual lot developer(s) at a later date.

Basin B5 covers a portion of the east side of Falcon Market Place adjacent to lots 3 and 4. Flows of Q₅ =2.8 cfs, Q₁₀₀ =5.1 cfs are generated by this basin and will travel to the south towards a proposed public 10' Type R at-grade inlet (**Design Point 5**). Flows exit this proposed in let IB1 to the west via public 24" RCP storm sewer.

Basin B6 covers the northeast corner of lot 2. Flows generated by this basin Q₅ =12.8 cfs, Q₁₀₀ =23.6 cfs are intended to culminate at **Design Point 6** where a proposed private 24" RCP storm sewer stub is provided to allow for storm sewer connection as needed by the

Display D2 - Basin B19 Falcon Marketplace Report Pages

$Q_{100} = 17.0$ cfs are intended to culminate at **Design Point 14** where a proposed private 30" RCP storm sewer stub is provided to allow for storm sewer connection as needed by the future lot developer. Design of the internal storm sewer/drainage configuration for lot 1 will be determined by the individual lot developer at a later date.

A private 24" RCP stub has been provided into proposed manhole MA1 on the 96" outfall from pond SR4, at the northwest corner of lot 2. However, in accordance with El Paso County water quality guidelines, any flow entering this 24" stub, will need to be treated for water quality prior to entering the storm system. Alternatively all flow from this basin may travel via internal storm system to the south, as designed by this drainage report.

Basin B15 covers the western side of lot 2 and a portion of lot 1. Flows generated by this basin $Q_5 = 20.3$ cfs, $Q_{100} = 38.0$ cfs are intended to culminate at **Design Point 15** where a proposed private 30" RCP storm sewer stub is provided to allow for storm sewer connection as needed by the future lot developer. Design of the internal storm sewer/drainage configuration for lots 1 and 2 will be determined by the individual lot developer(s) at a later date.

Basin B16 covers a portion of the north side of Falcon Market Place adjacent lot 1. Flows of $Q_5 = 1.6$ cfs, $Q_{100} = 2.9$ cfs are generated by this basin and will travel to the east towards a proposed public 10' Type R at-grade inlet IB7 and further on to low point and public 10' Type R sump inlet IB8 (**Design Point 16**). Flows exiting this inlet will travel to the south via proposed public 36" RCP storm sewer.

Basin B17 covers a portion of the south side of Falcon Market Place adjacent lots 9 and 10. Flows of $Q_5 = 1.5$ cfs, $Q_{100} = 2.7$ cfs are generated by this basin and will travel to the east towards a proposed low point and public 10' Type R sump inlet IB9 (**Design Point 17**). Flows exiting this inlet will travel to the southeast via proposed public 36" RCP storm sewer.

Design Point 18 represents the combining of flows from Design Points 13 and 17 at proposed manhole MB1. Flows at this point ($Q_5 = 52.1$ cfs, $Q_{100} = 88.2$ cfs) will travel to the south via proposed public 48" RCP storm sewer.

Basin B18/Design Point 19 covers lots 9 and 10. Flows generated by this basin $Q_5 = 7.8$ cfs, $Q_{100} = 15.0$ cfs are intended to enter a proposed private 24" RCP storm sewer stub that has been extended through lot 9 into lot 10. This stub is provided to allow for storm sewer connection as needed by the future lot developer(s). Design of the internal storm sewer/drainage configuration for lots 9 and 10 will be determined by the individual lot developer(s) at a later date.

Basin B19/Design Point 20 covers lots 7 and 8. Flows generated by this basin $Q_5 = 10.1$ cfs, $Q_{100} = 18.8$ cfs are intended to enter a proposed private 24" RCP storm sewer stub that has been extended through lot 8 into lot 7. This stub is provided to allow for storm sewer connection as needed by the future lot developer(s). Design of the internal storm sewer/drainage configuration for lots 7 and 8 will be determined by the individual lot developer(s) at a later date.

