



## **Deim Subdivision**

### **FINAL DRAINAGE REPORT**

EL PASO COUNTY PROJECT NO: SF2515

ALL TERRAIN ENGINEERING PROJECT NO: 24034

JUNE 2025

PREPARED FOR:

CONNIE DEIM

348 GALAXY DRIVE

CASTLE ROCK, COLORADO, 80104

PREPARED BY:

ALL TERRAIN ENGINEERING LLC

CONTACT: NICHOLAS Q. JOKERST

NJOKERST@ALLTERRAINENG.COM

(530) 391-7635

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## 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 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.

Nicholas Q. Jokerst, PE

Date

State of Colorado No. 59273

For and on behalf of All Terrain Engineering LLC

## DEVELOPER'S STATEMENT

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

Connie Diem

Date

348 Galaxy Drive, Castle Rock, Colorado 80104

## EL PASO COUNTY ONLY

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.

Joshua Palmer, P.E.

Date

County Engineer/ECM Administrator

Conditions:



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## I. General Purpose, Location & Description

### a. Purpose

The purpose of this Final Drainage Report (FDR) for the Deim Subdivision is to describe the site's onsite and offsite drainage patterns, existing and proposed storm infrastructure, and to safely route developed stormwater to adequate outfalls.

### b. Location

Deim Subdivision, referred to as 'the site' herein, is in a portion of the northwest quart of Section 30, Township 11 South, Range 66 West of the 6th P.M., El Paso County, Colorado. The site is bound by Hodgen Road to the north, Sundance Ranch Lane to the south and undeveloped land to the west and east. A vicinity map is presented in Appendix A.

### c. Description of Property

The site is approximately 35.05 acres of undeveloped and unplatted land with existing vegetation consisting of prairie grasses. There will be no disturbance associated with the final plat project. The development will plat 4 single family residential lots (5+ acre). Proposed lot sizes will vary between 5.15 to 15.09 acres. In general, the site slopes northeasterly towards the Franktown FPE-2 Reservoir. Onsite elevations range from 7435' - 7490' with slopes ranging 1 – 35%. Per a NRCS soil survey, the site is made up of Type B Peyton sandy loam and Type B Peyton-Pring Complex. The NRCS soil survey is presented in Appendix A.

An unnamed tributary of East Cherry Creek bisects the site. Franktown FPE-2 reservoir is located within this drainageway, just south of Hodgen Road. Franktown FPE-2 reservoir is located within a preservation easement. The reservoir and the dam will not be disturbed or altered by the development. There are no onsite existing utilities.

### d. Floodplain Statement

Based on FEMA Firm map 08041C0305G dated December 7, 2018, the site is Zone A and Zone X. Zone A are areas determined to be within the 1% annual chance flood. Zone X are areas determined to be outside the 0.2% annual chance flood.

## II. Drainage Basins

### a. Major Basin Description

The site is located within the East Cherry Creek Drainage Basin. There is not an approved DBPS available with El Paso County.

The "Flying Horse North Master Development Drainage Report" prepared by HR Green, dated September 9, 2022, (FHN MDDP) is the most recent drainage analysis of the areas surrounding the site. This report was reviewed for its applicability to the proposed development. However, hydrologic data from this report is not utilized. Instead, a FEMA approved LOMR (Case No. 18-08-0702P) will be utilized for the basis of existing stormwater in the unnamed tributary of East Cherry Creek that bisects the site.

The LOMR was approved for the unnamed tributary of East Cherry Creek that bisects the site. The LOMR was approved with a 100-year flow of 287 cfs. The LOMR does not provide a 5-year flow. The FHN MDDP greatly overestimates the flow in the tributary compared to the LOMR. Due to the LOMR being accepted by FEMA, LOMR flows will be utilized for the tributary analysis.

#### b. Existing Subbasin Description

The existing site's drainage patterns are northeasterly towards the Franktown FPE-2 reservoir. An unnamed tributary of East Chery Creek conveys onsite & offsite basins, located to the east and south of the site, towards the reservoir dam. It should be noted that per the approved LOMR, the 287 cfs is the total flow at the Hodgen Road crossing. Therefore, the 287 cfs includes the stormwater from all onsite and offsite basins draining to the unnamed tributary. The individual basin flows provided in the existing and proposed basin descriptions are to demonstrate those basin's flow contribution to the total of 287 cfs. For this reason, the flow at DP1 and DP6 are both 287 cfs. Therefore, the existing v. proposed flow comparison at DP6 account for both the total flow at DP6 and the individual basin contributions.

Basin A is 25.82 acres of onsite and offsite undeveloped land. Basin A stormwater ( $Q_5 = 2.8$  cfs  $Q_{100} = 19.0$  cfs) is conveyed in the unnamed tributary of East Cherry Creek to DP5 ( $Q_5 = 9.1$  cfs  $Q_{100} = 61$  cfs). At DP5, stormwater passes through the Franktown FPE-2 reservoir outlet structure and onto DP6.

DP1 ( $Q_5 = \text{N/A}$  cfs  $Q_{100} = 287$  cfs) is an existing, private 20" RCP culvert conveys stormwater across Sundance Ranch Lane and into Basin A. The culvert conveys 17.04 cfs and the remaining 256.96 cfs overtops Sundance Ranch Lane. Per a HY-8 analysis of the existing culvert, the HW/D ratio is 1.83 and does not meet the EPC DCM criteria of 1.5. The culvert discharge velocity is 8.20 ft/s and exceeds the limit of 2.5 ft/s established in EPC DCM Table 10-3 for sandy loam soils. The overtopping at DP1 occurs with a maximum depth of 0.59 feet, a velocity of 4.08 ft/s and span of approximately 140.50'. The overtopping depth does not meet the 6" maximum depth criteria from EPCDCM Table 6-4. A culvert analysis is presented in Appendix C.

After DP1, stormwater continues in the unnamed tributary of East Cherry Creek to DP5. A no build easement is proposed around the limits of the FEMA 100-year Zone A floodplain that is present in the unnamed tributary.

While the existing culvert does not meet EPC DCM criteria for capacity and overtopping, the existing culvert is not located within the boundary of the Deim Subdivision. The culvert is located on the unplatted land to the southwest of Deim Subdivision and is located within a private, utility easement that is owned and operated by Cherokee Metropolitan District. Therefore, the Deim Subdivision owner does not have jurisdiction or legal authority to make improvements to the culvert or Sundance Ranch Lane. Additionally, Deim Subdivision is located downstream of the culvert and the development will not affect the existing conditions of the culvert. For these reasons, a variance request has been submitted to El Paso County to accommodate the criteria violations of the existing culvert conditions.

Basin B is 15.77 acres of onsite, undeveloped land. Basin B stormwater ( $Q_5 = 2.8$  cfs  $Q_{100} = 18.7$  cfs) sheet flows to DP4 ( $Q_5 = 10.5$  cfs  $Q_{100} = 70.4$  cfs). DP4 is in a low point within the Franktown FPE-2 reservoir and is

adjacent to the spillway. Flows can overtop a berm to the west to DP5 or the spillway crest to the east. Both overtop paths outfall to DP6 ultimately.

Basin C is 2.77 acres of onsite, undeveloped land on the downstream end of the reservoir's dam. Basin C stormwater ( $Q_5 = 0.9$  cfs  $Q_{100} = 5.7$  cfs) is conveyed in the reservoir spillway to DP6 ( $Q_5 = 22.0$  cfs  $Q_{100} = 287$  cfs). At DP6, stormwater follows existing drainage patterns east along Hodgen Road. Since Basin C is located downstream of the dam, no development will occur within this basin.

Basin OS1 is approximately 42.32 acres of offsite, undeveloped land located along the site's southern boundary. Basin OS1 stormwater ( $Q_5 = 7.5$  cfs  $Q_{100} = 50.2$  cfs) sheet flows onto the site at DP2 ( $Q_5 = 7.5$  cfs  $Q_{100} = 50.2$  cfs). DP2 continues northeasterly through the site to DP4 ( $Q_5 = 10.5$  cfs  $Q_{100} = 70.4$  cfs).

Basin OS2 is approximately 23.53 acres of offsite, undeveloped land located along the site's eastern boundary. Basin OS2 stormwater ( $Q_5 = 4.4$  cfs  $Q_{100} = 29.5$  cfs) collects in a low point along the site's eastern boundary and overtops onto the site at DP3 ( $Q_5 = 4.4$  cfs  $Q_{100} = 29.5$  cfs) and continues to DP4 ( $Q_5 = 10.5$  cfs  $Q_{100} = 70.4$  cfs).

Basin OS3 is approximately 4.48 acres of offsite, undeveloped land and Hodgen Road. Basin OS3 stormwater ( $Q_5 = 1.6$  cfs  $Q_{100} = 7.8$  cfs) is collected in the roadside ditch along Hodgen Road and the Franktown FPD-2 reservoir spillway. Basin OS3 stormwater is conveyed to DP6 ( $Q_5 = 22.0$  cfs  $Q_{100} = 287$  cfs) where it follows existing drainage patterns along Hodgen Road.

DPOS1 ( $Q_5 = 12.1$  cfs  $Q_{100} = 54.9$  cfs) represents an offsite tributary crossing of Sundance Ranch Lane. Streamstats is utilized to quantify the basin limits and existing stormwater flows. DPOS1 does not have a culvert to pass flow under Sundance Ranch Lane. Instead, existing stormwater overtops the pavement and proceeds in an offsite tributary eventually to DP6 ( $Q_5 = 22.0$  cfs  $Q_{100} = 287$  cfs). The 100-year overtopping at DPOS1 occurs with a depth of 0.10', a velocity of 1.42 cfs and a span of approximately 354.72'. While the crossing meets EPC criteria, it also appears stable, vegetated and a suitable outfall for the tributary flow. Photos are presented in Appendix E for reference.

### c. Proposed Subbasin Description

The proposed conditions analysis utilizes the same drainage basins as the existing conditions. Proposed basin descriptions only address basins that are changed in the proposed condition. A proposed drainage map is presented in Appendix F.

Basin A is 25.82 acres of offsite, undeveloped land and portions of Lots 1-4. To account for future development of Lots 1 & 4, the hydrologic analysis of proposed Basin A includes 10,000 square foot of roof area and an assumed 20' driveway. See Basin B for Lots 2 & 3 development. Proposed Basin A stormwater ( $Q_5 = 3.1$  cfs  $Q_{100} = 19.7$  cfs) follows historic patterns and is conveyed in the unnamed tributary to DP5 ( $Q_5 = 9.7$  cfs  $Q_{100} = 62.3$  cfs). At DP5, stormwater passes through the Franktown FPE-2 reservoir outlet structure and onto DP6. Basin A is excluded from permanent water quality treatment per the Large Lot Single Family Sites exclusion in Appendix I of the EPC DCM. The proposed 100-year flow has a slight increase (Existing:  $Q_5 = 2.8$

cfs  $Q_{100} = 19.0$  cfs & Proposed:  $Q_5 = 3.1$  cfs  $Q_{100} = 19.7$  cfs) and will not adversely affect downstream infrastructure.

Basin B is 15.77 acres of Lots 2-4. To account for future development of Lot 2 & 3, the hydrologic analysis of proposed Basin A includes 10,000 square feet of roof area and an assumed 20' driveway. Proposed Basin B stormwater ( $Q_5 = 3.5$  cfs  $Q_{100} = 19.8$  cfs) follows historic patterns and is conveyed in the unnamed tributary to DP5 ( $Q_5 = 9.7$  cfs  $Q_{100} = 62.3$  cfs). At DP5, stormwater passes through the Franktown FPE-2 reservoir outlet structure and onto DP6. Basin B is excluded from permanent water quality treatment per the Large Lot Single Family Sites exclusion in Appendix I of the EPC DCM. The proposed 100-year flow has a slight increase (Existing:  $Q_5 = 2.8$  cfs  $Q_{100} = 18.7$  cfs & Proposed:  $Q_5 = 3.5$  cfs  $Q_{100} = 19.8$  cfs) and will not adversely affect downstream infrastructure.

### III. Drainage Design Criteria

#### a. Development Criteria Reference

The drainage analysis, proposed storm sewer system, and proposed private, full spectrum water quality and detention pond follow the criteria from the "El Paso County Drainage Criteria Manual, Volumes 1 and 2" (EPCDCM, latest revision).

#### b. Hydrologic Criteria

Onsite drainage improvements are designed for the 5-year storm (minor event) and 100-year storm (major event). Runoff is calculated per EPCDCM Chapter 5 – Storm Runoff Method of Analysis. Streamstats Version 4.29 is utilized to quantify select offsite basin flow.

#### c. Hydraulic Criteria

Hydraulic criteria for channel analysis are obtained from EPCDCM Chapter 9 – Culvert Design & Chapter 10 - Open Channels and Structures.

### IV. Drainage Facility Design

#### a. General Concept

The site will remain in its existing condition. No stormwater improvements will be made in conjunction with this FDR. However, Lots 1 – 4 have been analyzed with future assumptions for development.

#### b. Water Quality & Detention

Basin A - C are comprised of 5+ acre lots and are excluded from permanent water quality treatment per the Large Lot Single Family Sites exclusion in Appendix I of the EPC DCM. However, the exclusion does not relinquish detention requirements for the site. The development of the site has a marginal increase on peak flows in the 5-year and 100-year scenarios (DP6 Existing:  $Q_5 = 22.0$  cfs  $Q_{100} = 287.0$  cfs & Proposed:  $Q_5 = 22.6$  cfs  $Q_{100} = 288.1$  cfs). The total increase for the 5-year and 100-year scenarios is 2.73% and 0.38%, respectively. The marginal increase in flows will not adversely affect downstream drainageways and associated facilities.

#### c. Major Drainageways

An unnamed tributary to East Cherry Creek bisects the site and conveys offsite flow to Franktown FPE-2 reservoir. The unnamed tributary has FEMA Zone A from the site's northern boundary at Hodgen Road to the site's southern boundary at Sundance Ranch Lane. The site will be platted with a No Build easement encompassing the 100-year floodplain limits. Additionally, the Franktown FPE-2 reservoir dam will not be affected by the subdivision. The dam and limits of the reservoir will remain in an easement for construction, operation, maintenance and inspection of a floodwater retarding structure by Reception No. 279336. The plat has been included in Appendix E for reference.

A second unnamed tributary to East Cherry Creek crosses a second location along Sundance Ranch Lane, DPOS1. While the development of the site will not affect this crossing, as it is upstream of the development, Sundance Ranch Lane provides access to the site and must meet El Paso County roadway overtopping criteria, per EPC DCM Section 6.4.1. Based on the hydraulic analysis of the crossing, the 100-year flow of 54.9 cfs overtops with a depth of 0.10'. Photographs of the drainageway and crossing are presented in Appendix E.

#### d. Grading & Erosion Control Plan

The project will not perform any earthwork operations or disturbances. Therefore, a Grading and Erosion Control Plan is not required.

#### e. Four Step Method

*Step 1 – Reducing Runoff Volumes:* Roof drains will route across landscape areas whenever possible to promote infiltration. In addition, the lots are limited to 10% imperviousness to help reduce runoff volumes.

*Step 2 – Treat and slowly release the WQCV:* Deim Subdivision is comprised of 5+ acre lots and is excluded from permanent water quality per the exclusions in Appendix I of the EPC DCM.

*Step 3 – Stabilize stream channels:* All new and re-development projects are required to construct or participate in the funding of channel stabilization measures. Drainage basin fees paid, at the time of platting, go towards channel stabilization with the drainage basin. However, the site lies within the East Cherry Creek Drainage Basin which has no associated fees.

*Step 4 – Consider the need for source controls:* No industrial or commercial uses are proposed within this development and therefore no source controls are proposed.

#### f. Drainage Basin & Bridge Fees

Drainage and bridge fees are due at time of platting. However, the site lies within the East Cherry Creek Drainage Basin which has no associated fees.





## V. Summary

Deim Subdivision remains consistent with pre-development drainage conditions with the construction of the recommended drainage improvements. The proposed development will not adversely affect downstream stormwater infrastructure or surrounding developments. This report meets the latest El Paso County Drainage criteria. The development will not adversely affect access across the Franktown FPE-2 easement for maintenance of the FPE-2 dam and reservoir in any way.

## VI. References

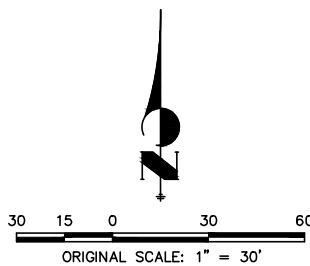
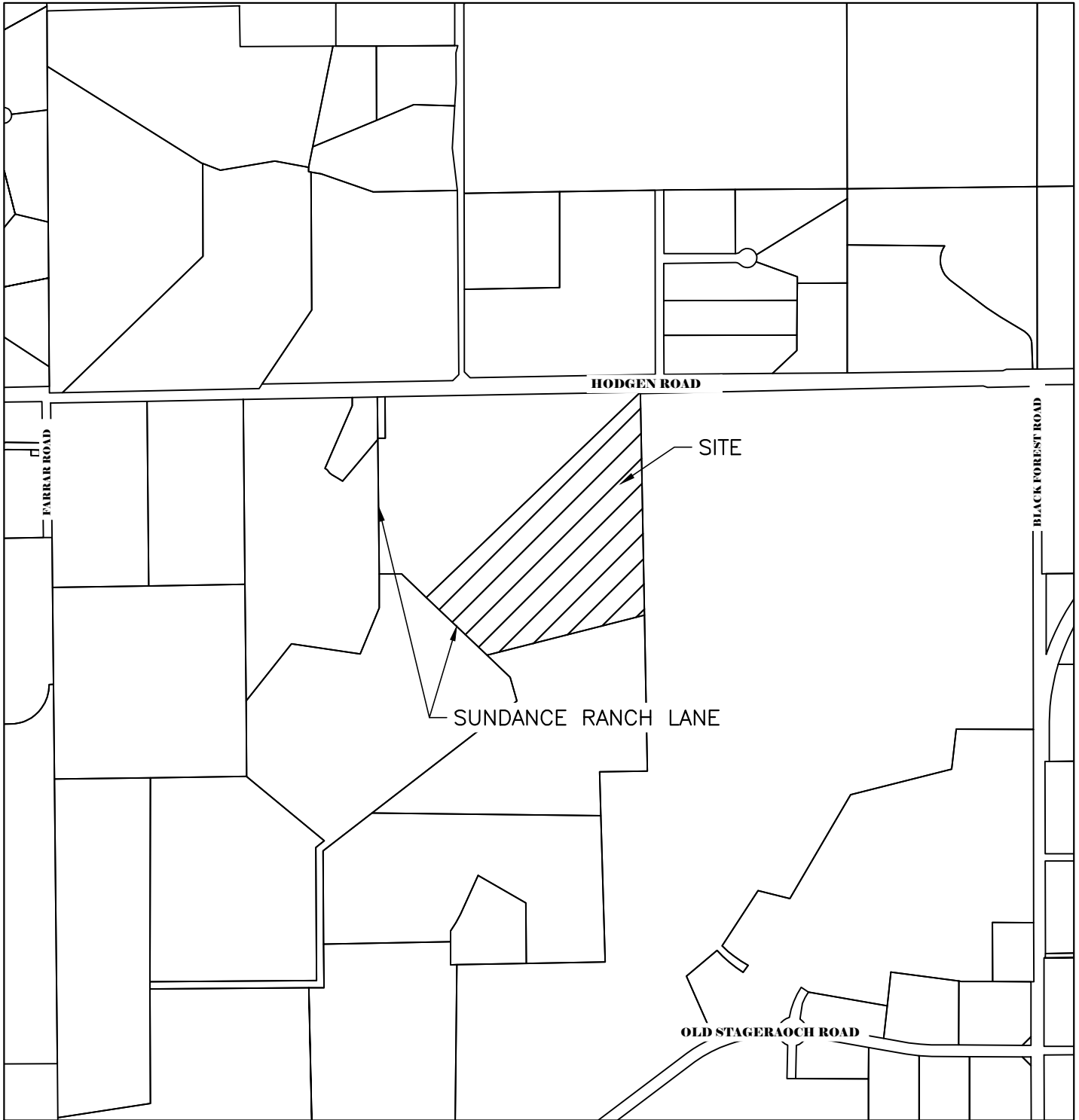
1. Drainage Criteria Manual and Drainage Criteria Manual Update of El Paso County, Revised 1991, 2015, 2018.
2. El Paso County Engineering Criteria Manual, 2023.
3. Urban Storm Drainage Criteria Manual, Urban Drainage Flood Control District, January 2018.
4. Federal Emergency Management Agency, Flood Map Service Center - <https://msc.fema.gov/portal/home>
5. Web Soil Survey, Natural Resources Conservation Service - <https://websoilsurvey.nrcs.usda.gov/app/>
6. U.S. Geologic Survey, Streamstats - <https://www.usgs.gov/streamstats>




