Preliminary Drainage Report
for
Mayberry Phase 2
A Portion of Mayberry Filing No. 1A
El Paso County, Colorado

Prepared for:

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PROJECT 8787-0001
PCD File No. PUDSP251

Date: June 15th, 2026

Mayberry Phase 2 Preliminary Drainage Report

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File name:	Mayberry Phase 2 Preliminary Drainage Report

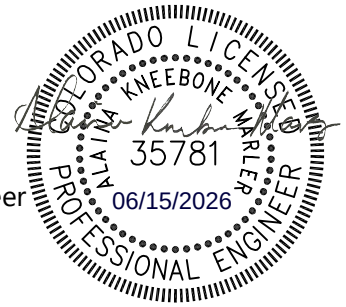
Document history and status

Revision	Date	Description	By	Review	Approved
1	06/15/2026	2nd Submittal	RNM	XWL	AKM

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 of the drainage basin. I accept responsibility for liability caused by negligent acts, errors or omissions on my part in preparing this report.

Alaina Kneebone Marler, P.E.
Registered Professional Engineer
State of Colorado No. 35781



06/15/2026
Date

Developer's Statement:

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

By:

_____

John Mick Date
Mayberry Communities, LLC

El Paso County's Statement:

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

_____

Joshua J. Palmer, P.E. Date
County Engineer/ECM Administrator

Conditions:

Contents

1. General Location & Description

1.1 Location

The proposed Mayberry Phase 2 project (hereafter, the Site) is located within a portion of Mayberry Filing No. 1A (PCD File No. VR2113) located in the Northwest Quarter of Section 14 and Northeast Quarter of Section 15, Township 14 South, Range 63 West of the 6th Principal Meridian, County of El Paso, State of Colorado (see Vicinity Map in Appendix A). The Site is located at the intersection of Mayberry Drive (formerly "New Log Road") and State Highway 94 and is approximately 18.70 acres in size.

The Site is bounded to the north by State Highway 94 and to the east by Mayberry Filing No. 1 (EPC Project No. SF-18-025) (residential).

1.2 Description of Property

The total area of the property is 18.70 acres, with a majority of the site being disturbed as a part of this development. A portion of the site, known as Tract K, includes the construction of 98 lots (paired homes and single-family homes), a clubhouse, parking lots, drive aisles and associated utilities. The rest of the site consists of a park, pickleball courts, a soccer field, public roadways, and associated utilities.

The existing terrain of the Site has already been overlot graded and it generally slopes from the northwest to southeast at grades ranging from 1%-3%, except a small hill with 25% slopes. The existing Site ground coverage consists of native grasses, brush, and vegetation where the site has not already been cleared due to the overlot grading being done as part of the overall development. For the overlot graded area, a temporary sediment basin was installed on the southwest corner of the Village Main Street and Marketplace Drive intersection. The existing sediment basin grading can be seen in the existing topography within the proposed soccer field.

The Soil Survey of El Paso County Area, Colorado, prepared by the U.S. Department of Agriculture Soil Conservation Service, shows the site is underlain by Blakeland loamy sand, 1 to 9 percent slopes, and Truckton-Bresser complex, eroded – both included in Hydrologic Soil Group A. The NRCS Soils Survey Report for this site is included in Appendix A.

There are no major drainageways within the Site. No portion of the site is located within a 100-year floodplain as determined by the Flood Insurance Rate Map (FIRM) number 08041C0810G, Panel 810 of 1300, effective date, December 2018 (see appendix).

There are no existing irrigation facilities or canals on the Site.

The current zoning is PUD.

2. Drainage Basins & Sub-Basins

2.1 Major Basin Description

There are two major basins located on site – Basin A and Basin C. The major basins for the Site are split according to the Mayberry Communities Master Development Drainage Plan (MDDP), prepared by R&R Engineers-Surveyors, Inc., and approved March 26, 2025.

Basin A consists of six (6) basins and has a total area of 4.66 acres. Runoff from Basin A will drain to Pond A in the ultimate condition but will be routed to a temporary pond (Temporary Pond A1) in the interim condition located at Design Point 1A. Pond A will be constructed when development occurs adjacent to where Pond A is shown on the MDDP at Design Point 1. The MDDP was submitted with the Mayberry Sketch Plan (EPC Project No. SKP236). Providing a temporary pond that is closer to the site will reduce offsite disturbance until later phases are developed.