Design Point 21 represents the combining of flows from Design Points 18, 19 and 20 at proposed manhole MB2. Flows at this point ($Q_5 = 67.6$ cfs, $Q_{100} = 117.5$ cfs) will travel to the

Display D2 - Basin B19 Falcon Marketplace Report Pages

PROJECT INFORMATION

PROJECT:
PROJECT NO:
DESIGN BY:
REV. BY:
AGENCY:
REPORT TYPE:
DATE:

Falcon Marketplace
20988-00CSCV
KGV
TDM
El Paso County
Final
4/17/2019



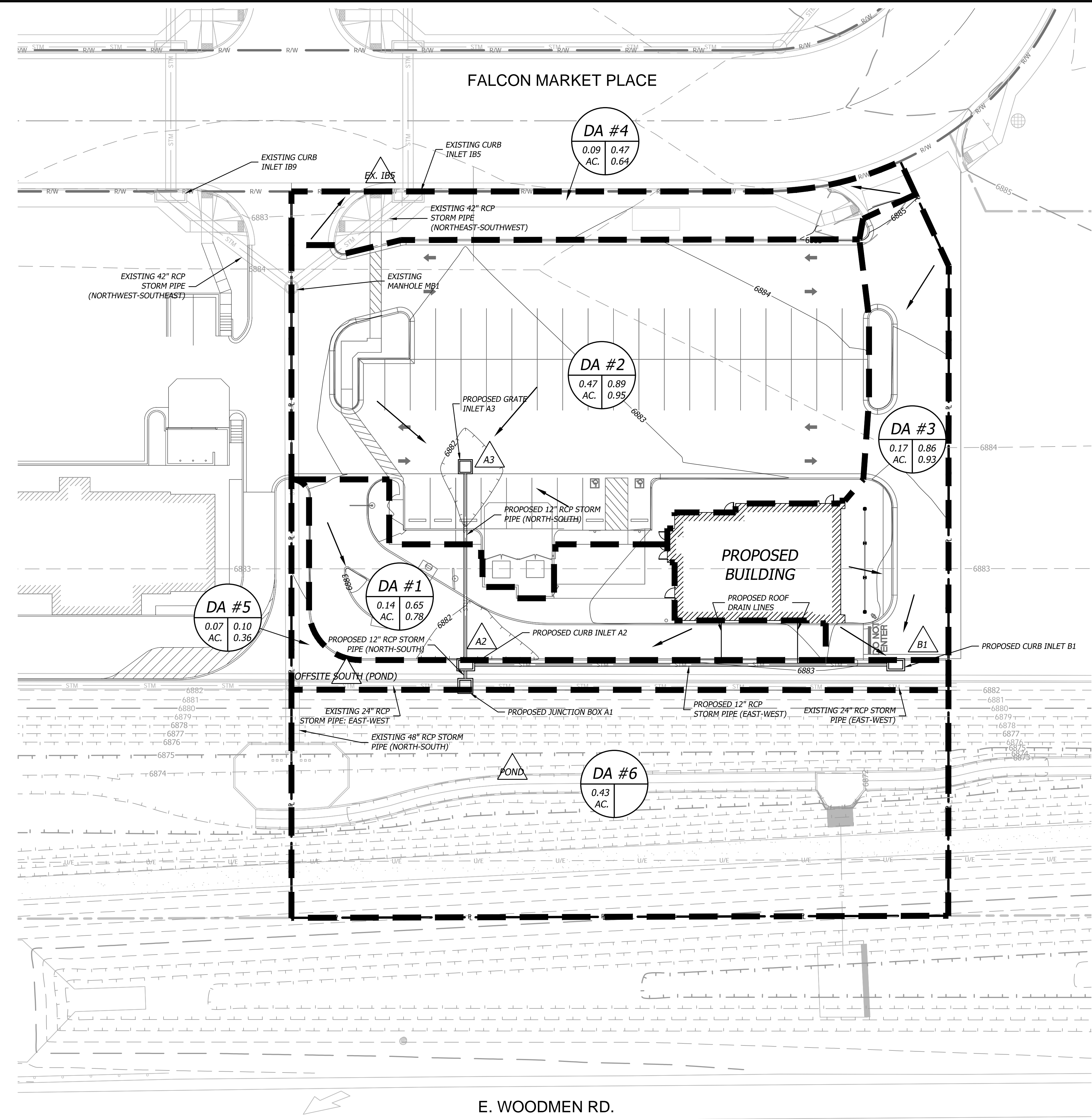
	C2*	C5*	C10*	C100*	% IMPERV
Commercial Development		0.81		0.88	95
Open Space		0.08		0.35	0
Asphalt Roadway		0.90		0.96	100