## **APPENDIX A – VICINITY MAP, FEMA MAP, NRCS WEB SOIL SURVEY & NOAA ATLAS 14**

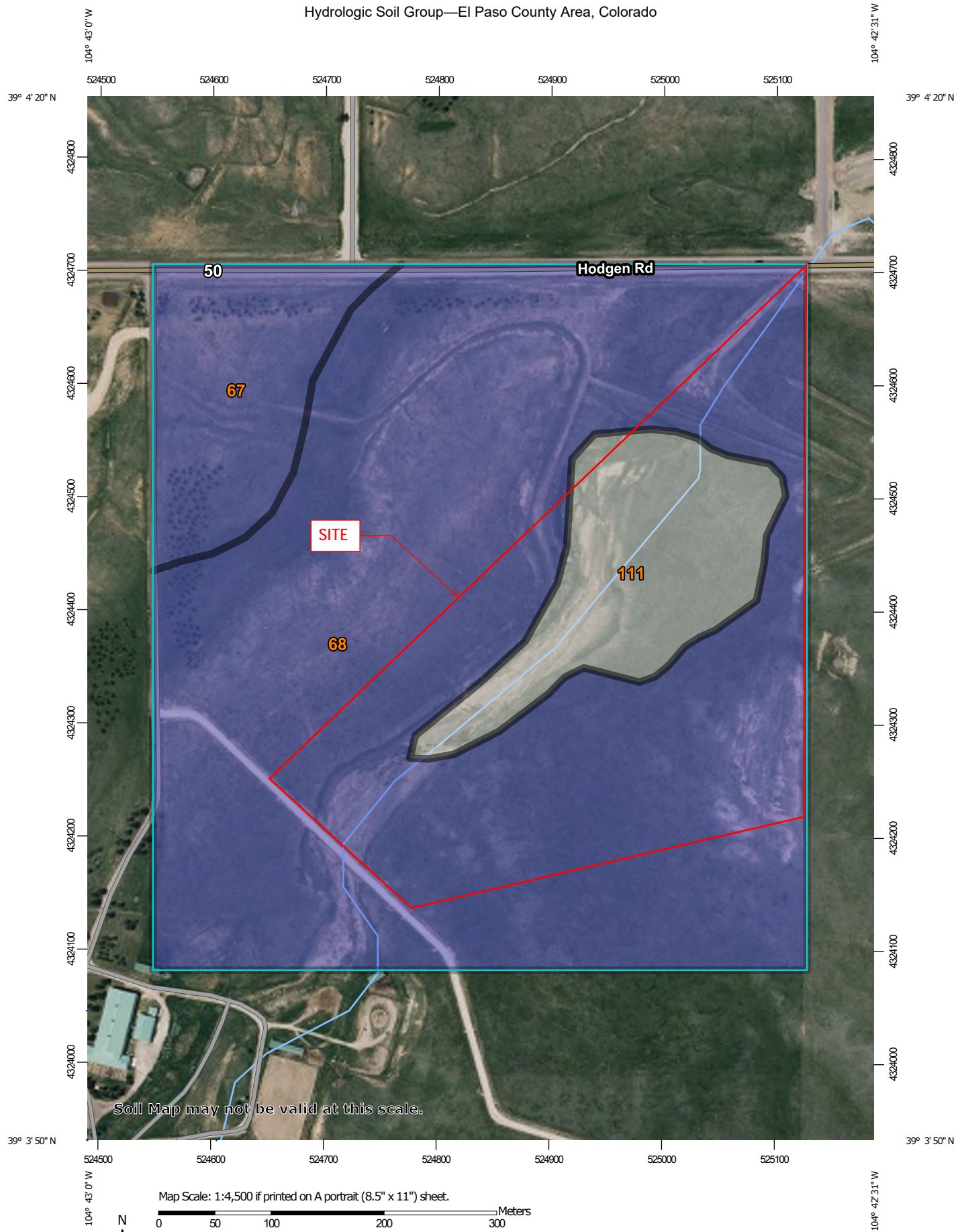
# DEIM SUBDIVISION

## VICINITY MAP

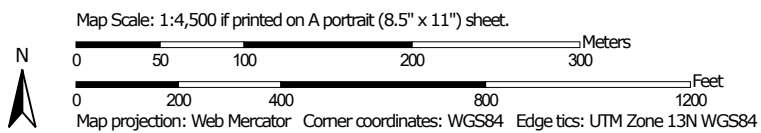


VICINITY MAP		 <b>TALL TERRAIN ENGINEERING</b> 1004 WEST VAN BUREN STREET COLORADO SPRINGS, CO 80907
DEIM SUBDIVISION		
JOB NO. 24034		
LOCATION: EPC	SHEET	
02/11/2025		
SHEET: 1		

# Hydrologic Soil Group—El Paso County Area, Colorado



Soil Map may not be valid at this scale.



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

1/28/2025  
Page 1 of 4

## 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.

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 22, Sep 3, 2024

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

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

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
67	Peyton sandy loam, 5 to 9 percent slopes	B	9.0	10.0%
68	Peyton-Pring complex, 3 to 8 percent slopes	B	70.7	78.7%
111	Water		10.1	11.3%
<b>Totals for Area of Interest</b>			<b>89.8</b>	<b>100.0%</b>

## 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.

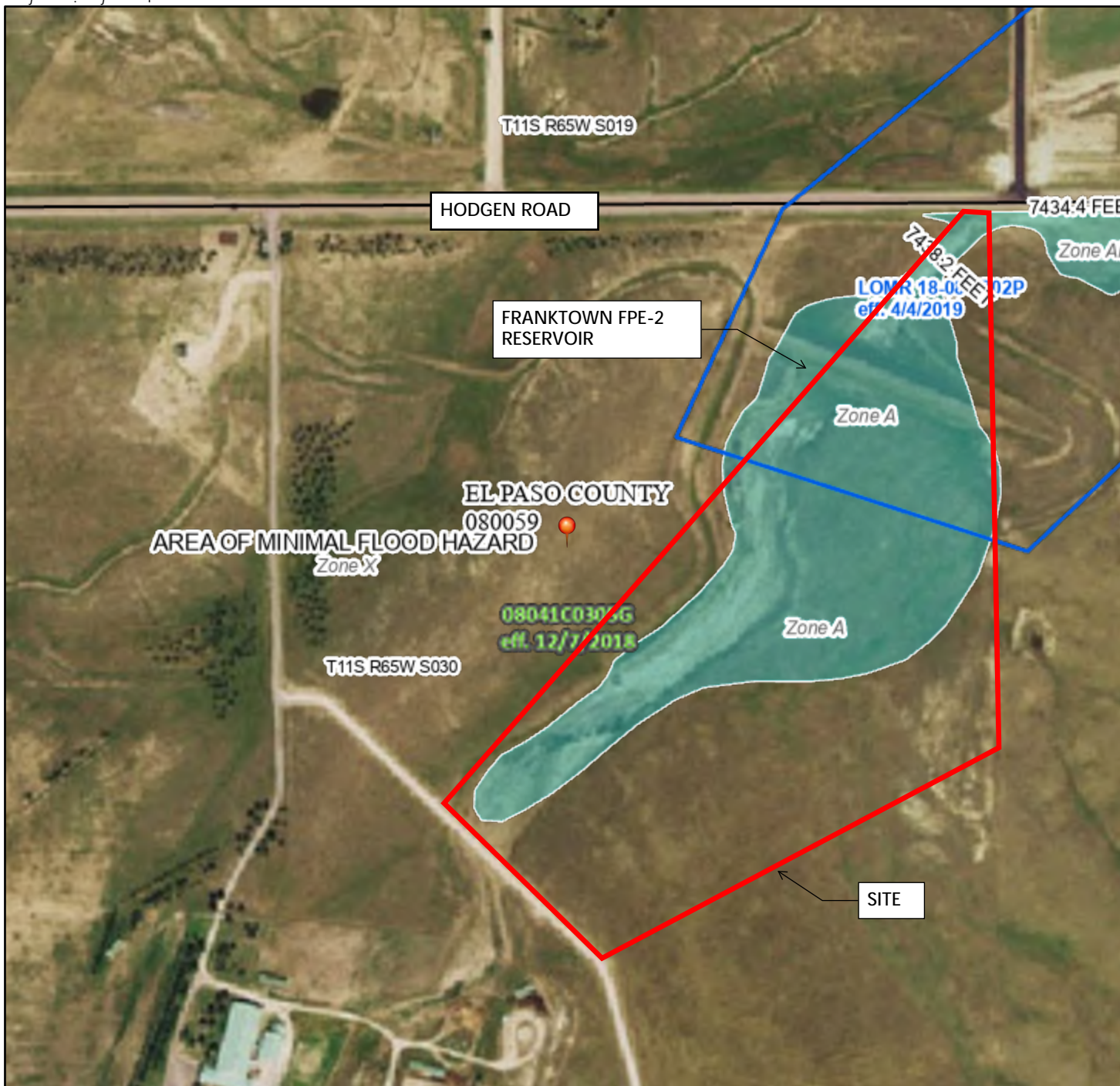
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over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









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63(&,\$/ )/22' +\$=\$5' \$5(

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\$QQXDO &KDQFH )ORRG  
RI DQQXDO FKDQFH IOI  
GHSWK OHVV WKDQ RQH  
DUHDV RI OHVV WKDQ RQH

XWXUH &RQLWLRLQV  
&KDQFH )ORRG +DJDUG  
\$UHD ZLWK 5HGXFHG )ORRG  
/HYHH 6HHRLRWHV  
\$UHD ZLWK )ORRG 5LVLN

12 6&5( (\$UHD RI 0LQLPDO )ORRG  
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\*(1(\$ /--- &KDQQHO &XOYHUW RU  
6758&785(16111 /HYHH 'LNH RU )ORRGZD

&URVV 6HFWLRQV ZLWK  
:DWHU 6XUIDFH (OHYDWL  
&RDVWDO 7UDQVHFV  
%DVH )ORRG (OHYDWLRQ  
/LPL RI 6WXG\  
-XULVGLFWLRQ %RXQGDU  
&RDVWDO 7UDQVHFV %DVH  
27+(5 3URLOH %DVHOLQH  
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7KH SLQ GLVSOD\HG RQ WKH  
SRLQW VHOHFWHG E\ WKH XV  
DQ DXWKRULWDWLYH SURSHU

7KLV PDS FRPSOLHV ZLWK )(0\$ V VWDQ  
GLJLWDO IORRG PDSV LI LW LV QRW YR  
7KH EDVHPDS VKRZQ FRPSOLHV ZLWK )(0  
DFFXUD\ VWDQGDUGV

7KH IORRG KDJDUG LQIRUPDWLRQ LV GH  
DXWKRULWDWLYH 1)+/ ZHE VHU\LFHV S  
ZDV H[SURWHG RQ W DQG GRHV RQ  
UHIOHFW FKDQJHV RU DPHQGPHQWV VX  
WLPH 7KH 1)+/ DQG HIIHFWLYH LQIRUP  
EHFRPH VXSHUVHG E\ QHZ GDWD RYH

7KLV PDS LPDJH LV YRLG LI WKH RQH R  
HOHPHQWV GR QRW DSSHU EDVHPDS  
OHJHQG VFDOH EDU PDS FUNDWLRQ G  
,50 SDQHO QXPEHU DQG ),50 HIIHFWLY  
XQPDSSHG DQG XQPRGHUQLJHG DUHDV  
UHJXODWRU\ SXUSRVHV



## **APPENDIX B – HYDROLOGIC CALCULATIONS**

**Subdivision:** Deim Subdivision  
**Location:** El Paso County  
**Project Name:** Deim Subdivision  
**Project Number:** 24034  
**Calculated By:** NQJ  
**Checked By:** REB  
**Date:** 6/6/2025

EXISTING CONDITIONS - BASIN SUMMARY TABLE							
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>5</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>5</sub> (cfs)	Q <sub>100</sub> (cfs)
A	25.82	2%	0.09	0.36	69.7	2.8	19.0
B	15.77	2%	0.09	0.36	42.3	2.8	18.7
C	2.77	2%	0.09	0.36	16.1	0.9	5.7
OS1	42.32	2%	0.09	0.36	42.4	7.5	50.2
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
OS1	12.1	54.9
1	N/A	287.0
2	7.5	50.2
3	4.4	29.5
4	10.5	70.4
5	9.1	61.0
6 ONSITE	22.0	120.2
6 TOTAL	22.0	287.0

COMPOSITE % IMPERVIOUS CALCULATIONS - EXISTING CONDITIONS

Subdivision: Deim Subdivision  
Location: El Paso County

Project Name: Deim Subdivision  
Project No.: 24034.00  
Calculated By: NQJ  
Checked By: REB  
Date: 3/28/25

Basin ID	Total Area (ac)	Dirt Roadway				Paved				Historic Greenbelt				Weighted C <sub>5</sub> & C <sub>100</sub>		Basins Total Weighted % Imp.
		C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	
A	25.82	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.09	0.36	25.82	2.0%	0.09	0.36	2.0%
B	15.77	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.09	0.36	15.77	2.0%	0.09	0.36	2.0%
C	2.77	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.09	0.36	2.77	2.0%	0.09	0.36	2.0%
OS1	42.32	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.09	0.36	42.32	2.0%	0.09	0.36	2.0%
OS2	23.53	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.09	0.36	23.53	2.0%	0.09	0.36	2.0%
OS3	4.48	0.59	0.70	0.00	80.0%	0.9	0.96	0.25	100.0%	0.09	0.36	4.23	2.0%	0.14	0.39	7.5%
Total	114.69															2.2%

STANDARD FORM SF-2 - EXISTING CONDITIONS  
TIME OF CONCENTRATION

Subdivision: Deim Subdivision  
Location: El Paso County

Project Name: Deim Subdivision  
Project No.: 24034.00  
Calculated By: NQJ  
Checked By: REB  
Date: 3/28/25

SUB-BASIN					INITIAL/OVERLAND			TRAVEL TIME					t <sub>c</sub> CHECK			FINAL
DATA					(T <sub>i</sub> )			(T <sub>t</sub> )					(URBANIZED BASINS)			
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Weighted C <sub>s</sub>	Impervious (%)	L (ft)	S <sub>o</sub> (%)	t <sub>i</sub> (min)	L <sub>t</sub> (ft)	S <sub>t</sub> (%)	K	VEL. (ft/s)	t <sub>t</sub> (min)	COMP. t <sub>c</sub> (min)	TOTAL LENGTH (ft)	Urbanized t <sub>c</sub> (min)	t <sub>c</sub> (min)
A	25.82	B	0.09	2.0%	300	4.7%	19.0	2194	0.80%	7.0	0.6	58.4	77.4	2494.0	69.7	69.7
B	15.77	B	0.09	2.0%	300	7.3%	16.4	1375	1.6%	7.0	0.9	25.9	42.3	1675.0	45.2	42.3
C	2.77	B	0.09	2.0%	86	8.0%	8.5	586	3.4%	7.0	1.3	7.6	16.1	672.0	31.4	16.1
OS1	42.32	B	0.09	2.0%	300	6.0%	17.5	1841	3.1%	7.0	1.2	24.9	42.4	2141.0	44.4	42.4
OS2	23.53	B	0.09	2.0%	300	2.7%	22.8	1440	3.6%	7.0	1.3	18.1	40.8	1740.0	39.3	39.3
OS3	4.48	B	0.14	7.5%	260	4.6%	17.0	773	3.2%	7.0	1.3	10.3	27.3	1033.0	31.9	27.3

NOTES:

$t_c = t_i + t_t$

Where:

$t_c$  = computed time of concentration (minutes)

$t_i$  = overland (initial) flow time (minutes)

$t_t$  = channelized flow time (minutes).

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t}$$

Where:

$t_t$  = channelized flow time (travel time, min)

$L_t$  = waterway length (ft)

$S_o$  = waterway slope (ft/ft)

$V_t$  = travel time velocity (ft/sec) =  $K\sqrt{S_o}$

$K$  = NRCS conveyance factor (see Table 6-2).

Eq 
$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.333}}$$

Where:

$t_i$  = overland (initial) flow time (minutes)

$C_5$  = runoff coefficient for 5-year frequency (from Table 6-4)

$L_i$  = length of overland flow (ft)

$S_o$  = average slope along the overland flow path (ft/ft).

Equation 6-4 
$$t_c = \frac{16 - 17t_i}{60(14i + 9)\sqrt{S_t}}$$

Eq:

$t_c$  = minimum time of concentration for first design point when less than  $t_i$  from Equation 6-1.

$L_o$  = length of channelized flow path (ft)

$i$  = imperviousness (expressed as a decimal)

$S_t$  = slope of the channelized flow path (ft/ft).

Equation 6-3

Equation 6-5

Table 6-2. NRCS Conveyance factors, K	
Type of Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Use a minimum  $t_c$  value of 5 minutes for urbanized areas and a minimum  $t_c$  value of 10 minutes for areas that are not considered urban. Use minimum values even when calculations result in a lesser time of concentration.

STANDARD FORM SF-3 - EXISTING CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Deim Subdivision  
Location: El Paso County  
Design Storm: 5-Year

Project Name: Deim Subdivision  
Project No.: 24034.00  
Calculated By: NOJ  
Checked By: REB  
Date: 3/28/25

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				SURFACE			PIPE				TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	$t_c$ (min)	C*A (Ac)	I (in/hr)	Q (cfs)	$t_c$ (min)	C*A (ac)	I (in/hr)	Q (cfs)	$Q_{stream}$ (cfs)	C*A (ac)	Slope (%)	$Q_{pipe}$ (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	$t_t$ (min)	
	OS1	N/A	N/A	N/A	N/A	N/A	N/A	12.1															DPOS1 FLOW, SEE STREAMSTATS IN APPENDIX E, OFFSITE DRAINAGE FLOW TO DP6
	1							N/A															CWCB BLE STUDY DOES NOT INCLUDE 5-YEAR FLOW, SEE 100-YEAR SCENARIO
		A	25.82	0.09	69.71	2.32	1.22	2.8															BASIN A FLOW @ DP5
	2	OS1	42.32	0.09	42.38	3.81	1.96	7.5					7.5	3.81	1.60					1375	1.3	18.1	BASIN OS1 FLOW @ DP2, FOLLOWS EXISTING TO DP4
	3	OS2	23.53	0.09	39.29	2.12	2.08	4.4					4.4	2.12	2.40					510	1.5	5.5	BASIN OS2 FLOW @ DP3, FOLLOWS EXISTING TO DP4
		B	15.77	0.09	42.27	1.42	1.97	2.8															BASIN B FLOW @ DP4
	4								60.5	7.35	1.43	10.5	10.5	7.35	0.08					395	0.3	23.3	COMBINED DP2, DP3 & BASIN B FLOW @ DP4, FOLLOW EXISTING TO DP5
	5								83.8	9.67	0.94	9.1											COMBINED BASIN A, DP1 & DP4 @ DP5, PIPED THROUGH DAM TO DP6
		C	2.77	0.09	16.08	0.25	3.42	0.9															BASIN C FLOW @ DP6
		OS3	4.48	0.14	27.26	0.61	2.62	1.6															BASIN OS3 FLOW @ DP6
	6								83.8	10.52	0.94	22.0											COMBINED DPOS1, DP5, BASIN C & BASIN OS3 FLOW @ DP6, FOLLOWS HISTORIC EAST ALONG HODGEN ROAD

Notes:  
Street and Pipe C\*A values are determined by Q/I using the catchment's intensity value.