*C-Values and Basin Imperviousness based on Table 5-1, City of Colorado Springs and El Paso County "Drainage Criteria Manual"

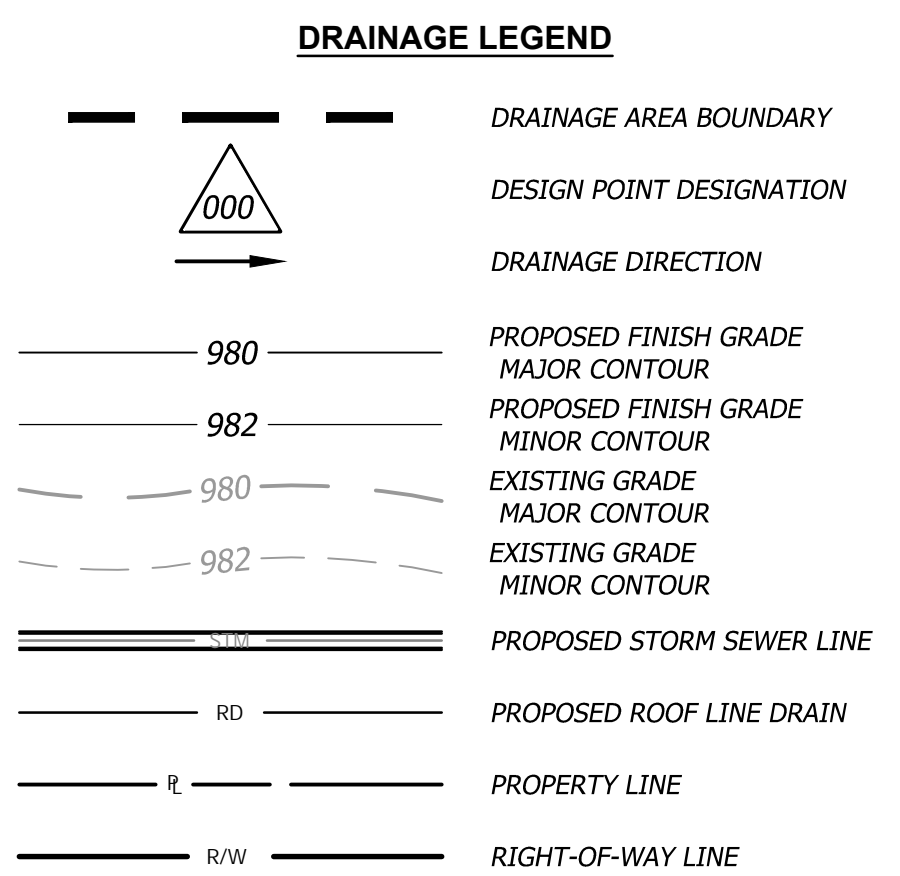
B11	Commercial Development	82352	1.07		0.01		0.00	95
	Open Space	5276	0.12		0.08		0.35	0
	Asphalt Roadway	0	0.00		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	87628	2.01		0.77		0.85	89
B12	Commercial Development	0	0.00		0.81		0.88	95
	Open Space	0	0.00		0.08		0.35	0
	Asphalt Roadway	7868	0.18		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	7868	0.18		0.90		0.96	100
B13	Commercial Development	0	0.00		0.81		0.88	95
	Open Space	0	0.00		0.08		0.35	0
	Asphalt Roadway	8699	0.20		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	8699	0.20		0.90		0.96	100
B14	Commercial Development	100956	2.32		0.81		0.88	95
	Open Space	7304	0.17		0.08		0.35	0
	Asphalt Roadway	0	0.00		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	108260	2.49		0.76		0.84	89
B15	Commercial Development	230636	5.29		0.81		0.88	95
	Open Space	18865	0.43		0.08		0.35	0
	Asphalt Roadway	0	0.00		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	249501	5.73		0.75		0.84	88
B16	Commercial Development	0	0.00		0.81		0.88	95
	Open Space	0	0.00		0.08		0.35	0
	Asphalt Roadway	15279	0.35		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	15279	0.35		0.90		0.96	100
B17	Commercial Development	0	0.00		0.81		0.88	95
	Open Space	0	0.00		0.08		0.35	0
	Asphalt Roadway	14340	0.33		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	14340	0.33		0.90		0.96	100
B18	Commercial Development	81327	1.87		0.81		0.88	95
	Open Space	13537	0.31		0.08		0.35	0
	Asphalt Roadway	0	0.00		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	94864	2.18		0.71		0.80	81
B19	Commercial Development	106398	2.44		0.81		0.88	95
	Open Space	5768	0.13		0.08		0.35	0
	Asphalt Roadway	0	0.00		0.90		0.96	100
TOTAL	WEIGHTED AVERAGE	112166	2.57		0.77		0.85	90
B20	Commercial Development	0	0.00		0.81		0.88	95
	Open Space	30159	0.69		0.08		0.35	0