IDF Equations

$$I_{24h} = -2.52 \ln(D) + 12.735$$
$$I_{6h} = -2.18 \ln(D) + 11.375$$
$$I_{3h} = -2.00 \ln(D) + 10.111$$
$$I_{1h} = -1.75 \ln(D) + 8.847$$
$$I_{0.5h} = -1.50 \ln(D) + 7.583$$
$$I_{0.2h} = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

STANDARD FORM SF-3 - EXISTING CONDITIONS  
STORM DRAINAGE SYSTEM DESIGN  
(RATIONAL METHOD PROCEDURE)

Subdivision: Deim Subdivision  
Location: El Paso County  
Design Storm: 100-Year

Project Name: Deim Subdivision  
Project No.: 24034.00  
Calculated By: NQJ  
Checked By: REB  
Date: 3/28/25

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				SURFACE			PIPE				TRAVEL TIME			REMARKS
		Basin ID	Area (ac)	Runoff Coeff.	$t_c$ (min)	C*A (ac)	I (in/hr)	Q (cfs)	$t_c$ (min)	C*A (ac)	I (in/hr)	Q (cfs)	$Q_{stream}$ (cfs)	C*A (ac)	Slope (%)	$Q_{pipe}$ (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	$t_t$ (min)	
	OS1	N/A	N/A	N/A	N/A	N/A	N/A	54.9															DPOS1 FLOW, SEE STREAMSTATS IN APPENDIX E, OFFSITE DRAINAGE FLOW TO DP6
	1							287.0															CWCB BLE STUDY FLOW IN UNNAMED TRIBUTARY TO EAST CHERRY CREEK (ALL FLOWS BELOW ARE INCLUDED IN THE 287 CFS)
		A	25.82	0.36	69.71	9.30	2.04	19.0															BASIN A FLOW @ DP5
	2	OS1	42.32	0.36	42.38	15.24	3.29	50.2					50.2	15.24	1.60					1375	1.3	18.1	BASIN OS1 FLOW @ DP2, FOLLOWS EXISTING TO DP4
	3	OS2	23.53	0.36	39.29	8.47	3.48	29.5					29.5	8.47	2.40					510	1.5	5.5	BASIN OS2 FLOW @ DP3, FOLLOWS EXISTING TO DP4
		B	15.77	0.36	42.27	5.68	3.30	18.7															BASIN B FLOW @ DP4
	4								60.5	29.38	2.40	70.4	70.4	29.38	0.08					395	0.3	23.3	COMBINED DP2, DP3 & BASIN B FLOW @ DP4, FOLLOW EXISTING TO DP5
	5								83.8	38.68	1.58	61.0											COMBINED BASIN A, DP1 & DP4 @ DP5, PIPED THROUGH DAM TO DP6
		C	2.77	0.36	16.08	1.00	5.74	5.7															BASIN C FLOW @ DP6
		OS3	4.48	0.39	27.26	1.76	4.41	7.8															BASIN OS3 FLOW @ DP6
	6	ONSITE CONTRIBUTION							83.8	41.44	1.58	120.2											COMBINED DPOS1, DP5, BASIN C & BASIN OS3 FLOW @ DP6, FOLLOWS HISTORIC EAST ALONG HODGEN ROAD
	6	TOTAL FLOW										287.0											CWCB BLE STUDY 100-YEAR FLOW IN UNNAMED TRIBUTARY OF EAST CHERRY CREEK (ALL OTHER BASINS INCLUDED IN THIS FLOW)

IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$
$$I_{50} = -2.25 \ln(D) + 11.375$$
$$I_{25} = -2.09 \ln(D) + 10.111$$
$$I_{10} = -1.75 \ln(D) + 8.847$$
$$I_5 = -1.50 \ln(D) + 7.583$$
$$I_1 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figures.



**Subdivision:** Deim Subdivision  
**Location:** El Paso County  
**Project Name:** Deim Subdivision  
**Project Number:** 24034  
**Calculated By:** NQJ  
**Checked By:** REB  
**Date:** 6/6/2025

PROPOSED CONDITIONS - BASIN SUMMARY TABLE							
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>5</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>5</sub> (cfs)	Q <sub>100</sub> (cfs)
A	25.82	3%	0.10	0.37	68.8	3.1	19.7
B	15.77	5%	0.11	0.38	41.9	3.5	19.8
C	2.77	2%	0.09	0.36	16.1	0.9	5.7
OS1	43.32	2%	0.09	0.36	42.4	7.7	51.4
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8

PROPOSED CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
OS1	12.1	54.9
1	N/A	287.0
2	7.7	51.4
3	4.4	29.5
4	11.1	72.0
5	9.7	62.3
6 ONSITE	22.6	121.6
6 TOTAL	22.6	288.1

FLOW COMPARISON - DP6		
Condition	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
Existing	22.0	287
Proposed	22.6	288.1
% Increase	2.73%	0.38%



COMPOSITE % IMPERVIOUS CALCULATIONS - PROPOSED CONDITIONS

Subdivision: Deim Subdivision  
Location: El Paso County

Project Name: Deim Subdivision  
Project No.: 24034.00  
Calculated By: NQJ  
Checked By: REB  
Date: 6/6/25

		Dirt Roadway				Paved				Roofs				Historic Greenbelt				Weighted C <sub>5</sub> & C <sub>100</sub>		Basins Total Weighted % Imp.
Basin ID	Total Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	% Imp.			
																		C <sub>5</sub>	C <sub>100</sub>	
A	25.82	0.59	0.70	0.10	80.0%	0.9	0.96	0.00	100.0%	0.73	0.81	0.22	90.0%	0.09	0.36	25.72	2.0%	0.10	0.37	3.1%
B	15.77	0.59	0.70	0.33	80.0%	0.9	0.96	0.00	100.0%	0.73	0.81	0.22	90.0%	0.09	0.36	15.44	2.0%	0.11	0.38	4.9%
C	2.77	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	2.77	2.0%	0.09	0.36	2.0%
OS1	43.32	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	43.32	2.0%	0.09	0.36	2.0%
OS2	23.53	0.59	0.70	0.00	80.0%	0.9	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	23.53	2.0%	0.09	0.36	2.0%
OS3	4.48	0.59	0.70	0.00	80.0%	0.9	0.96	0.25	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	4.23	2.0%	0.14	0.39	7.5%
Total	115.69																			2.8%

# STANDARD FORM SF-2 - PROPOSED CONDITIONS

## TIME OF CONCENTRATION

Subdivision: Deim Subdivision  
 Location: El Paso County

Project Name: Deim Subdivision  
 Project No.: 24034.00  
 Calculated By: NQJ  
 Checked By: REB  
 Date: 6/6/25

SUB-BASIN					INITIAL/OVERLAND			TRAVEL TIME					t <sub>c</sub> CHECK			FINAL
DATA					(T <sub>i</sub> )			(T <sub>t</sub> )					(URBANIZED BASINS)			
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Weighted C <sub>5</sub>	Impervious (%)	L (ft)	S <sub>o</sub> (%)	t <sub>i</sub> (min)	L <sub>t</sub> (ft)	S <sub>t</sub> (%)	K	VEL. (ft/s)	t <sub>t</sub> (min)	COMP. t <sub>c</sub> (min)	TOTAL LENGTH (ft)	Urbanized t <sub>c</sub> (min)	t <sub>c</sub> (min)
A	25.82	B	0.10	3.1%	300	4.7%	18.8	2194	0.80%	7.0	0.6	58.4	77.2	2494.0	68.8	68.8
B	15.77	B	0.11	4.9%	300	7.3%	16.1	1375	1.6%	7.0	0.9	25.9	41.9	1675.0	43.9	41.9
C	2.77	B	0.09	2.0%	86	8.0%	8.5	586	3.4%	7.0	1.3	7.6	16.1	672.0	31.4	16.1
OS1	43.32	B	0.09	2.0%	300	6.0%	17.5	1841	3.1%	7.0	1.2	24.9	42.4	2141.0	44.4	42.4
OS2	23.53	B	0.09	2.0%	300	2.7%	22.8	1440	3.6%	7.0	1.3	18.1	40.8	1740.0	39.3	39.3
OS3	4.48	B	0.14	7.5%	260	4.6%	17.0	773	3.2%	7.0	1.3	10.3	27.3	1033.0	31.9	27.3

### NOTES:

$$t_c = t_i + t_t$$

Where:

t<sub>c</sub> = computed time of concentration (minutes)

t<sub>i</sub> = overland (initial) flow time (minutes)

t<sub>t</sub> = channelized flow time (minutes).

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t}$$

Where:

t<sub>t</sub> = channelized flow time (travel time, min)

L<sub>t</sub> = waterway length (ft)

S<sub>o</sub> = waterway slope (ft/ft)

V<sub>t</sub> = travel time velocity (ft/sec) = K√S<sub>o</sub>

K = NRCS conveyance factor (see Table 6-2).

$$\text{Eq } t_i = \frac{0.395(1.1 - C_s)\sqrt{L_i}}{S_o^{0.333}}$$

Where:

t<sub>i</sub> = overland (initial) flow time (minutes)

C<sub>s</sub> = runoff coefficient for 5-year frequency (from Table 6-4)

L<sub>i</sub> = length of overland flow (ft)

S<sub>o</sub> = average slope along the overland flow path (ft/ft).

$$\text{Equation 6-4 } t_i = \frac{L_i}{60(14i + 9)\sqrt{S_o}}$$

Where:

t<sub>i</sub> = minimum time of concentration for first design point when less than t<sub>c</sub> from Equation 6-1.

L<sub>i</sub> = length of channelized flow path (ft)

i = imperviousness (expressed as a decimal)

S<sub>o</sub> = slope of the channelized flow path (ft/ft).

Equation 6-3

Table 6-2. NRCS Conveyance factors, K

Type of Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Equation 6-5

Use a minimum t<sub>c</sub> value of 5 minutes for urbanized areas and a minimum t<sub>c</sub> value of 10 minutes for areas that are not considered urban. Use minimum values even when calculations result in a lesser time of concentration.

## STANDARD FORM SF-3 - PROPOSED CONDITIONS

## STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Deim Subdivision

Location: El Paso County

Design Storm: 5-Year

Project Name: Deim Subdivision

Project No.: 24034.00

Calculated By: NOJ

Checked By: REB

Date: 6/6/25

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				SURFACE			PIPE				TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	$t_c$ (min)	C*A (Ac)	I (in/hr)	Q (cfs)	$t_c$ (min)	C*A (ac)	I (in/hr)	Q (cfs)	$Q_{stream}$ (cfs)	C*A (ac)	Slope (%)	$Q_{pipe}$ (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	$t_t$ (min)	
	OS1	N/A	N/A	N/A	N/A	N/A	N/A	12.1															DPOS1 FLOW, SEE STREAMSTATS IN APPENDIX E, OFFSITE DRAINAGE FLOW TO DP6
	1							N/A															CWCB BLE STUDY DOES NOT INLCUDE 5-YEAR FLOW, SEE 100-YEAR SCENARIO
		A	25.82	0.10	68.83	2.53	1.24	3.1															BASIN A FLOW @ DP5
	2	OS1	43.32	0.09	42.38	3.90	1.96	7.7					7.7	3.90	1.60					1375	1.3	18.1	BASIN OS1 FLOW @ DP2, FOLLOW EXISTING TO DP4
	3	OS2	23.53	0.09	39.29	2.12	2.08	4.4					4.4	2.12	2.40					510	1.5	5.5	BASIN OS2 FLOW @ DP3, FOLLOW EXISTING TO DP4
		B	15.77	0.11	41.94	1.74	1.98	3.5															BASIN B FLOW@ DP4
	4								60.5	7.76	1.43	11.1	11.1	7.76	0.08					395	0.3	23.3	COMBINED DP2, DP3 & BASIN B FLOW @ DP4, FOLLOW EXISTING TO DP5
	5								83.8	10.30	0.94	9.7	9.7	10.30	1.00					455	1.0	7.6	COMBINED BASIN A, DP1 & DP4 @ DP5, PIPED THROUGH DAM TO TDP6
		C	2.77	0.09	16.08	0.25	3.42	0.9															BASIN C FLOW @ DP6
		OS3	4.48	0.14	27.26	0.61	2.62	1.6															BASIN OS3 FLOW @ DP6
	6								83.8	11.15	0.94	22.6											COMBINED DPOS1, DP5, BASIN C & BASIN OS3 @ DP6, FOLLOWS HISTORIC EAST ALONG HODGEN ROAD

## Notes:

Street and Pipe C\*A values are determined by Q/I using the catchment's intensity value.

## IDF Equations

$$I_{24h} = -2.52 \ln(D) + 12.735$$

$$I_{6h} = -2.25 \ln(D) + 11.375$$

$$I_{3h} = -2.00 \ln(D) + 10.111$$

$$I_{1h} = -1.75 \ln(D) + 8.847$$

$$I_1 = -1.50 \ln(D) + 7.583$$

$$I_2 = -1.19 \ln(D) + 6.835$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

## STANDARD FORM SF-3 - PROPOSED CONDITIONS

## STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Deim Subdivision

Project Name: Deim Subdivision

Location: El Paso County

Project No.: 24034.00

Design Storm: 100-Year

Calculated By: NQJ

Checked By: REB

Date: 6/6/25

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				SURFACE			PIPE				TRAVEL TIME			REMARKS
		Basin ID	Area (ac)	Runoff Coeff.	$t_c$ (min)	C*A (ac)	$I$ (in/hr)	Q (cfs)	$t_c$ (min)	C*A (ac)	$I$ (in/hr)	Q (cfs)	$Q_{stream}$ (cfs)	C*A (ac)	Slope (%)	$Q_{pipe}$ (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	$t_t$ (min)	
	OS1	N/A	N/A	N/A	N/A	N/A	N/A	54.9															DPOS1 FLOW, SEE STREAMSTATS IN APPENDIX E, OFFSITE DRAINAGE FLOW TO DP6
	1							287.0															CWCB BLE STUDY FLOW IN UNNAMED TRIBUTARY TO EAST CHERRY CREEK (ALL FLOWS BELOW ARE INCLUDED IN THE 287 CFS)
		A	25.82	0.37	68.83	9.51	2.07	19.7															BASIN A FLOW @ DP5
	2	OS1	43.32	0.36	42.38	15.60	3.29	51.4					51.4	15.60	1.60					1375	1.3	18.1	BASIN OS1 FLOW @ DP2, FOLLOW EXISTING TO DP4
	3	OS2	23.53	0.36	39.29	8.47	3.48	29.5					29.5	8.47	2.40					510	1.5	5.5	BASIN OS2 FLOW @ DP3, FOLLOW EXISTING TO DP4
		B	15.77	0.38	41.94	5.97	3.32	19.8															BASIN B FLOW @ DP4
	4								60.5	30.03	2.40	72.0	72.0	30.03	0.08					395	0.3	23.3	COMBINED DP2, DP3 & BASIN B FLOW @ DP4, FOLLOW EXISTING TO DP5
	5								83.8	39.54	1.58	62.3	62.3	39.54	1.00					455	1.0	7.6	COMBINED BASIN A, DP1 & DP4 @ DP5, PIPED THROUGH DAM TO TDP6
		C	2.77	0.36	16.08	1.00	5.74	5.7															BASIN C FLOW @ DP6
		OS3	4.48	0.39	27.26	1.76	4.41	7.8															BASIN OS3 FLOW @ DP6
	6	ONSITE CONTRIBUTION							83.8	42.30	1.58	121.6											COMBINED DPOS1, DP5, BASIN C & BASIN OS3 @ DP6, FOLLOWS HISTORIC EAST ALONG HODGEN ROAD
	6	TOTAL FLOW										288.1											CWCB BLE STUDY 100-YEAR FLOW IN UNNAMED TRIBUTARY OF EAST CHERRY CREEK (ALL OTHER BASINS INCLUDED IN THIS FLOW)

## IDF Equations

$$I_{24h} = -2.52 \ln(D) + 12.735$$

$$I_{18} = -2.25 \ln(D) + 11.375$$

$$I_{24} = -2.00 \ln(D) + 10.111$$

$$I_{18} = -1.75 \ln(D) + 8.847$$

$$I_3 = -1.50 \ln(D) + 7.583$$

$$I_1 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.



## **APPENDIX C – HYDRAULIC CALCULATIONS**

# HY-8 Culvert Analysis Report

**Table 1 - Project Headwater Table**

Crossing Name	Culvert Name	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	HW / D (ft)	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Outlet Velocity (ft/s)
Ex 20" RCP	Culvert 1	287.00	17.04	8052.02	592.21	464.337	354.62	1.67	1.67	1.67	131.03

REMAINING 256.96 CFS  
OVERTOPS SUNDANCE RANCH LANE  
SEE OVERTOPPING ANALYSIS

DP1 CULVERT ANALYSIS

### Crossing Input: Ex 20" RCP

Parameter	Value	Units
<b>DISCHARGE DATA</b>		
Discharge Method	Minimum, Design, and Maximum	
Minimum Flow	285.000	cfs
Design Flow	287.000	cfs
Maximum Flow	290.000	cfs
<b>TAILWATER DATA</b>		
Channel Type	Irregular Channel	
Irregular Channel	Define...	
Rating Curve	View...	
<b>ROADWAY DATA</b>		
Roadway Profile Shape	Irregular	
Irregular Shape	Define...	
Roadway Surface	Paved	
Top Width	12.000	ft

### Culvert Input: Ex 20" RCP

Parameter	Value	Units
<b>CULVERT DATA</b>		
Name	Culvert 1	
Shape	Circular	
Material	Concrete	
Diameter	1.670	ft
Embedment Depth	0.000	in
Manning's n	0.012	
Culvert Type	Straight	
Inlet Configuration	Grooved End Projecting (Ke=0.2)	
Inlet Depression?	No	
<b>SITE DATA</b>		
Site Data Input Option	Culvert Invert Data	
Inlet Station	0.000	ft
Inlet Elevation	7459.810	ft
Outlet Station	40.130	ft
Outlet Elevation	7459.400	ft
Number of Barrels	1	
Computed Culvert Slope	0.010217	ft/ft

DP1 CULVERT ANALYSIS

Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	HW / D (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
285.00	17.02	7462.86	3.05	2.768	1.83	7-M2c	1.67	1.50	1.50	0.87	8.19	4.84
285.50	17.03	7462.86	3.05	2.769	1.83	7-M2c	1.67	1.50	1.50	0.87	8.19	4.85
286.00	17.03	7462.87	3.06	2.770	1.83	7-M2c	1.67	1.50	1.50	0.87	8.19	4.85
286.50	17.03	7462.87	3.06	2.771	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.85
287.00	17.04	8052.02	592.21	464.33	354.62	6-FFc	1.67	1.67	1.67	0.87	131.03	4.85
287.50	17.04	7462.87	3.06	2.772	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.86
288.00	17.04	7462.87	3.06	2.773	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.86
288.50	17.05	7462.87	3.06	2.774	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.86
289.00	17.05	7462.87	3.06	2.775	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.86
289.50	17.06	7462.87	3.06	2.775	1.83	7-M2c	1.67	1.51	1.51	0.87	8.20	4.87
290.00	17.06	7462.87	3.06	2.776	1.83	7-M2c	1.67	1.51	1.51	0.87	8.21	4.87
290.00	17.06	7462.87	3.06	2.776	1.83	7-M2c	1.67	1.51	1.51	0.87	8.21	4.87

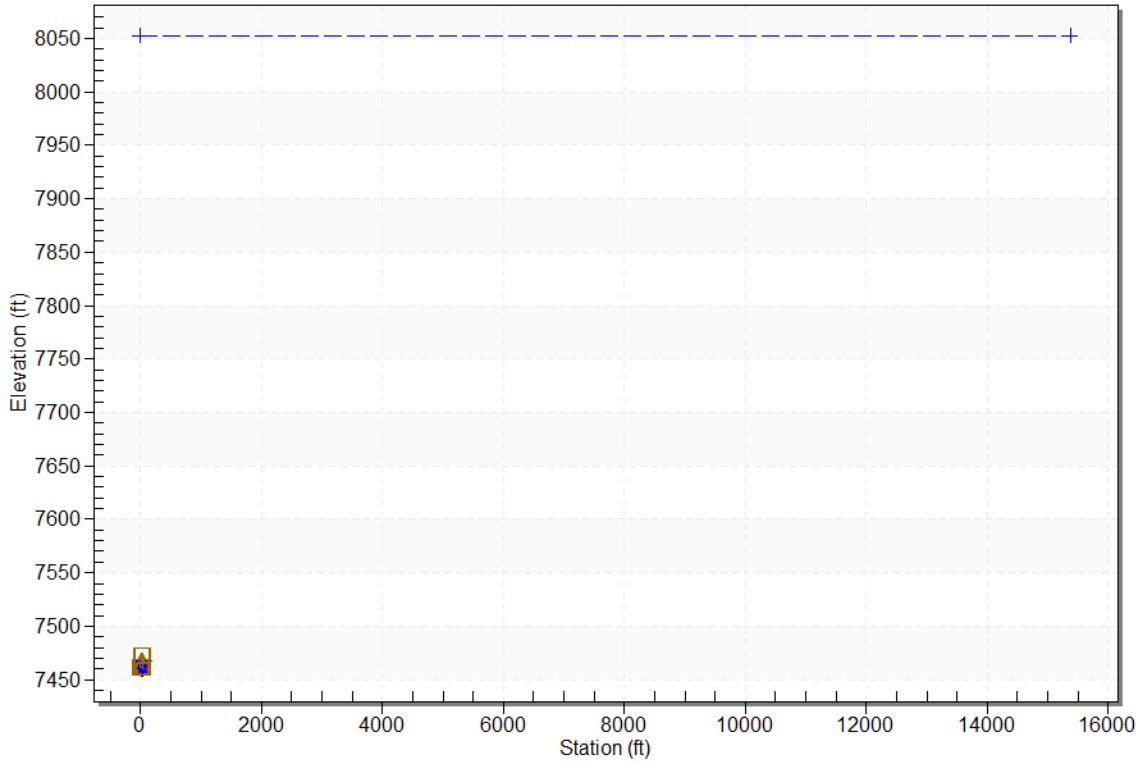


## DP1 CULVERT ANALYSIS

### Water Surface Profile Plot for Culvert: Culvert 1

Crossing - Ex 20" RCP, Design Discharge - 287.0 cfs

Culvert - Culvert 1, Culvert Discharge - 17.0 cfs



# Channel Report

DP1 OVERTOP ANALYSIS

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Friday, Mar 28 2025

## Sundance Ranch Lane Overtopping (Q100: DP1 - Culvert Flow = 257 cfs)

### User-defined

Invert Elev (ft) = 7462.02  
Slope (%) = 2.00  
N-Value = 0.030

### Highlighted

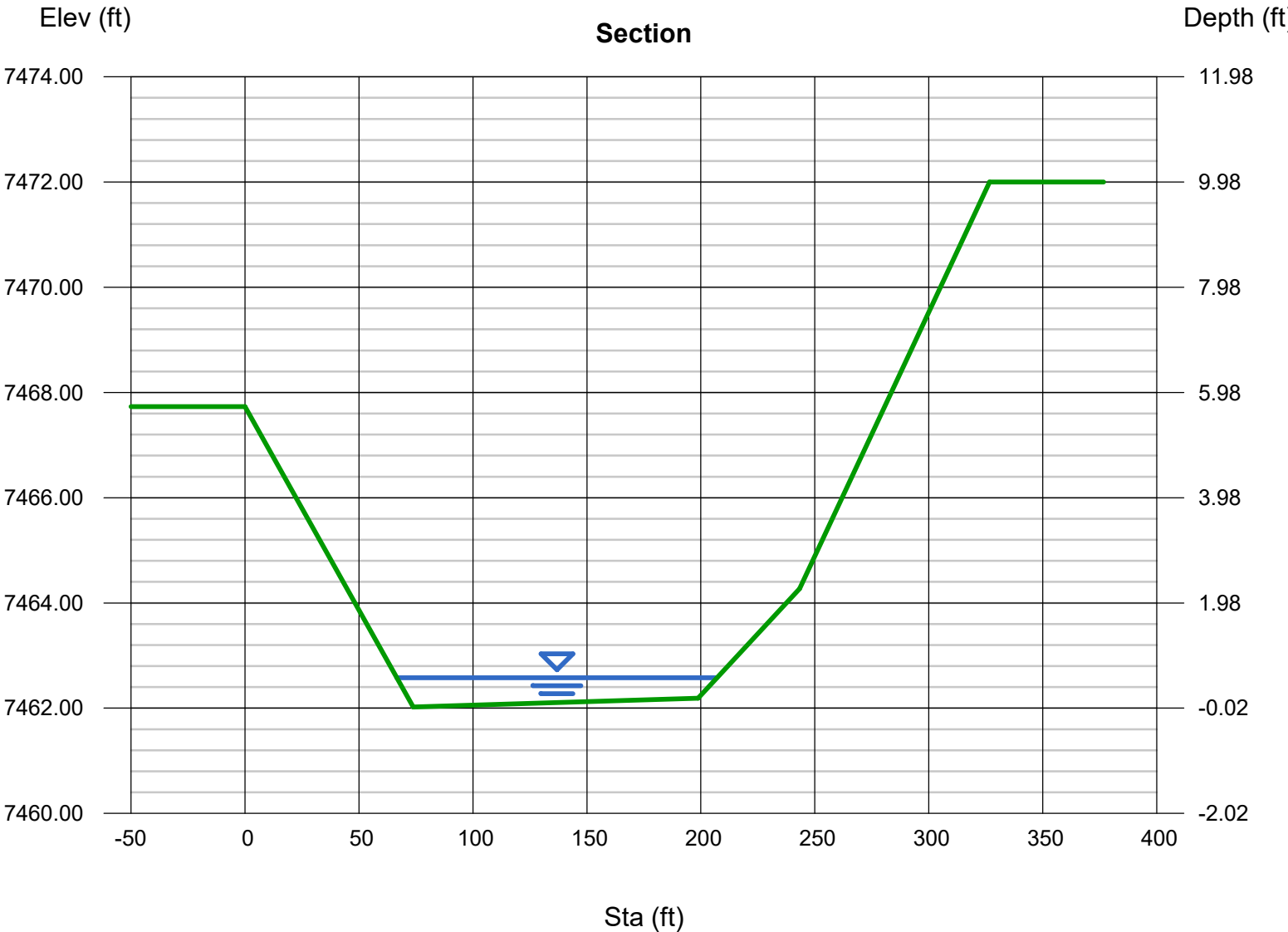
Depth (ft) = 0.56  
Q (cfs) = 257.00  
Area (sqft) = 62.99  
Velocity (ft/s) = 4.08  
Wetted Perim (ft) = 140.53  
Crit Depth, Yc (ft) = 0.59  
Top Width (ft) = 140.50  
EGL (ft) = 0.82

### Calculations

Compute by: Known Q  
Known Q (cfs) = 257.00

### (Sta, El, n)-(Sta, El, n)...

( 0.00, 7467.73)-(73.85, 7462.02, 0.030)-(198.73, 7462.19, 0.030)-(243.38, 7464.27, 0.030)-(326.64, 7472.00, 0.030)



# Channel Report

DPOS1 OVERTOP ANALYSIS

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Thursday, Jun 5 2025

## DPOS1 Overtopping Analysis (Q100 = 54.9 cfs)

### User-defined

Invert Elev (ft) = 7478.00  
Slope (%) = 2.00  
N-Value = 0.030

### Calculations

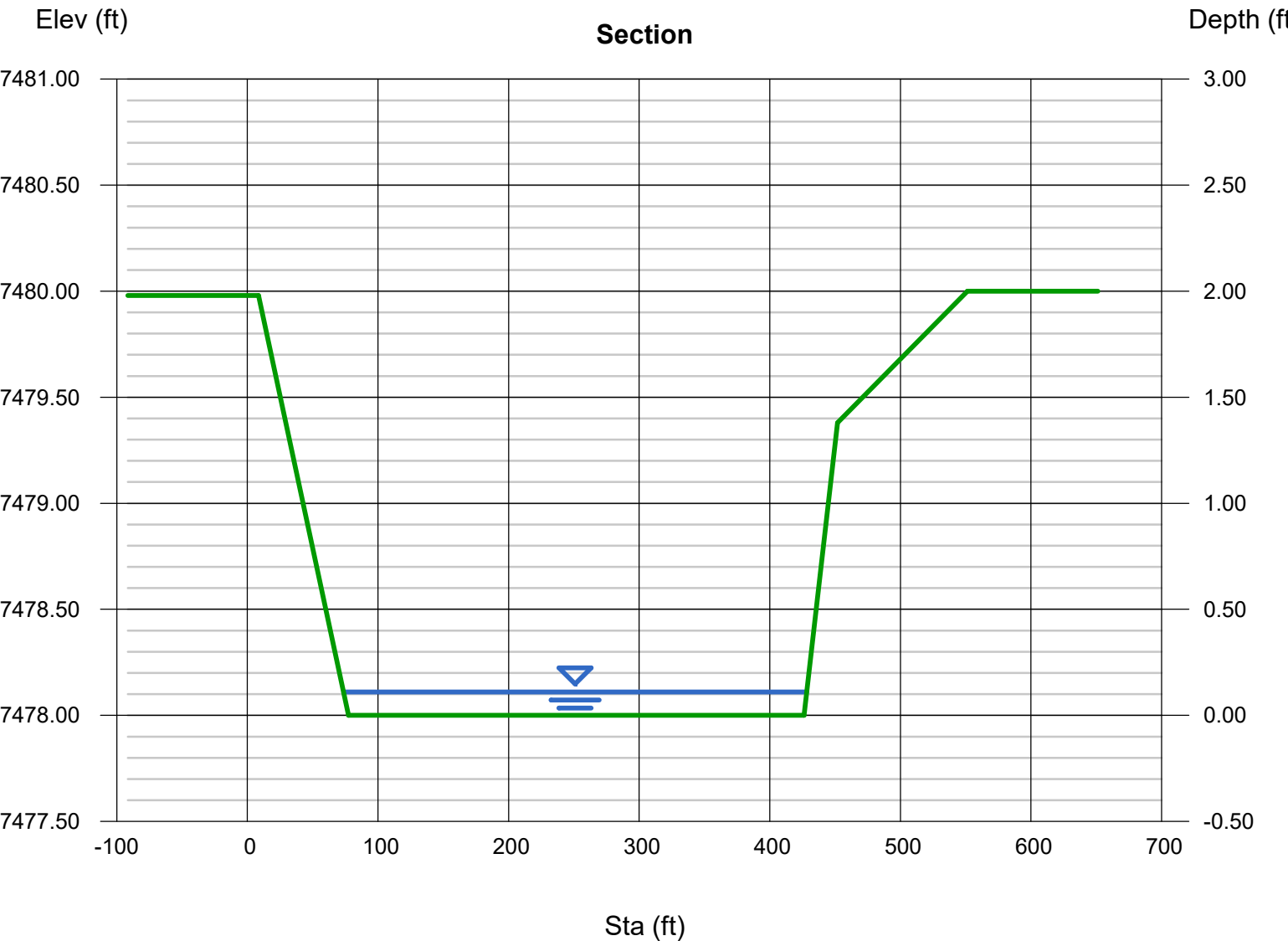
Compute by: Known Q  
Known Q (cfs) = 54.90

### Highlighted

Depth (ft) = 0.11  
Q (cfs) = 54.90  
Area (sqft) = 38.65  
Velocity (ft/s) = 1.42  
Wetted Perim (ft) = 354.72  
Crit Depth, Yc (ft) = 0.10  
Top Width (ft) = 354.72  
EGL (ft) = 0.14

### (Sta, El, n)-(Sta, El, n)...

( 8.47, 7479.98)-(77.48, 7478.00, 0.030)-(426.34, 7478.00, 0.030)-(451.84, 7479.38, 0.030)-(551.31, 7480.00, 0.030)





## **APPENDIX D – WATER QUALITY & DETENTION**



2880 International Circle, Suite 110  
Colorado Springs, CO 80910  
Phone: 719-520-6300  
Email: [Stormwater@elpasoco.com](mailto:Stormwater@elpasoco.com)  
[publicworks.elpasoco.com/stormwater/](http://publicworks.elpasoco.com/stormwater/)

## EL PASO COUNTY PCM APPLICABILITY FORM

EPC Project Number: \_\_\_\_\_

This form is to be used by the Engineer of Record to determine if the proposed construction activities are eligible for an exclusion to stormwater quality permanent control measure (PCM) requirements. All “applicable construction activity” within El Paso County (EPC) must comply with the post-construction stormwater management criteria. Reference ECM Appendix I for information about PCMs.

Note that this form only addresses stormwater quality for the site. Even if the site is fully excluded from needing a stormwater quality PCM, the site may still need to address stormwater detention (per DCMv1 Chap 1.5 and ECM Chap 3.2.8.B). However, if the site requires stormwater detention, then it must also address stormwater quality (per DCMv2 Chap 4.1 and ECM Appendix I.7.3). Refer to the Reference Information pages below for more guidance.

Part I. Project Summary			
Project Name:			
Is Stormwater Detention Required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Is Water Quality Treatment Required? (i.e.: non-excluded disturbance >1ac)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is an ESQCP Required? If “No,” Check Applicable Reason	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Not an Applicable Construction Activity <input type="checkbox"/> Oil & Gas <input type="checkbox"/> R-Factor	
Engineer of Record Email Address:			

Part II. PCM Exclusions				
Note: Questions A through K directly correlate to Part I.E.4.a.i (A) to (K) on page 27 of the 2016 CDPS Statewide Standard <a href="#">MS4 General Permit COR090000</a> (i.e.: the MS4 Permit), as amended. Document exclusions that apply to the whole project or parts of it.				
Questions	Excluded Acreage	Yes	No	Notes
A. Is this project a “Pavement Management Site?”				This exclusion applies to the maintenance, rehabilitation, and reconstruction of pavement on existing roads, bridges, bike lanes, and parking along roads. Areas used primarily for parking (i.e.: separate lots not along roadway) or access to parking are not included. No increase in impervious area is allowable.
B. Review two options below to see if project is an “Excluded Roadway Development.”				Does <u>not</u> include sidewalks. Does include curb & gutter.
• Does the project include improvements to an existing roadway that adds < 1 acre of paved or gravel area per mile of roadway?				If selected, list the proposed additional acreage per mile in Part IV Notes below.
• Does the project include improvements to an existing roadway that adds ≤ 8.25 ft of paved width at any location?				If selected, list the proposed additional width in Part IV Notes below.



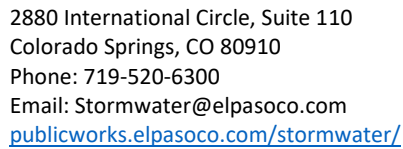
2880 International Circle, Suite 110  
Colorado Springs, CO 80910  
Phone: 719-520-6300  
Email: [Stormwater@elpasoco.com](mailto:Stormwater@elpasoco.com)  
[publicworks.elpasoco.com/stormwater/](http://publicworks.elpasoco.com/stormwater/)

## EL PASO COUNTY PCM APPLICABILITY FORM

EPC Project Number: \_\_\_\_\_

### Part II. PCM Exclusions (continued)

Questions	Excluded Acreage	Yes	No	Notes
C. Does the project include "Excluded Existing Roadway Areas?"				For redevelopment of <u>existing</u> roadways. This exclusion only excludes the original roadway area, it does NOT apply to the entire project. This exclusion applies only when the proposed project will expand the existing roadway width by <2x on average. If selected, list the proposed expanded width in Part IV Notes below.
D. Is the project considered an Aboveground or Underground Utilities activity?				Activity can <u>not</u> permanently alter the terrain, ground cover, or drainage patterns from existing conditions.
E. Is the project considered a "Large Lot Single-Family Site"? <i>This exclusion only pertains to the lots and does not include roadways.</i>				Must be a single-family residential lot or agricultural zoned land with $\geq 2.5$ acres per dwelling and total lot impervious area < 10%. If "Yes," notate the percent impervious below in Part IV: Notes.
F. Do Non-Residential or Non-Commercial Infiltration Conditions exist? <i>Post-development surface conditions do not result in concentrated stormwater flow or surface water discharge during an 80<sup>th</sup> percentile stormwater runoff event, and the 80<sup>th</sup> percentile event must be infiltrated.</i>				Exclusion does not apply to residential or commercial sites for buildings. A site-specific study is required and must show rainfall and soil conditions, allowable slopes, surface conditions, and ratios of imperviousness area to pervious area.
G. Is the project land disturbance to Undeveloped Land where undeveloped land remains undeveloped following the activity?				Project must be on land with no human made structures such as buildings or pavement. The proposed development must return the disturbed area to its historical condition. See CDPHE's "Standard MS4 Permit FAQ" for more detail on how this exclusion applies.
H. Is the project a Stream Stabilization Site?				
I. Is the project a Bike or Pedestrian Trail?				Bike lanes for roadways are not included in this exclusion but may qualify if attached to a larger roadway activity that is excluded in A, B or C above. Pedestrian trails (e.g. sidewalks) that are attached to a roadway do not apply.
J. Is the project Oil and Gas Exploration?				Activities and facilities associated with oil and gas exploration are excluded.
K. Is the project in a County Growth Area?				El Paso County does not apply this exclusion.
If any exclusions above apply (via a "Yes" for any row), runoff from those areas is excluded from stormwater quality treatment requirements. All runoff from remaining non-excluded disturbed areas will need to be treated by a stormwater quality PCM, unless remaining area is <1ac. If remaining area is >1ac, select at least one Design Standard on the next page.				



**EPC Project Number:** \_\_\_\_\_

<b>Part IV: Notes</b>
Provide info regarding all applicable PCM(s) and PCM Exclusion(s) including location, PCM name(s)/number(s), and additional relevant filings or reports or maintenance agreements, etc. Attach an additional sheet if you need more space. Attaching a detailed summary table would replace the need for any notes here.



2880 International Circle, Suite 110  
Colorado Springs, CO 80910  
Phone: 719-520-6300  
Email: [Stormwater@elpasoco.com](mailto:Stormwater@elpasoco.com)  
[publicworks.elpasoco.com/stormwater/](http://publicworks.elpasoco.com/stormwater/)

## EL PASO COUNTY PCM APPLICABILITY FORM

EPC Project Number: \_\_\_\_\_

### Part V: Signatures

Applicant: This PCM Applicability Form was prepared under my direction and supervision and is correct to the best of my knowledge and belief. It was prepared along with the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required. And it has been reviewed for compliance with the Post Construction Stormwater Management criteria and MS4 Permit requirements.

  
\_\_\_\_\_  
Signature and Stamp of Engineer of Record  
(If the project is not a Post Construction Activity, this line can be signed by the Applicant or their rep. They do not have to be an engineer)

\_\_\_\_\_  
Date

El Paso County: This PCM Applicability Form has been reviewed and the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required, have been reviewed for compliance with the Post Construction Stormwater Management process and MS4 Permit requirements.

\_\_\_\_\_  
Signature of El Paso County Project Engineer

\_\_\_\_\_  
Date



### Reference Information:

If a PCM is required, then these additional documents will also need to be submitted:

- PCM Maintenance Agreement
- PCM O&M Manual
- MHFD Detention Basin Design Workbook\*
- Proof of Submittal of: Notice of Intent to Construct a Non-Jurisdictional Water Impoundment Structure\*

\*Not required for all PCMs, check ECM Appendix I for requirements

The following are screenshots of example Water Quality Treatment Summary Tables. The Excel versions can be found at the EPC DPW Stormwater website linked below. These are optional tables that can be used to summarize water quality treatment and applicable exclusions. Select the table that best suits the project based on the number of basins, PCMs, and/or exclusions. A PDF of the selected table(s) can be attached to this form and/or to the Drainage Report. It is helpful to also include a basic overview map with color shading or hatch patterns that shows areas tributary to each type of PCM (pond, runoff reduction, etc.) and those areas that are not captured by a PCM, with the applicable exclusion(s) labeled.

<https://publicworks.elpasoco.com/stormwater/>

Water Quality Treatment Summary Table		
Basin ID(s)	PCM Tributary Area (ac)	PCM ID
A1 - A5	4	Pond 1
B1 - B3	3.25	Pond 2
C, D	5.5	Runoff Reduction
E	10	Excluded*
* Excluded based on ECM App I.7.1.B.5		

Water Quality Treatment Summary Table							
Basin ID	Total Area (ac)	Total Proposed Disturbed Area (ac)	Area Trib to Pond A (ac)	Disturbed Area Treated via Runoff Reduction (ac)	Disturbed Area Excluded from WQ per ECM App I.7.1.C.1 (ac)	Disturbed Area Excluded from WQ per ECM App I.7.1.B.# (ac)	Applicable WQ Exclusions (App I.7.1.B.#)
A	4.50	4.50	4.50				
B	1.25	1.25		1.25			
C	6.00	4.00				4.00	ECM App I.7.1.B.5
D	2.50	2.50	1.00		0.50	1.00	ECM App I.7.1.B.7
E	3.00		3.00				
F	8.25						
Total	25.50	12.25	8.50	1.25	0.50	5.00	

Min Required Area to Receive WQ Treatment	Total Proposed Disturbed Area (ac)	Total Proposed Treated Area (ac)	Total Proposed Disturbed Area Excluded from WQ (ac)	Net Treatment (ac)
6.75	12.25	9.75	5.50	3.00

Design Standard D, definition of “Waters of the State of Colorado” per MS4 Permit:

*“Any and all surface waters and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed. This definition can include water courses that are usually dry.”*

The following website shows Waters of the State of Colorado:

<https://cdphe.maps.arcgis.com/apps/Viewer/index.html?appid=f1541d2f21834642ba1551c674fd4a79>

Design Standard E, additional info from the MS4 Permit:

*Before discharging to a water of the state, at least 20 percent of the upstream imperviousness of the applicable development site must be disconnected from the storm drainage system and drain through a receiving pervious area control measure comprising a footprint of at least 10 percent of the upstream disconnected impervious area of the applicable development site. The control measure must be designed in accordance with a design manual identified by the permittee. In addition, the stream channel between the discharge point of the applicable development site and the regional WQCV facility must be stabilized.*

Below are the 8 conditions that must be met:

- 1) The regional WQCV facility must be implemented, functional, and maintained following good engineering, hydrologic and pollution control practices.*
- 2) The regional WQCV facility must be designed and maintained for 100% WQCV for its entire drainage area.*
- 3) The regional WQCV facility must have capacity to accommodate the drainage from the applicable development site.*
- 4) The regional WQCV facility be designed and built to comply with all assumptions for the development activities planned by the permittee within its drainage area, including the imperviousness of its drainage area and the applicable development site.*
- 5) Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the facility. Consideration of drain time shall include maintaining vegetation necessary for operation of the facility (e.g., wetland vegetation).*
- 6) The permittee shall meet the requirements in Parts I.E.4.a.v. and vii. and Part I.E.4.b. for the regional WQCV facility consistent with requirements and actions for control measures.*
- 7) The regional WQCV facility must be subject to the permittee’s authority consistent with requirements and actions for a Control Measure in accordance with Part I.E.4.a.iv.*
- 8) Regional Facilities must be designed and implemented with flood control or water quality as the primary use. Recreational ponds and reservoirs may not be considered Regional Facilities. Water bodies listed by name in surface water quality classifications and standards regulations (5 CCR 1002-32 through 5 CCR 1002-38) may not be considered regional facilities.*



## **APPENDIX E – REFERENCE MATERIAL**

DEIM SUBDIVISION  
REPLAT OF PARCEL C, LAND SURVEY PLAT BY RECEPTION NO. 220900262,  
BEING A PART OF THE NORTHWEST QUARTER OF SECTION 30,  
TOWNSHIP 11 SOUTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,  
COUNTY OF EL PASO, STATE OF COLORADO

PARCEL DETAILS

Address: 0 SUNDANCE RANCH LN, COLORADO SPRINGS, CO 80908  
APN/Parcel ID: 5100000509  
Owner of Record: Connie Diem and Josh Diem  
Phone: 719-271-0737

OWNER'S CERTIFICATION AND DEDICATION

The undersigned, being being all the owners, mortgagees, beneficiaries of deeds of trust and holders of the land described herein, have laid out, subdivided, and platted said land into Lots and easements as shown hereon unto the name and style of POWERS RANCH SUBDIVISION.  
Connie Diem and Josh Diem.