Appendix E – Proposed Watershed Map

E1 – Proposed Watersheds Map

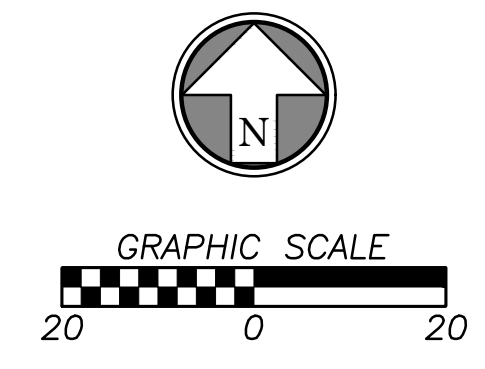
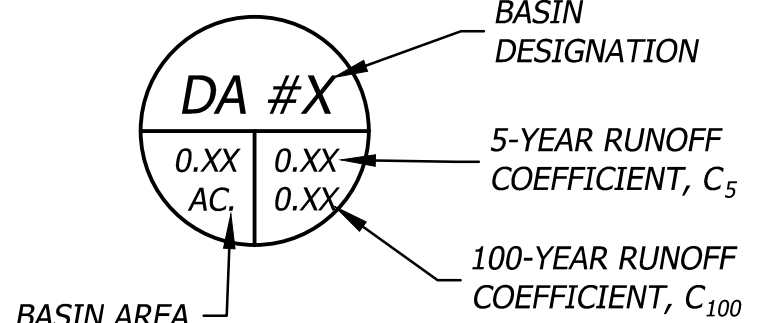


Display E1 - Proposed Watersheds Map



SUMMARY RUNOFF TABLE

Basin ID	Design Point	Contributing Area (acres)	Runoff 5Yr (cfs)	Peak Runoff 100Yr (cfs)
DA #1	A2	0.14	0.46	0.92
DA #2	A3	0.47	2.18	3.91
DA #3	B1	0.18	0.78	1.41
DA #4	EX. IB5	0.09	0.21	0.49
DA #5	POND	0.07	0.02	0.15



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REVISIONS:

NO.	DESCRIPTION	DATE
1	CITY COMMENTS	10.13.21

ISSUE DATE:

DESCRIPTION	DATE
1ST PERMIT/BID SET	07-15-2021

DRAWN BY: JA

PANDA PROJECT #: S8-22-D8137
PANDA STORE #: -
ARCH PROJECT #: 20044.016

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DRAINAGE MAP

C5.0

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