\_\_\_\_\_  
Connie Diem , Owner Date

\_\_\_\_\_  
Josh Diem, Owner Date

State of Colorado )  
County of El Paso ) ss

The foregoing plat was Acknowledged before me on this \_\_\_\_\_day  
of \_\_\_\_\_, 20\_\_\_\_, A.D. by Connie Diem and Josh Diem, owners.

Witness my hand and official seal

\_\_\_\_\_  
Notary Public

My Commision Expires: \_\_\_\_\_.

BOARD OF COUNTY COMMISSIONERS CERTIFICATE:

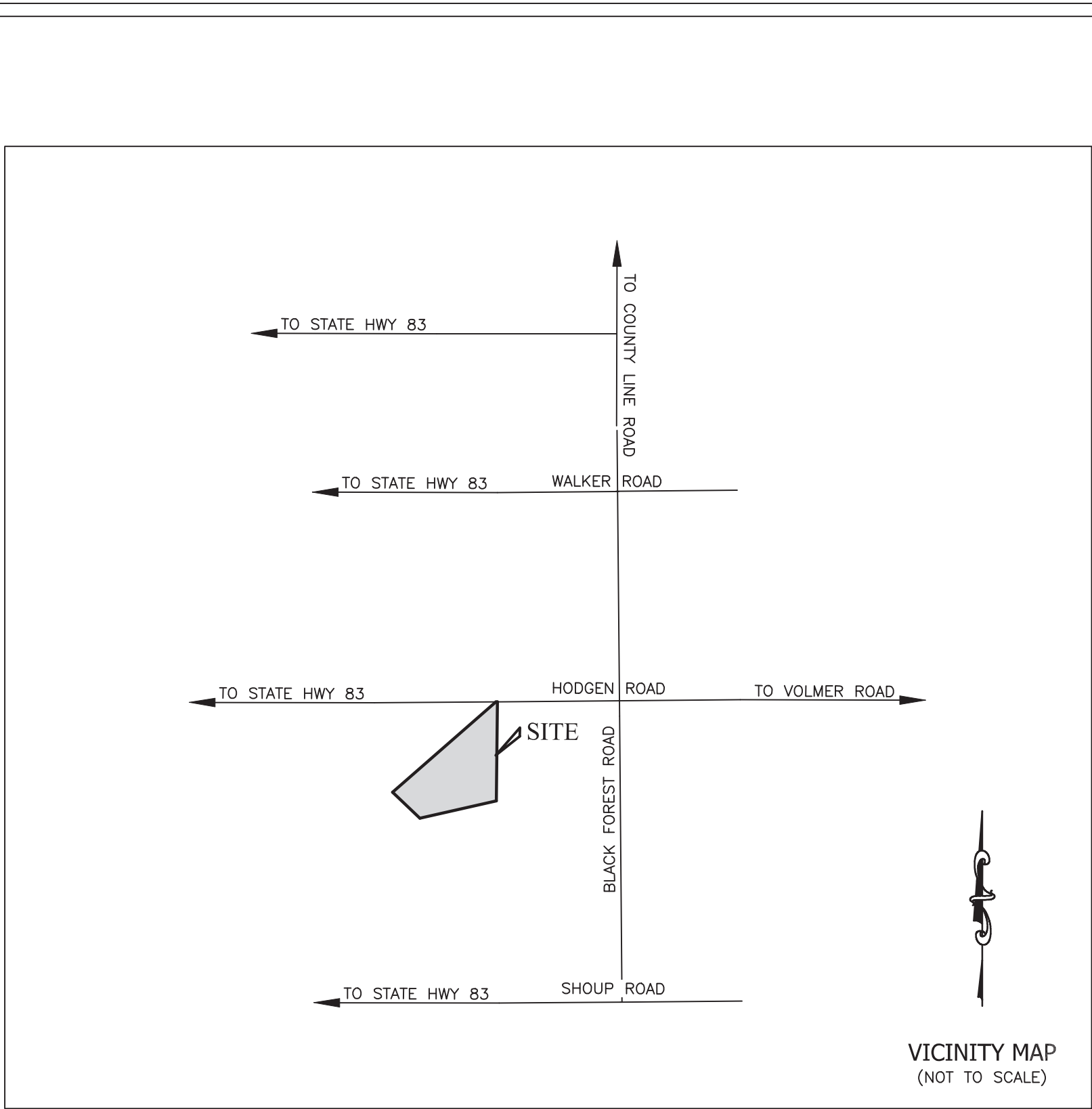
This plat of MCLEAN SUBDIVISION was approved for filing by the El Paso County, Colorado Board of County Commissioners on this\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, subject to any notes specified hereon and any conditions included in the resolution of approval. The dedications of land to the public (streets, tracts, easements) are accepted, but public improvements thereon will not become the maintenance responsibility of El Paso County until preliminary acceptance of the public improvements in accordance with the requirements of the Land Development Code and Engineering Criteria Manual.

\_\_\_\_\_  
Chair, Board of County Commissioners Date

\_\_\_\_\_  
Planning and Community Development Director

FEES:

Drainage Fee: \_\_\_\_\_  
  
School Fee: \_\_\_\_\_  
  
Bridge Fee: \_\_\_\_\_  
  
Park Fee: \_\_\_\_\_



PLAT NOTES

1. The addresses exhibited on this plat are for informational purposes only. They are not the legal description and are subject to change.
2. No driveway shall be established unless an access permit has been granted by El Paso County.
3. Mailboxes shall be installed in accordance with all El Paso County and United States Postal Service regulations.
4. Sewage treatment is the responsibility of each individual property owner. The El Paso County Department of Health and Environment must approve each system and, in some cases the Department may require an engineer designed system prior to permit approval. These systems may cost more to design, install, and maintain.
5. Individual wells are the responsibility of each property owner. Permits for individual wells must be obtained from the State Engineer who by law has the authority to set conditions for the issuance of these permits.
6. Ingress and egress to Hodgen Road with current Private drive serving lot 1, and lot 2 with Access easement as graphically depicted on sheet 2.
7. The Federal Emergency Management Agency, Flood Insurance Rate Map No. 08041C0305G, effective date of 12/7/2018, indicates a portion of this parcel of land to be located in Zone A (without base flood elevation) and Zone AE (with BFE or Depth 7438.2 feet - LOMR 18-08-0702P Eff. 04-2019). Approximate location is graphically depicted per the aforementioned Federal Emergency Management Agency, Flood Insurance Rate Map.
8. All Property owners are responsible for maintaining proper storm water drainage in and through their property. Public drainage easements are specifically noted on the plat shall be maintained by the individual lot owners unless otherwise indicated. Structures, fences, materials or landscaping that could impeded the flow of runoff shall not be placed in drainage easements.
9. Individual investigations for new building sites and septic systems will be required prior to construction.
10. Easement For Construction, operation, maintenance and inspection of a floodwater retarding structure, as further described by Reception No. 279336. Said easement location graphically depicts the area within subject parcel.

SURVEYOR'S CERTIFICATE

I, Danny Rodic, a duly registered Professional Land Surveyor in the State of Colorado, do hereby certify that this plat truly and correctly represents the results of a survey made on date of survey, by me or under my direct supervision and that all monuments exist as shown hereon; that mathematical closure errors are less than 1:10,000 ; and that said plat has been prepared in full compliance with all applicable laws of the State of Colorado dealing with monuments, subdivision, or surveying of land and all applicable provisions of the El Paso County Land Development Code.

I attest the above on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Surveyor's Name, (Signature) Date  
Colorado Registered PLS #38759

CLERK AND RECORDER:

State of Colorado )  
County of El Paso ) ss  
  
I certify that this instrument was filed for record in my office at \_\_\_\_\_ O'Clock  
\_\_\_\_M., this \_\_\_\_\_day of \_\_\_\_\_, 20\_\_\_\_, A.D.  
and is duly recorded in plat book \_\_\_\_\_, at page number \_\_\_\_\_,  
under Reception No. \_\_\_\_\_, of the records of El Paso County,  
Colorado.

Fee:\_\_\_\_\_.

By: \_\_\_\_\_  
El Paso County Clerk and Recorder

LEGAL DESCRIPTION

A PORTION OF NORTHWEST QUARTER OF SECTION 30 IN THE TOWNSHIP 11 SOUTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF EL PASO, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 30; THENCE S.00°38'14"W. COINCIDENT WITH THE EAST LINE OF THE NW1/4 OF SAID SECTION 30, A DISTANCE OF 30.01 FEET TO THE POINT OF BEGINNING OF A PARCEL OF LAND DESCRIBED HEREIN; THENCE S.00°38'14"W. COINCIDENT WITH THE EAST LINE OF THE NW1/4, A DISTANCE OF 1,544.73 FEET; THENCE S.77°17'12"W., A DISTANCE OF 1,208.00 FEET; THENCE N46°25'12"W., A DISTANCE OF 579.83 FEET; THENCE N.48°52'19"E., A DISTANCE OF 2,144.86 FEET TO THE POINT OF BEGINNING.

COUNTY OF EL PASO, STATE OF COLORADO.


(Per title commitment RND55120007, with an effective date of 12/12/2024 at 5:00 P.M. as provided by:  
Land Title Guarantee Company and Old Republic National Title Insurance Company

AREA OF CONCERN

(AOC#1): Portion of fencing falls Easterly of subject parcel and said Tract D, as graphically depicted on this Subdivision Plat, causing an area of concern.

SURVEYOR'S NOTES


1. NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.
2. Any person who knowingly removes, alters or defaces any public land survey monument or land boundary monument or accessory commits a class 2 misdemeanor pursuant to the Colorado Revised Statute 18-4-508.
3. The lineal units used in this drawing are U.S. Survey Feet.
4. The fieldwork for this survey was completed on January 17, 2025.
5. The overall subject parcel contains a gross calculated area of 1,527,000 square feet (35.06 acres) of land, more or less. Subject parcel to be divided into 4 lots as shown hereon.
6. This survey does not constitute a title search by Apex Land Surveying and Mapping, LLC. to determine ownership or easements of record. For information regarding easements, rights-of-way and title of record, Apex Land Surveying and Mapping, LLC. relied upon Title Commitment RND55120007, with an effective date of 12/12/2024 at 5:00 P.M. as provided by Land Title Guarantee Company and Old Republic National Title Insurance Company.
7. Bearings are based on the East line of the Northwest quarter of Sec.30 T11S R65W in the 6th principal meridian, monumented on the North end with a found 2-1/2" aluminum cap in range box marked correctly as the N1/4 of Sec.30, found 0.6' below grade, and on the South end with a found 2" aluminum cap marked correctly as the C1/4 Sec.30, found flush with grade, and is to bear S.00°38'14"W., a measured distance of 2654.84' feet.
8. Any underground or above ground utilities shown hereon have been located from field survey information. Apex Land Surveying and Mapping, LLC. does not guarantee said underground utilities to be shown in their exact location and that said underground utilities are shown in their entirety. Apex Land Surveying and Mapping, LLC. did not physically enter any manholes or inlets to verify size and material. Where additional or more detailed information is required, the client is advised that excavation may be necessary.

DATE: April 14, 2025			REVISIONS		 <div>APEX Land Surveying and Mapping LLC. 5855 Lehman Drive, Suite 102 Colorado Springs, CO 80918 Phone: 719-318-0377 E-mail: info@apexsurveyor.com Website: www.apexsurveyor.com</div>	
No.	Remarks	Date	By			
Field: TJM	Drawn: TJM/DDR	Checked: DDR	PROJECT No.: 24106		SHEET 1 OF 2	



REPLAT OF PARCEL C, LAND SURVEY PLAT BY RECEPTION NO. 220900262,  
BEING A PART OF THE NORTHWEST QUARTER OF SECTION 30,  
TOWNSHIP 11 SOUTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,  
COUNTY OF EL PASO, STATE OF COLORADO

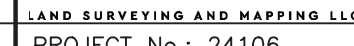


-  FLOODPLAIN NO BUILD LINE - SEE SURVEYOR'S NOTE #2  
 OVERHEAD ELECTRIC LINE  
 FENCE REMNANTS (T-POSTS)  
 BARBED-WIRE FENCE  
 GRAVEL DRIVEWAY



Danny Rodic  
State of Colorado Professional Land Surveyor No. 38759  
For and on behalf of Apex Land Surveying and Mapping LLC.

APEX Land Surveying and Mapping LLC.



5855 Lehman Drive, Suite 102  
Colorado Springs, CO 80918  
Phone: 719-318-0377  
E-mail: [info@apexsurveyor.com](mailto:info@apexsurveyor.com)  
Website: [www.apexsurveyor.com](http://www.apexsurveyor.com)

DATE: April 14, 2025				REVISIONS			
No.	Remarks			Date	By		
Field: TJM	Drawn: TJM			Checked: DDR			

SHEET 2 OF 2



# 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)	NO PROJECT	HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 080039		
IDENTIFIER	Severe Subdivision	APPROXIMATE LATITUDE AND LONGITUDE: 38.372, -104.767 SOURCE: USGS QUADRANGLE     DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES			ANNOTATED STUDY ENCLOSURES
TYPE: FIRM*	NO: 080470005G	DATE: December 7, 2018	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: December 7, 2018 PROFILE: 450P SUMMARY OF DISCHARGES 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 East Cherry Creek - From approximately 2,330 feet downstream of Hodgen Road to approximately 1,630 feet upstream of Hodgen Road

SUMMARY OF REVISIONS				
Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Unnamed Tributary to East Cherry Creek	Zone A	Zone A	NONE	YES
	No BFEs*	BFEs	YES	NONE
	Zone A	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 Map Information Exchange toll free at 1-877-306-2627 (1-877-FEMA-MAP) or by letter addressed to the LOMR 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/national-flood-insurance-program>

Patrick 'Rock' F. Secabit, 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.

**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 study 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 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 Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA-MAP) or by letter addressed to the LOMR Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

  
Patrick "Rik" F. Seebit, 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. Peterson  
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 Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA.MAP) or by letter addressed to the LOMR Clearinghouse, 3001 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/national-flood-insurance-program>

  
Patrick 'Rick' F. Sacchi, 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/fha/bfc\\_status/bfc\\_main.asp](https://www.floodmaps.fema.gov/fha/bfc_status/bfc_main.asp)

**LOCAL NEWSPAPER**

Name: *Colorado Springs Gazette*

Dates: November 28, 2018 and December 5, 2018

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 Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA-MAP) or by letter addressed to the LOMC Clearinghouse, 3001 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on our website at <https://www.fema.gov/national-flood-insurance-program>

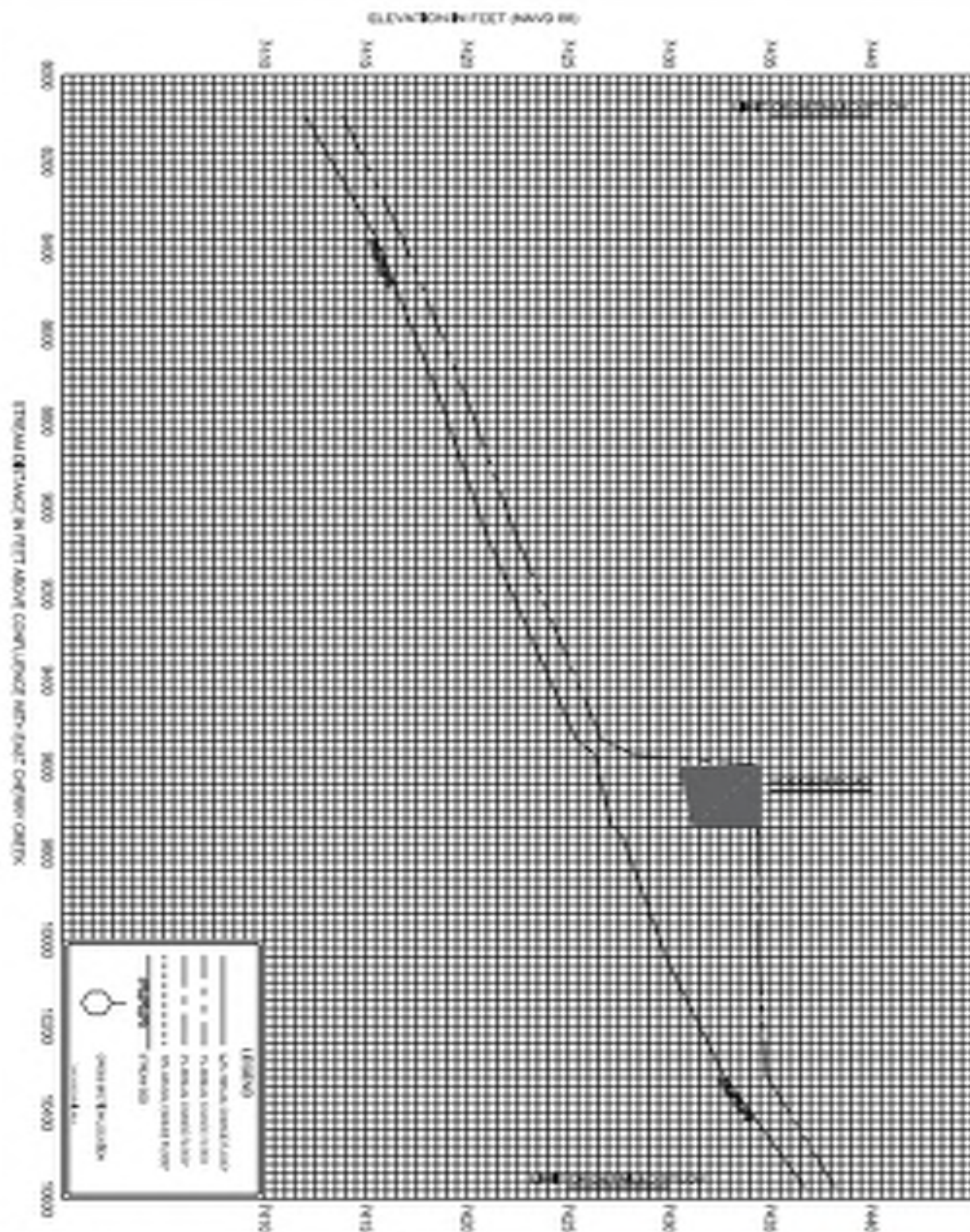
  
Patrick "Pete" P. Satchell, P.E., Branch Chief  
Engineering Services Branch  
Federal Insurance and Mitigation Administration

<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>
Unnamed Tributary to Black Squirrel Creek No. 2				
At US Highway 24	3.66	-- <sup>1</sup>	-- <sup>1</sup>	1,225
At Rolling Thunder Way	3.60	-- <sup>1</sup>	-- <sup>1</sup>	1,717
At Woodmen Road	3.23	-- <sup>1</sup>	-- <sup>1</sup>	1,482
Upper East Tributary to Chico Creek				
At Barbwire Road	4.6	-- <sup>1</sup>	-- <sup>1</sup>	705
Upper Fountain Creek (see Fountain Creek)				
West Fork Black Squirrel Creek – Solberg Ranch East Tributary				
At confluence with West Fork Black Squirrel Creek – Solberg Ranch Tributary	1.63	-- <sup>1</sup>	-- <sup>1</sup>	784
West Fork Black Squirrel Creek – Solberg Ranch Tributary				
Above Slocum Road				
At confluence with West Fork Black Squirrel Creek – Solberg Ranch East Tributary	7.22	-- <sup>1</sup>	-- <sup>1</sup>	2,184
	5.59	-- <sup>1</sup>	-- <sup>1</sup>	1,847
West Fork Squirrel Creek – Solberg Ranch – West Unnamed Tributary	1.5	-- <sup>1</sup>	-- <sup>1</sup>	1,935
West Tributary to Black Squirrel Creek				
At confluence with Black Squirrel Creek	0.59	-- <sup>1</sup>	-- <sup>1</sup>	55
Widefield Creek				
At confluence with Fountain Creek	15.1	4,600	7,700	10,000
Williams Canyon				
At confluence with Fountain Creek	2.68	1,930	3,640	4,710
Unnamed Tributary to East Cherry Creek				
Above confluence with Unnamed Tributary	2.95	-- <sup>1</sup>	-- <sup>1</sup>	357
At Hodgen Road	2.07	-- <sup>1</sup>	-- <sup>1</sup>	287

<sup>1</sup>Data not available

TOTAL FLOW AT DP6

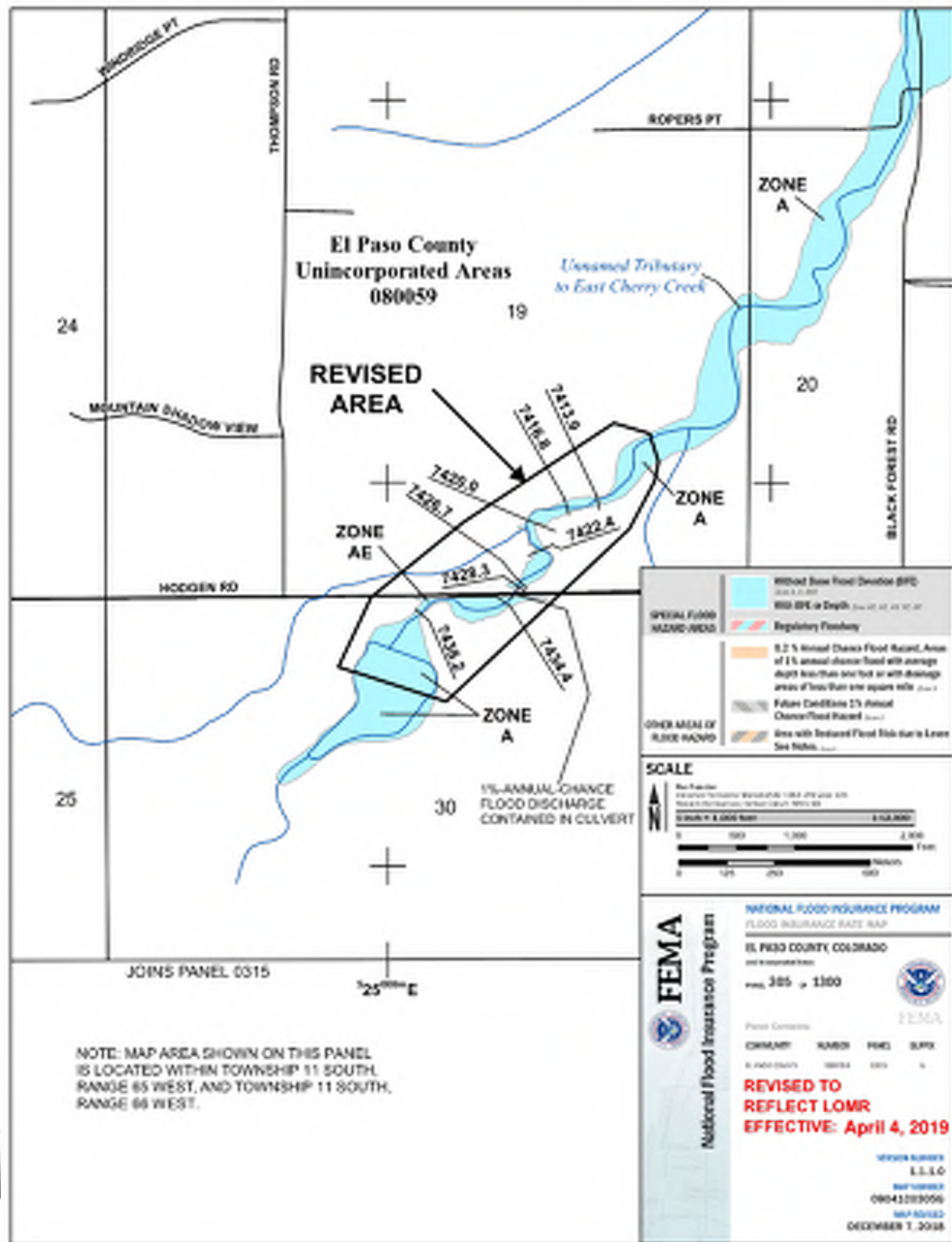




450p

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**EL PASO COUNTY, CO**  
 (AND INCORPORATED AREAS)

**FLOOD PROFILES**  
 UNNAMED TRIBUTARY TO EAST CHERRY CREEK  
 REVISION TO  
 REFLECT 1999  
 EFFECTIVE: April 4, 2019

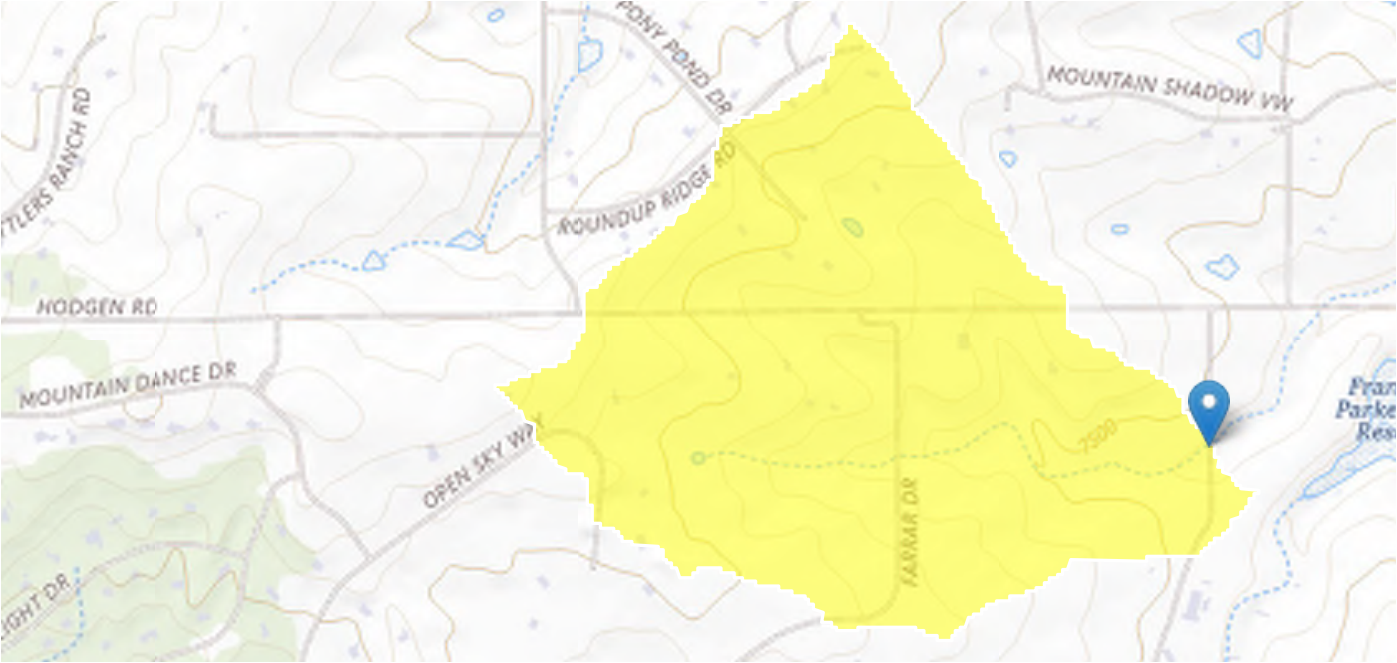




DPOS1 HYDROLOGY

StreamStats Report

Region ID: CO  
Workspace ID: CO20250528190350090000  
Clicked Point (Latitude, Longitude): 39.06820, -104.71623  
NHD Stream GNIS Name of Click Point: Stream name not found  
Time: 2025-05-28 13:04:14 -0600



+ Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	6	percent
DRNAREA	Area that drains to a point on a stream	0.47	square miles
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	4.97	inches
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	1.91	inches
I6H100Y	6-hour precipitation that is expected to occur on average once in 100 years	3	inches
OUTLETELEV	Elevation of the stream outlet in feet above NAVD88	7484	feet
STATSCLAY	Percentage of clay soils from STATSGO	16.3	percent
TOC	Time of concentration in hours	1.64	hours

DPOS1 HYDROLOGY

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Foothills Region Peak Flow 2016 5099]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.47	square miles	0.6	2850
I6H100Y	6 Hour 100 Year Precipitation	3	inches	2.38	4.89
OUTLETELEV	Elevation of Gage	7484	feet	4290	8270
STATSCLAY	STATSGO Percentage of Clay Soils	16.3	percent	9.87	37.5

Peak-Flow Statistics Disclaimers [Foothills Region Peak Flow 2016 5099]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [Foothills Region Peak Flow 2016 5099]

Statistic	Value	Unit
50-percent AEP flood	4.81	ft^3/s
20-percent AEP flood	12.1	ft^3/s
10-percent AEP flood	19.2	ft^3/s
4-percent AEP flood	30.9	ft^3/s
2-percent AEP flood	41.6	ft^3/s
1-percent AEP flood	54.9	ft^3/s
0.5-percent AEP flood	69.5	ft^3/s
0.2-percent AEP flood	92.1	ft^3/s

Peak-Flow Statistics Citations

Kohn, M.S., Stevens, M.R., Harden, T.M., Godaire, J.E., Klinger, R.E., and Mommandi, A.,2016, Paleoflood investigations to improve peak-streamflow regional-regression equations for natural streamflow in eastern Colorado, 2015: U.S. Geological Survey Scientific Investigations Report 2016–5099, 58 p. (<http://dx.doi.org/10.3133/sir20165099>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Interior Plains D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.47	square miles	0.19305	59927.7393

Bankfull Statistics Parameters [Great Plains P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.47	square miles	0.598455	30899.82624

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.47	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Interior Plains D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	9	ft
Bieger_D_channel_depth	1.29	ft
Bieger_D_channel_cross_sectional_area	15.1	ft^2

Bankfull Statistics Disclaimers [Great Plains P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [Great Plains P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	3.3	ft
Bieger_P_channel_depth	1.08	ft
Bieger_P_channel_cross_sectional_area	18.2	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	9.49	ft
Bieger_USA_channel_depth	1.03	ft
Bieger_USA_channel_cross_sectional_area	11.4	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	9	ft
Bieger_D_channel_depth	1.29	ft
Bieger_D_channel_cross_sectional_area	15.1	ft^2
Bieger_P_channel_width	3.3	ft
Bieger_P_channel_depth	1.08	ft
Bieger_P_channel_cross_sectional_area	18.2	ft^2
Bieger_USA_channel_width	9.49	ft
Bieger_USA_channel_depth	1.03	ft
Bieger_USA_channel_cross_sectional_area	11.4	ft^2

Bankfull Statistics Citations

**Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G., 2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. ([https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm\\_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm\\_medium=PDF&utm\\_campaign=PDFCoverPages](https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages))**

## ➤ Maximum Probable Flood Statistics

### Maximum Probable Flood Statistics Parameters [Crippen Bue Region 12]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.47	square miles	0.1	7000

### Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 12]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	4600	ft <sup>3</sup> /s

#### *Maximum Probable Flood Statistics Citations*

**Crippen, J.R. and Bue, Conrad D. 1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)**

## ➤ NHD Features of Delineated Basin

### NHD Streams Intersecting Basin Delineation Boundary

This functionality attempts to find the stream name at the delineation point. The name of the nearest intersecting National Hydrography Dataset (NHD) stream is selected by default to appear in the report above. NHD streams do not correspond to the StreamStats stream grid and may not be accurate. If you would like a different stream to appear in the above section, please make a selection below.

**No NHD streams intersect the delineated basin.**

### Watershed Boundary Dataset (WBD) HUC 8 Intersecting Basin Delineation Boundary

This functionality attempts to find the intersecting HUC 8 of the delineated watershed. HUC boundaries do not correspond to the StreamStats data and may not be accurate.

HUC 8	Name
10190003	Middle South Platte-Cherry Creek

#### *NHD Hydrologic Features Citations*

**U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>. (<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>) U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>. (<https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>)**



USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.29.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

**At DPOS1 looking south along Sundance Ranch Lane**



## DP1 culvert entry & downstream channel



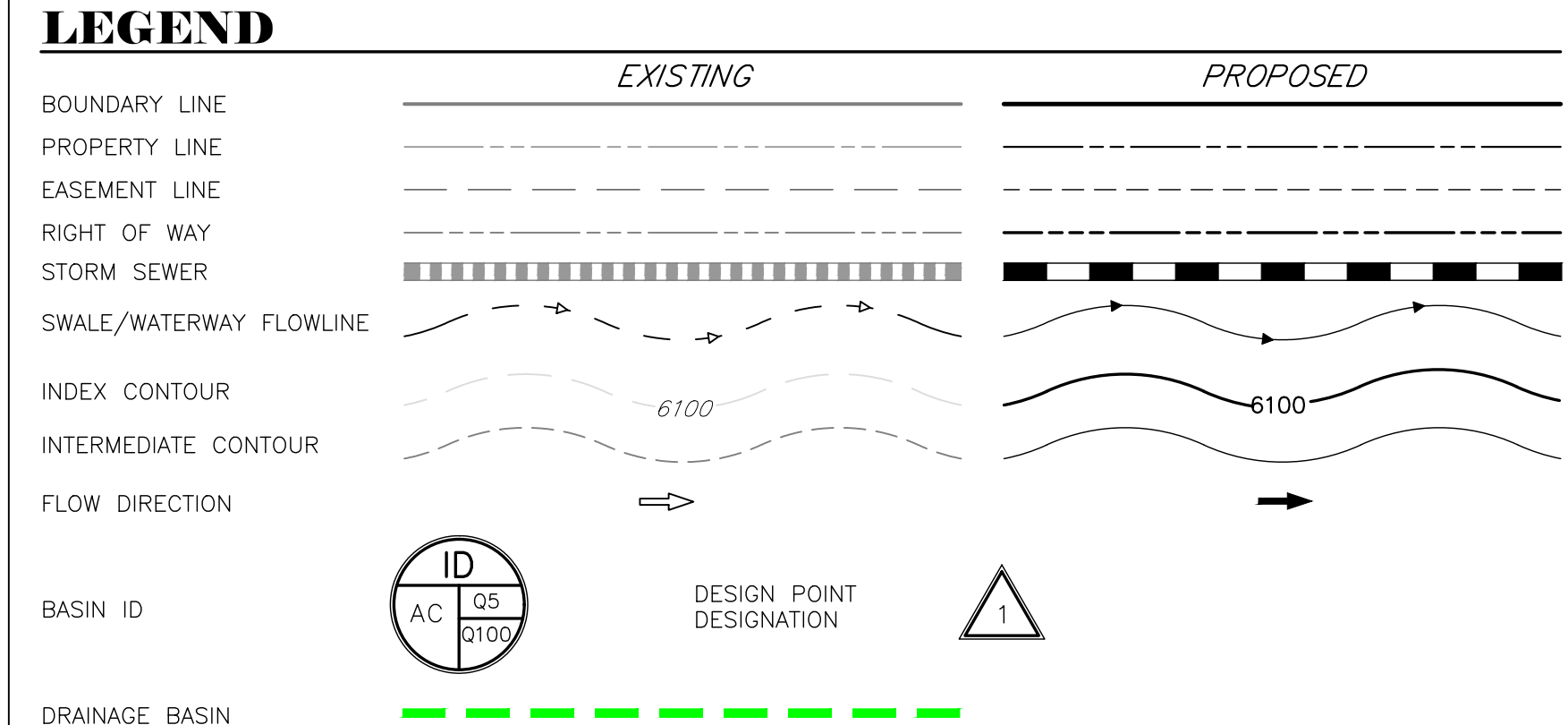
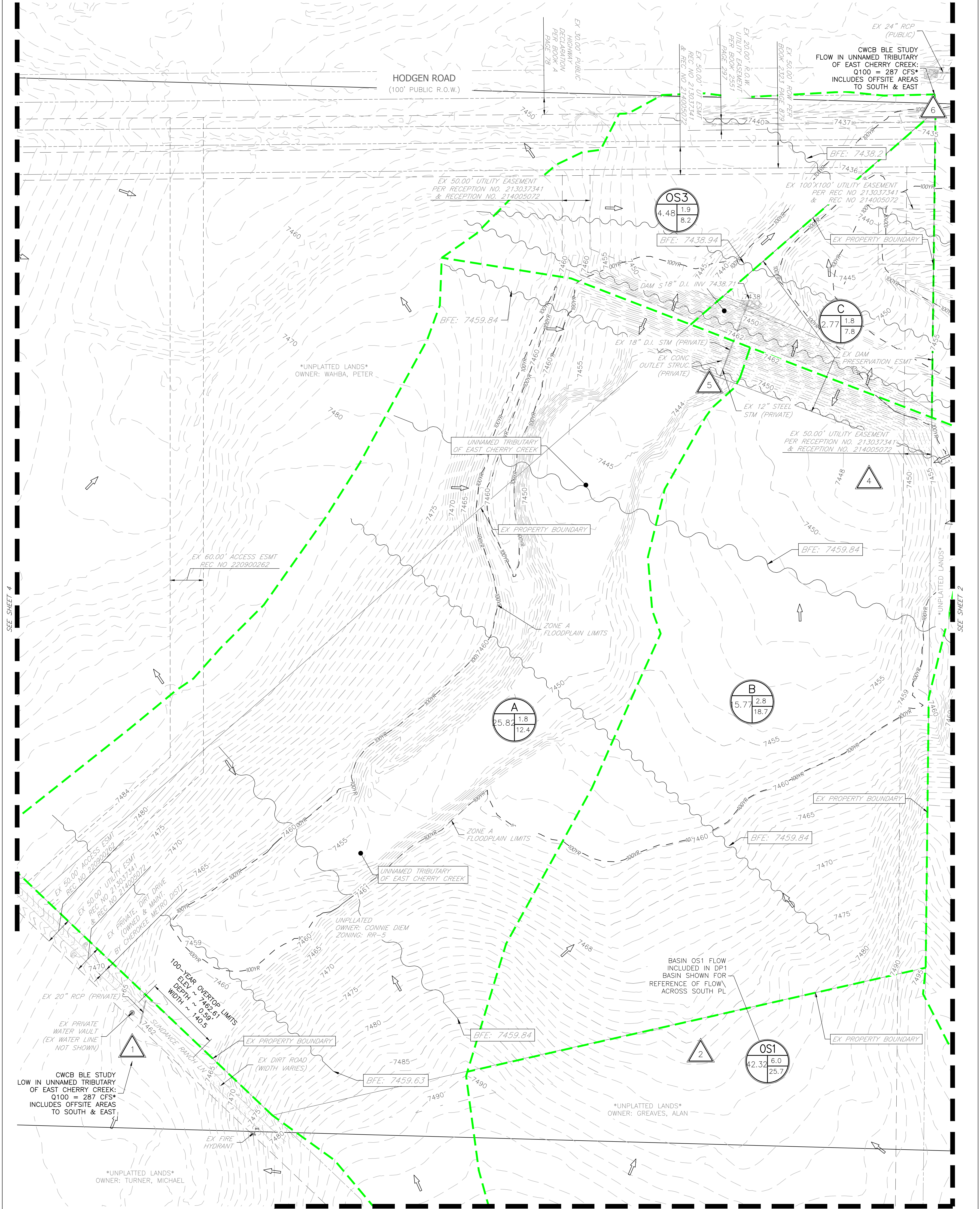


## **APPENDIX F – DRAINAGE MAPS**



# DEIM SUBDIVISION

## EXISTING DRAINAGE MAP



EXISTING CONDITIONS - BASIN SUMMARY TABLE								
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)	
A	25.82	2%	0.09	0.36	69.7	2.8	19.0	
B	15.77	2%	0.09	0.36	42.3	2.8	18.7	
C	2.77	2%	0.09	0.36	16.1	0.9	5.7	
OS1	42.32	2%	0.09	0.36	42.4	7.5	50.2	
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5	
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8	

- #### DRAINAGE MAP NOTES
- THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6.
  - BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE			
DP#	Q <sub>s</sub> -YR	Q <sub>100</sub> -YR	
OS1	12.1	54.9	
1	N/A	287.0	
2	7.5	50.2	
3	4.4	29.5	
4	10.5	70.4	
5	9.1	61.0	
6 ONSITE	22.0	120.2	
6 TOTAL	22.0	287.0	



EXISTING DRAINAGE MAP

DEIM SUBDIVISION

JOE NO. 24034

LOCATION: EPC

03/28/2025

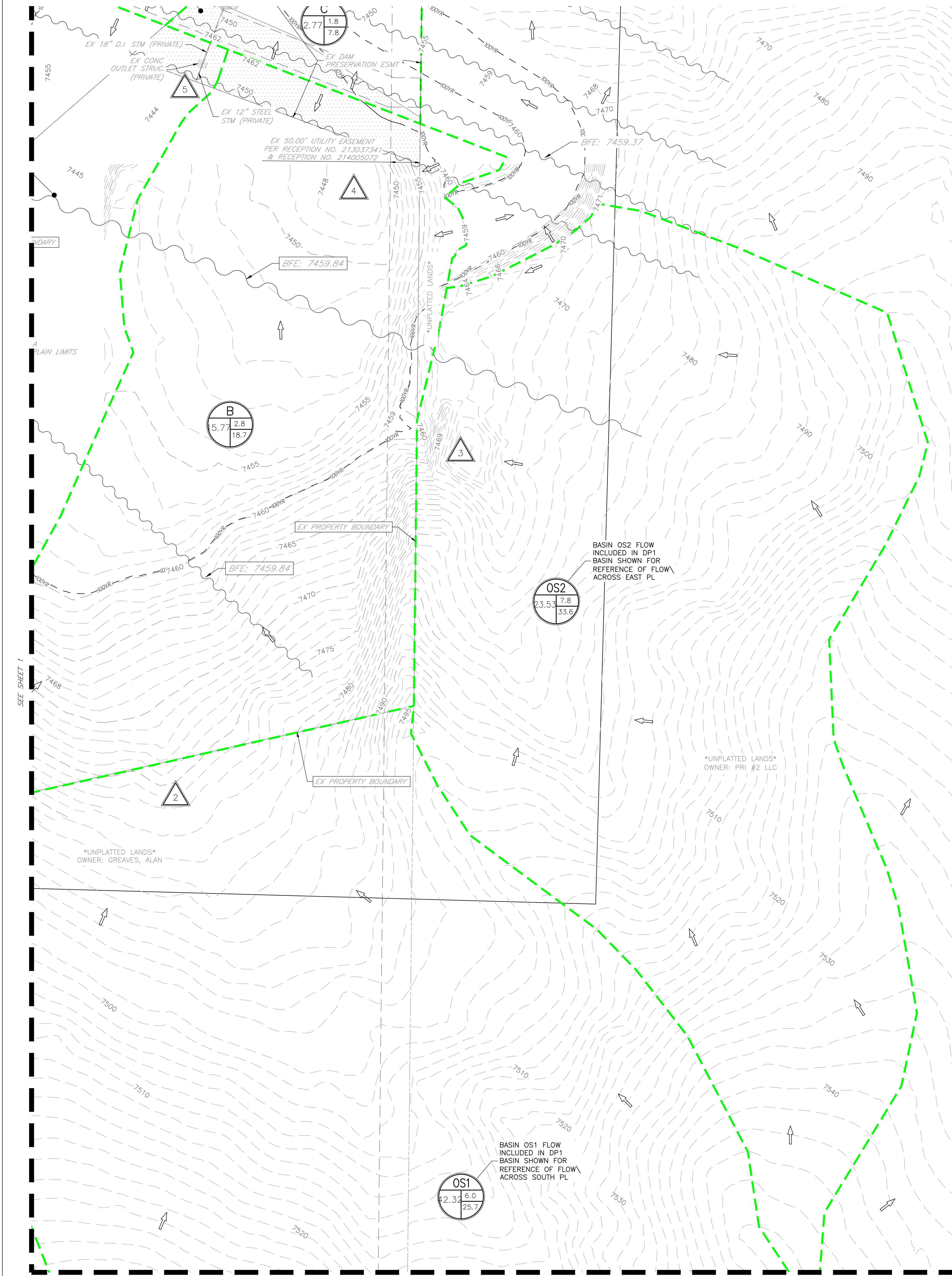
SHEET 1

ALL TERRAIN ENGINEERING

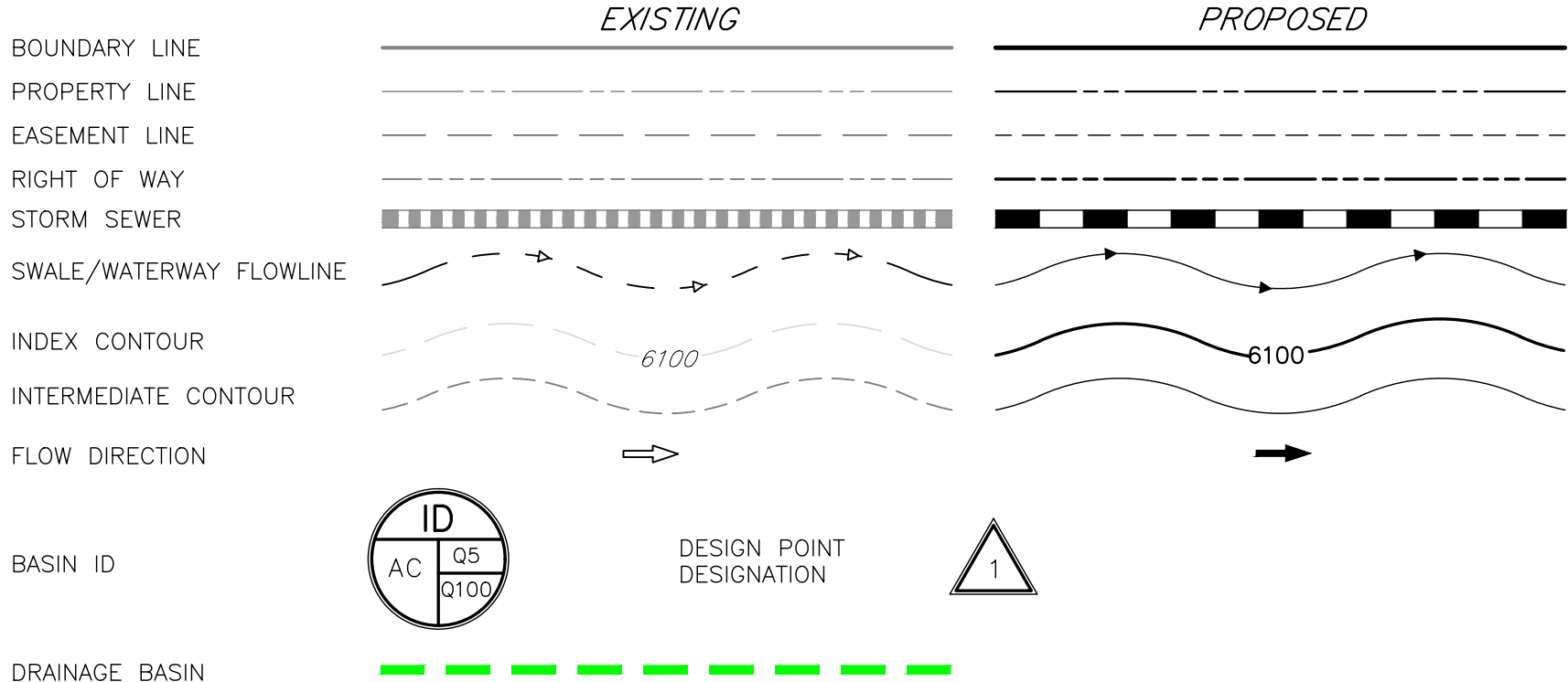


# DEIM SUBDIVISION

## EXISTING DRAINAGE MAP



### LEGEND



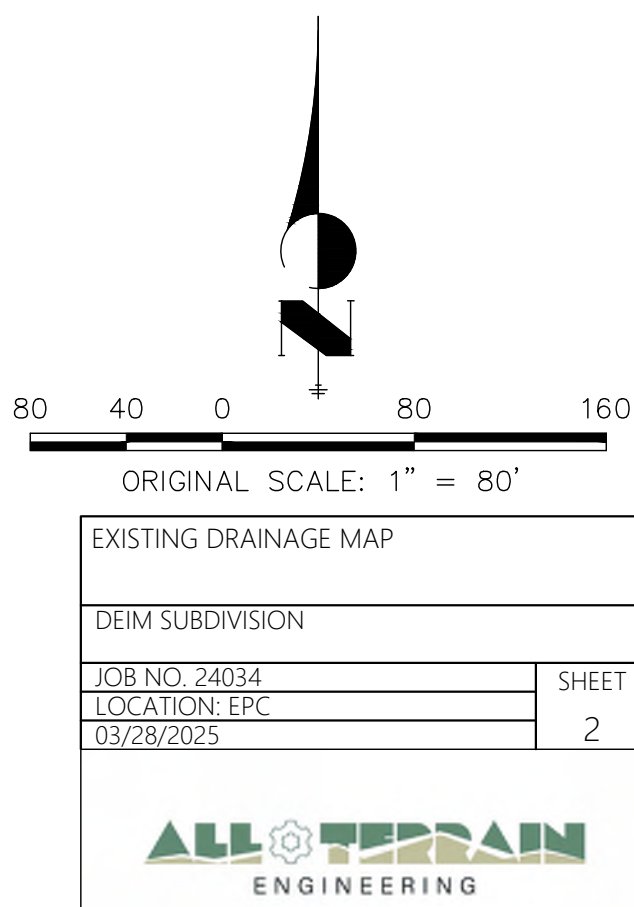
SEE SHEET 3

EXISTING CONDITIONS - BASIN SUMMARY TABLE								
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)	
A	25.82	2%	0.09	0.36	69.7	2.8	19.0	
B	15.77	2%	0.09	0.36	42.3	2.8	18.7	
C	2.77	2%	0.09	0.36	16.1	0.9	5.7	
OS1	42.32	2%	0.09	0.36	42.4	7.5	50.2	
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5	
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8	

### DRAINAGE MAP NOTES

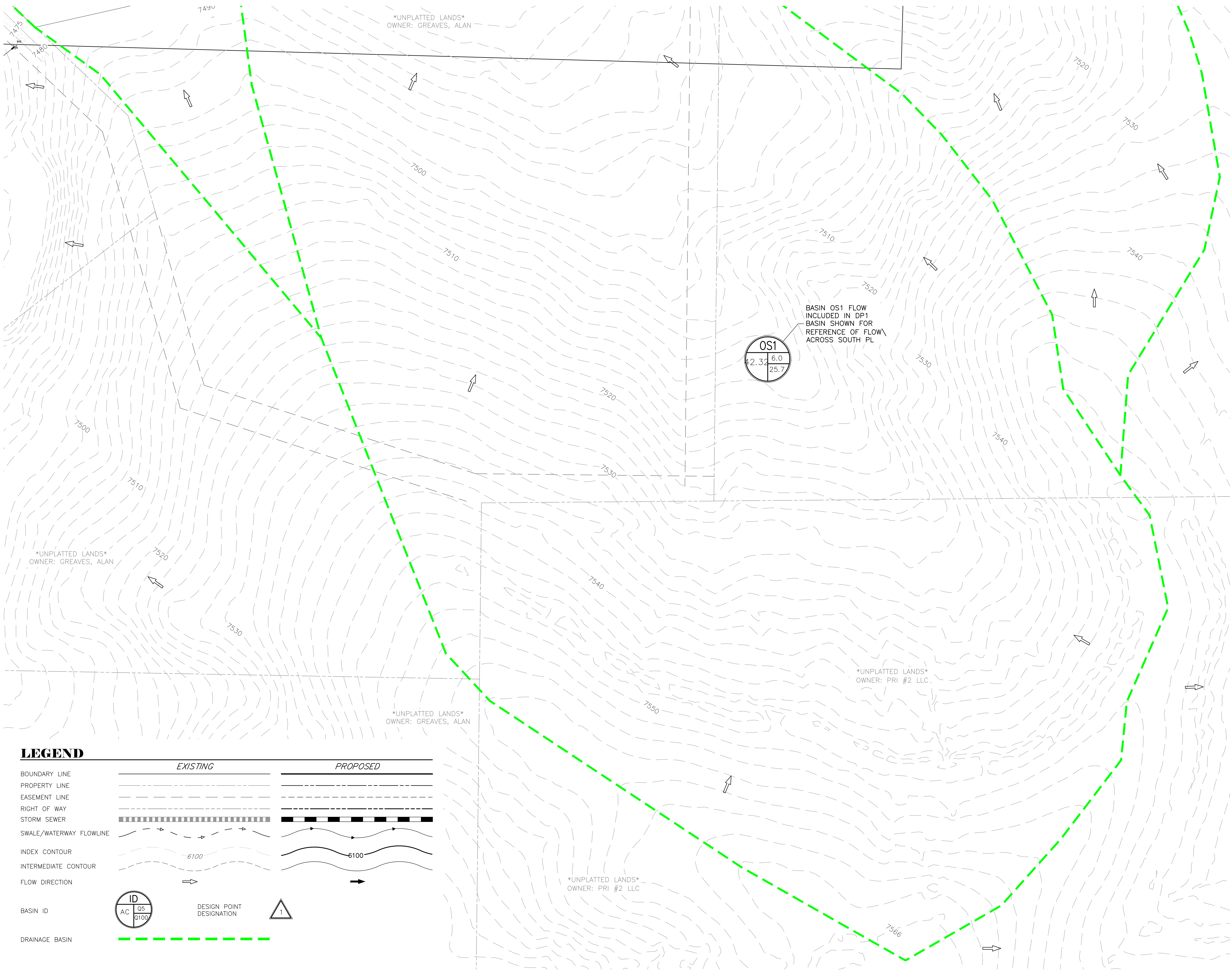
- THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6. BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>s</sub> -YR	Q <sub>100</sub> -YR
OS1	12.1	54.9
1	N/A	287.0
2	7.5	50.2
3	4.4	29.5
4	10.5	70.4
5	9.1	61.0
6 ONSITE	22.0	120.2
6 TOTAL	22.0	287.0





DEIM SUBDIVISION  
EXISTING DRAINAGE MAP



EXISTING CONDITIONS - BASIN SUMMARY TABLE							
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)
A	25.82	2%	0.09	0.36	69.7	2.8	19.0
B	15.77	2%	0.09	0.36	42.3	2.8	18.7
C	2.77	2%	0.09	0.36	16.1	0.9	5.7
OS1	42.32	2%	0.09	0.36	42.4	7.5	50.2
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
OS1	12.1	54.9
1	N/A	287.0
2	7.5	50.2
3	4.4	29.5
4	10.5	70.4
5	9.1	61.0
6 ONSITE	22.0	120.2
6 TOTAL	22.0	287.0

- DRAINAGE MAP NOTES**
1. THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6.
  2. BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
STORM SEWER		
SWALE/WATERWAY FLOWLINE		
INDEX CONTOUR		
INTERMEDIATE CONTOUR		
FLOW DIRECTION		
BASIN ID		
DESIGN POINT DESIGNATION		
DRAINAGE BASIN		

ORIGINAL SCALE: 1" = 80'

EXISTING DRAINAGE MAP

DEIM SUBDIVISION

JOB NO. 24034

LOCATION: EPC

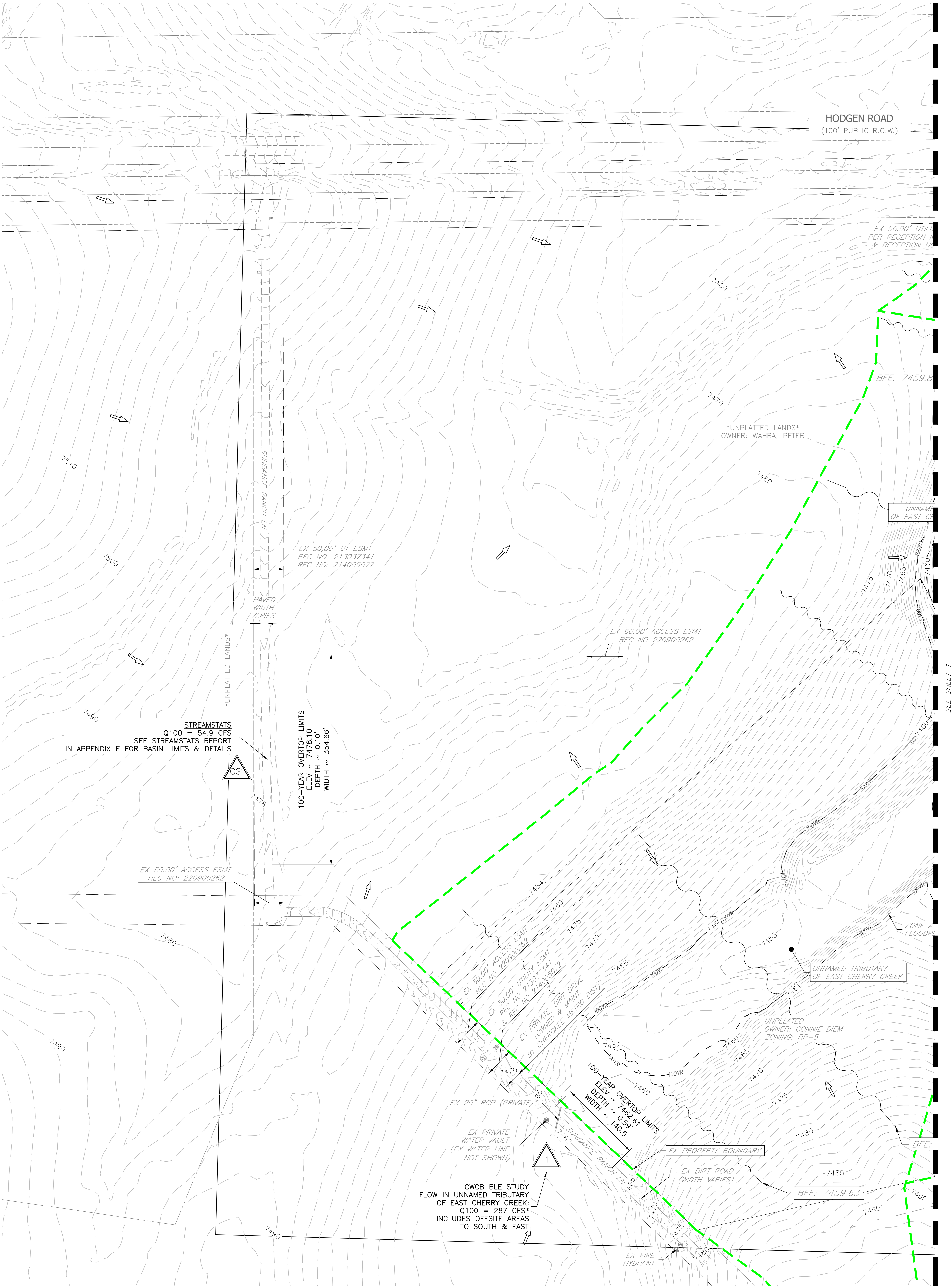
03/28/2025

SHEET 3

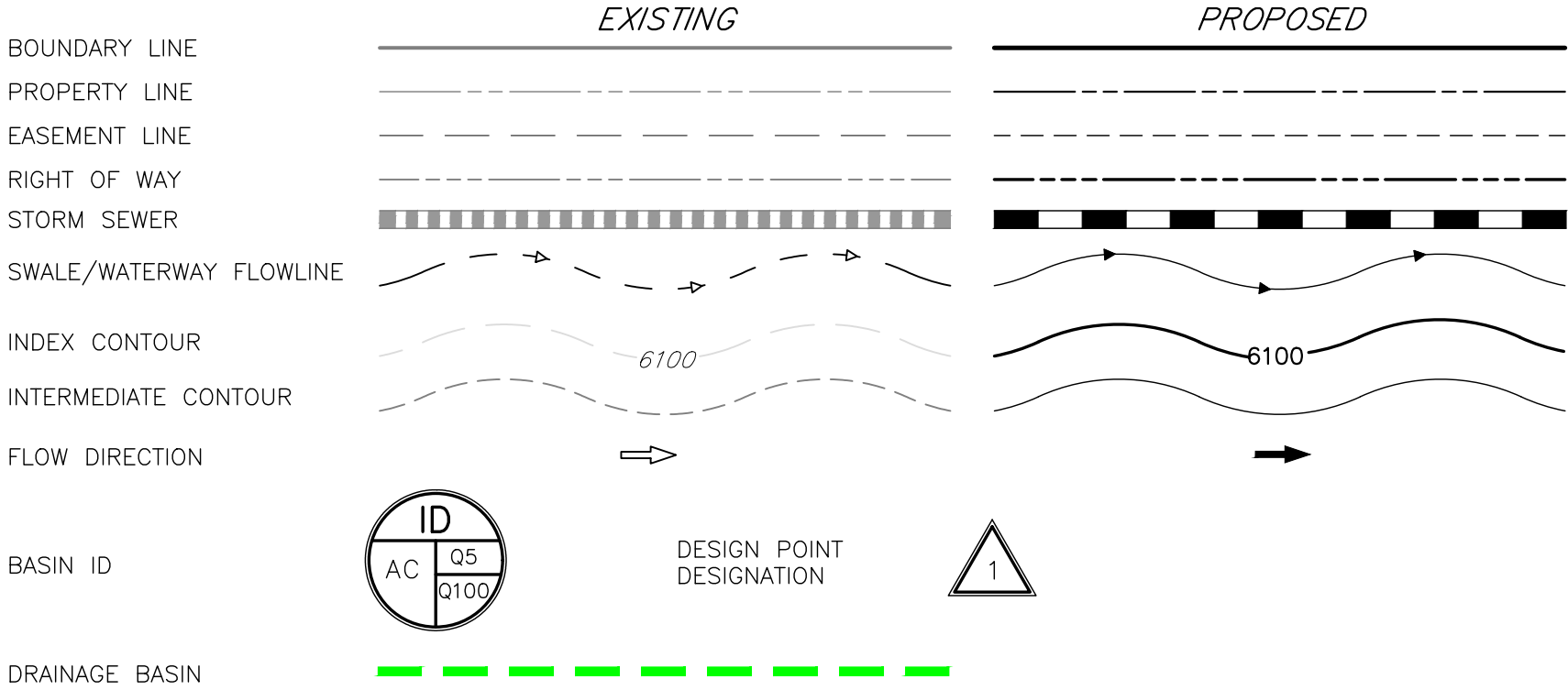


# DEIM SUBDIVISION

## EXISTING DRAINAGE MAP



### LEGEND

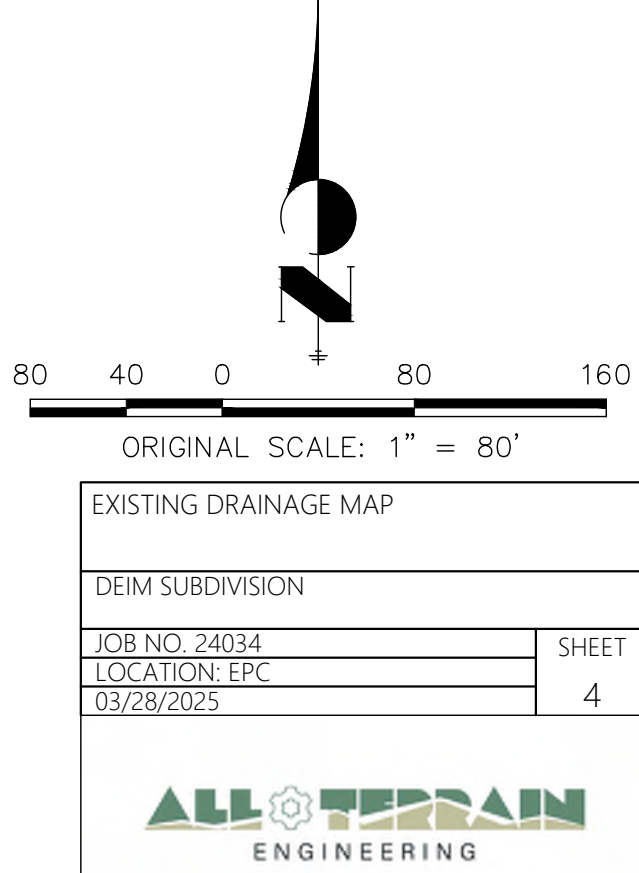


EXISTING CONDITIONS - BASIN SUMMARY TABLE								
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)	
A	25.82	2%	0.09	0.36	69.7	2.8	19.0	
B	15.77	2%	0.09	0.36	42.3	2.8	18.7	
C	2.77	2%	0.09	0.36	16.1	0.9	5.7	
OS1	42.32	2%	0.09	0.36	42.4	7.5	50.2	
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5	
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8	

### DRAINAGE MAP NOTES

- THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DPF6. BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

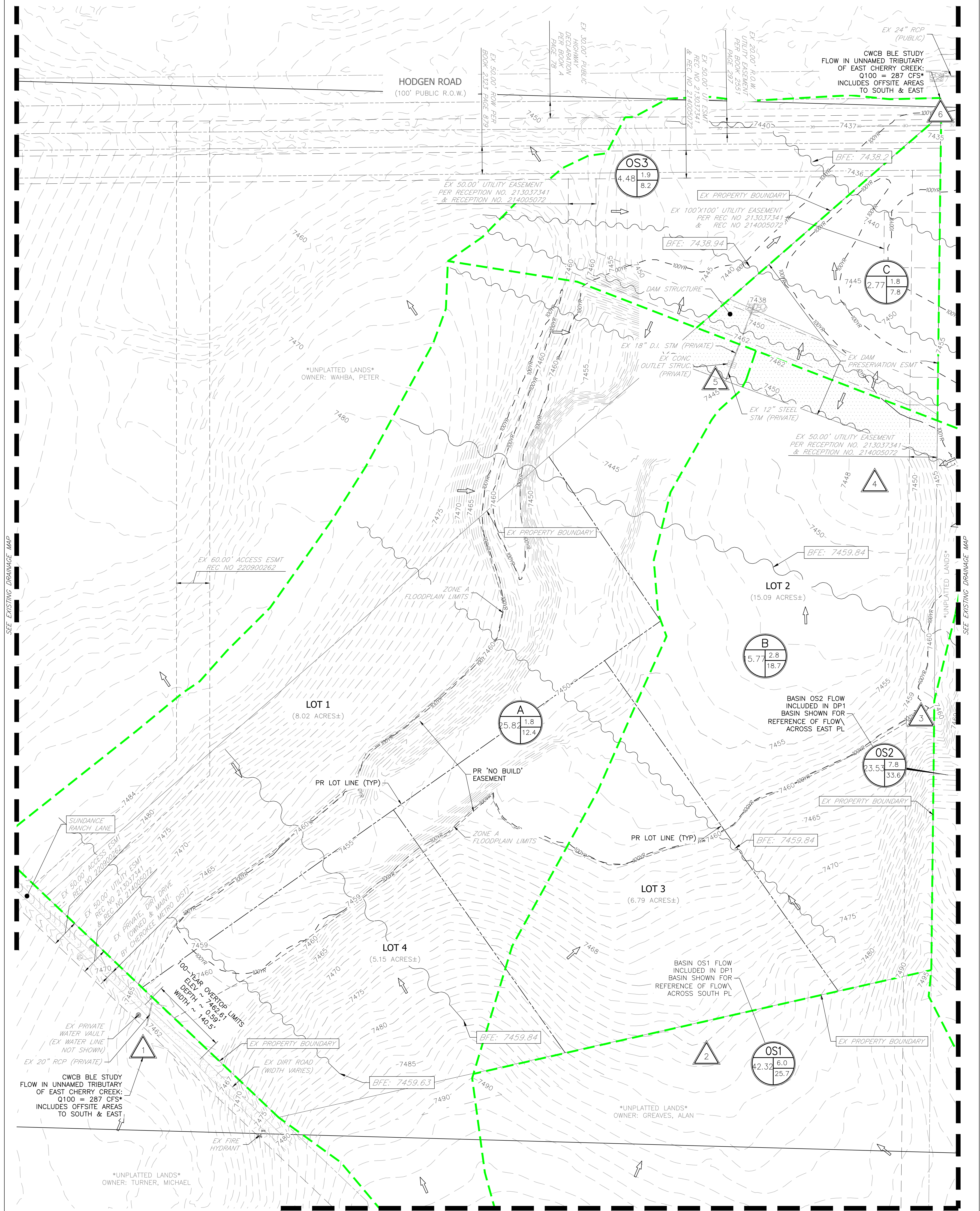
EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>s</sub> -YR	Q <sub>100</sub> -YR
OS1	12.1	54.9
1	N/A	287.0
2	7.5	50.2
3	4.4	29.5
4	10.5	70.4
5	9.1	61.0
6 ONSITE	22.0	120.2
6 TOTAL	22.0	287.0





# DEIM SUBDIVISION

## PROPOSED DRAINAGE MAP



## LEGEND

Diagram illustrating the difference between existing and proposed drainage basins. The diagram shows two scenarios: **EXISTING** and **PROPOSED**.

**EXISTING:** Shows a drainage basin defined by a dashed line. The flow direction is indicated by arrows. The design point is marked with a circle containing "ID 05 Q100".

**PROPOSED:** Shows a drainage basin defined by a solid line. The flow direction is indicated by arrows. The design point is marked with a triangle containing "1".

The diagram also shows the location of the design point (ID 05 Q100) and the drainage basin (DRAINAGE BASIN).

### PROPOSED CONDITIONS - BASIN SUMMARY TABLE

Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)
A	25.82	3%	0.10	0.37	68.8	3.1	19.7
B	15.77	5%	0.11	0.38	41.9	3.5	19.8
C	2.77	2%	0.09	0.36	16.1	0.9	5.7
OS1	43.32	2%	0.09	0.36	42.4	7.7	51.4
OS2	23.53	2%	0.09	0.36	39.3	4.4	29.5
OS3	4.48	7%	0.14	0.39	27.3	1.6	7.8

### DRAINAGE MAP NOTES

1. THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW ( $Q_{100} = 287$  CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6.
2. BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

**PROPOSED CONDITIONS - DESIGN**

POINT SUMMARY TABLE		
DP#	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
OS1	12.1	54.9
1	N/A	287.0
2	7.7	51.4
3	4.4	29.5
4	11.1	72.0
5	9.7	62.3
6 ONSITE	22.6	121.6
6 TOTAL	22.6	288.1

Condition	Q <sub>5-YR</sub>	Q <sub>100-YR</sub>
Existing	22.0	287
Proposed	22.6	288.1
% Increase	2.73%	0.38%

## PROPOSED DRAINAGE MAP

DEIM SUBDIVISION

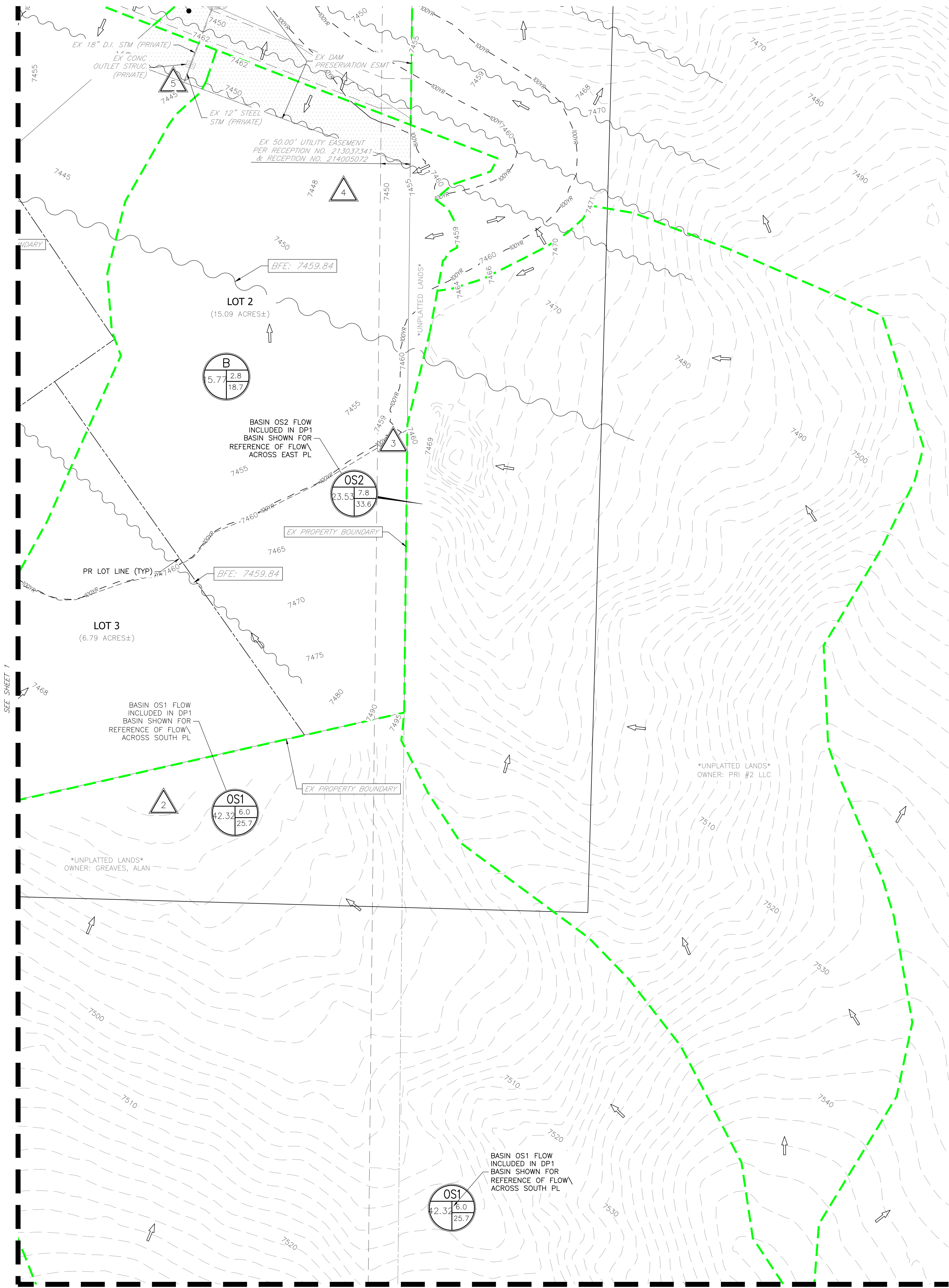
JOB NO. 24034
LOCATION: EPC
06/06/2025





# DEIM SUBDIVISION

## PROPOSED DRAINAGE MAP



### LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE	---	---
PROPERTY LINE	---	---
EASEMENT LINE	---	---
RIGHT OF WAY	---	---
STORM SEWER	---	---
SWALE/WATERWAY FLOWLINE	---	---
INDEX CONTOUR	---	---
INTERMEDIATE CONTOUR	---	---
FLOW DIRECTION	---	---
BASIN ID	---	---
DRAINAGE BASIN	---	---

### DRAINAGE MAP NOTES

- THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6.
- BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

80 40 0 80 160  
ORIGINAL SCALE: 1" = 80'

### PROPOSED DRAINAGE MAP

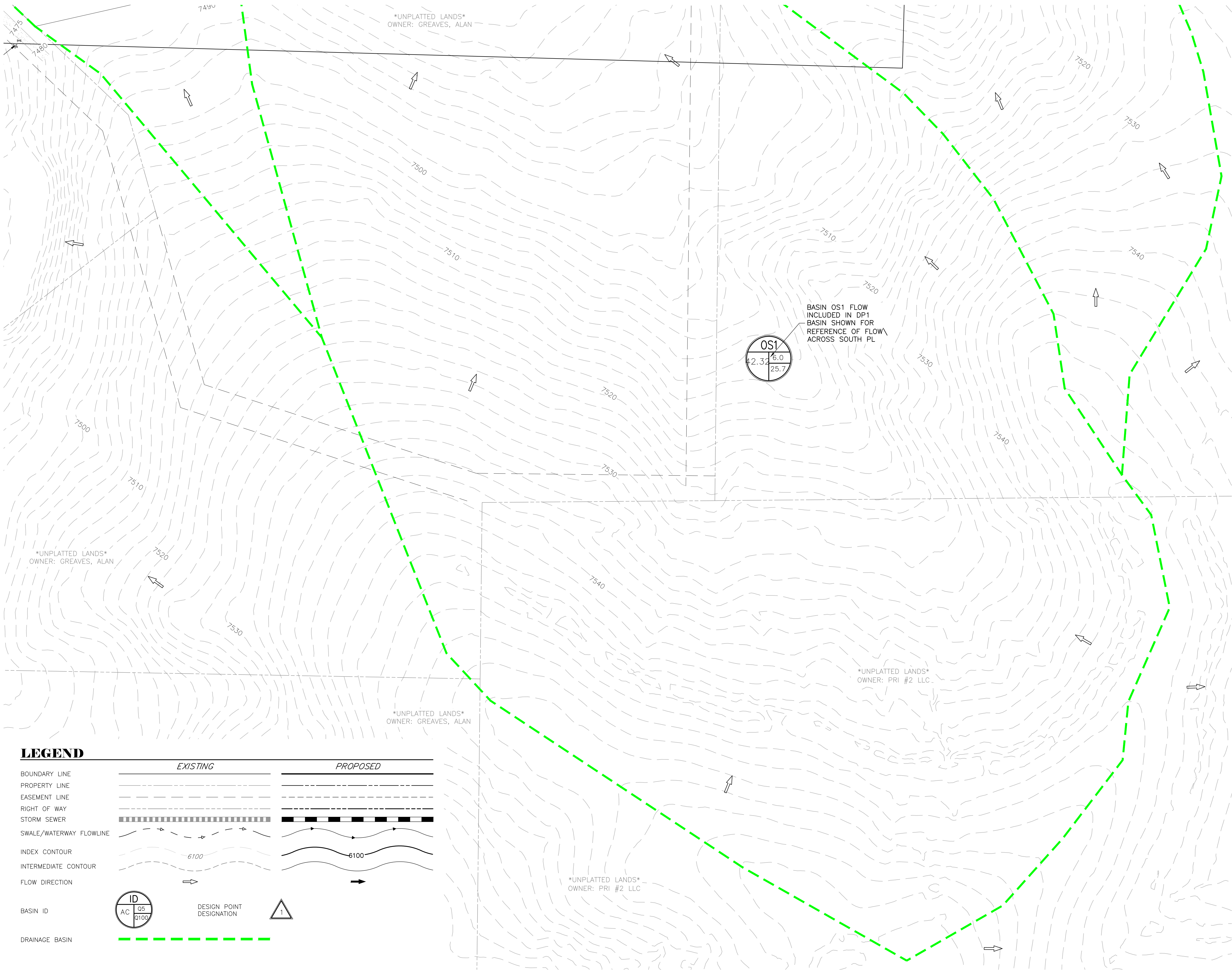
DEIM SUBDIVISION	
JOB NO. 24034	SHEET
LOCATION: EPC	2
06/06/2025	

ALL TERRAIN  
ENGINEERING



# DEIM SUBDIVISION

## PROPOSED DRAINAGE MAP



EXISTING CONDITIONS - BASIN SUMMARY TABLE							
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>6</sub> (cfs)	Q <sub>100</sub> (cfs)
A	25.82	2%	0.09	0.36	69.7	2.8	19.0
B	15.77	2%	0.09	0.36	45.2	2.8	18.7
C	2.77	2%	0.09	0.36	31.4	0.9	5.7
OS1	17.20	2%	0.09	0.36	44.4	3.0	20.4
OS2	42.32	2%	0.09	0.36	39.3	7.9	53.1
OS3	4.48	7%	0.14	0.39	32.1	1.6	7.8

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	Q <sub>5</sub> -YR	Q <sub>100</sub> -YR
1	N/A	287
2	3	20.4
3	7.9	53.1
4	9.7	65
5	18.2	57.4
6	27.6	61.7

- DRAINAGE MAP NOTES**
- THE APPROVED LOMR FOR THIS REACH (CASE NO 18-08-0702P) HAS ESTABLISHED THE EXISTING 100-YEAR FLOW IN THE UNNAMED TRIBUTARY OF EAST CHERRY CREEK. THE FLOW (Q100 = 287 CFS) INCLUDES ALL ONSITE AND OFFSITE AREAS TRIBUTARY TO DP6.
  - BASIN FLOW ANALYSIS IS TO DEMONSTRATE ONSITE & ADJACENT AREA CONTRIBUTION TO TOTAL FLOW OF 287 CFS & TO PROVIDE A PROPOSED CONDITION INCREASE TO ONSITE FLOW.

### LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE	—————	—————
PROPERTY LINE	- - - - -	- - - - -
EASEMENT LINE	- · - · -	- · - · -
RIGHT OF WAY	=====	=====
STORM SEWER	▨▨▨▨▨▨▨▨▨▨	▨▨▨▨▨▨▨▨▨▨
SWALE/WATERWAY FLOWLINE	- - - - -	- - - - -
INDEX CONTOUR	—————	—————
INTERMEDIATE CONTOUR	- - - - -	- - - - -
FLOW DIRECTION	→	→
BASIN ID	ID AC 05 Q100	DESIGN POINT DESIGNATION 1
DRAINAGE BASIN	-----	-----

80 40 0 80 160

ORIGINAL SCALE: 1" = 80'

PROPOSED DRAINAGE MAP

DEIM SUBDIVISION

JOB NO. 24034

LOCATION: EPC

06/06/2025

SHEET 3

ALL TERRAIN ENGINEERING