Basin C consists of eighteen (18) basins and has a total of 14.62 acres. Some of this area includes portions that were built with Mayberry Filing No. 1, such as a portion of Village Main Street and Mayberry Drive. Runoff from Basin C will drain to Pond C1 (referred to as Pond C in MDDP located at Design Point 3).

Existing available drainage studies that impact the site are:

- "Final Drainage Report for Mayberry, Colorado Springs – Filing No. 1A Replat" (PCD File No. VR2113) prepared by JPS Engineering, dated November 19, 2021, revised April 8, 2022, and El Paso County approved June 27, 2022.
- "Preliminary Drainage Report Amendment for Mayberry, Colorado Springs – Phase 1 PUD" prepared by JPS Engineering, dated May 5, 2021, revised February 15, 2022
- "Mayberry Communities Master Development Drainage Plan for Mayberry, Colorado Springs" prepared by R&R Engineers-Surveyors, dated March 2025, approved by El Paso County on March 26, 2025.
- "Preliminary & Final Drainage Report for Mayberry, Colorado Springs – Filing No. 1" (EPC Project No. SF-18-025) prepared by JPS Engineering, dated January 15, 2007, most recently revised October 27, 2020.
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), El Paso County, Colorado and Incorporated Areas, Panel 810 of 1300, Map No. 08041C0810G (December 2018).

2.2 Sub-basin Description

A majority of the Site was analyzed in the Mayberry Filing No. 1A Developed Drainage Plan (PCD File No. VR2113) and is encompassed by drainage Basins C1.1, C1.2, C1.7B (see Drainage maps from Mayberry Filing No. 1A Drainage report in Appendix C). These existing basins in addition to the remaining area of the Site make up the two proposed basins, Basin C and Basin A.

In the existing condition, Basins C1.1, C1.2, and C1.7B from Filing No. 1 (EPC Project No. SF-18-025) are conveyed to Pond C1. In the proposed condition, Basins C1.1, C1.2, and the additional area of the proposed Basin C, will be conveyed to Pond C1, while a majority of Basin C1.7B and the additional area of proposed Basin A will be conveyed to Pond A, as identified by the Master Development Drainage Plan submitted with the Mayberry Sketch Plan (EPC Project No. SKP236).

A Basins

As previously mentioned, there are six (6) A basins, Basin A2 – A7 that include roadways, pickleball courts, a soccer field, and an exterior portion of an amphitheater. The roadway basins overland flow to the curb and gutter before being captured by Type R street inlets. The pickleball courts overland flow southerly and soccer field overland flow easterly to low points on one side of the field/courts where it's captured by trench drains. Once runoff is captured, flow is routed through storm sewer to Temporary Pond A1. In the ultimate build out condition, runoff from Basin A will be routed to Pond A. The ultimate Pond A will be constructed when development occurs adjacent to where Pond A is shown on the MDDP at Design Point 1. A temporary pond located closer to the site will improve access and limit offsite disturbance during initial phases, while preserving flexibility for future design changes around Pond A.

C Basins

There are eighteen (18) C basins, Basin C1.2 – C17 that include roadways, parks, residential paired homes, alleys, and a portion of an amphitheater. Runoff for these basins will overland flow to nearby streets where they are conveyed by curb and gutter to Type R or Type 13 inlets located in streets and alleys. Once runoff is captured, it will be routed to the existing Mayberry Filing 1A storm system where it is routed to Pond C1.

Runoff will be discharged from Pond C1 and Temporary Pond A1 to the southeast, ultimately tributary to the West Fork of Black Squirrel Creek. This is consistent with historic drainage patterns. Detention pond release rates will be restricted to at least 90% of the historic discharge rate.

Offsite Basins

There are two (2) offsite basins, OS1-OS2, located on the western and northern side of the site.

OS1 is located to the north of Tract K and runoff from this basin will be conveyed east by a proposed swale which ties into an existing Filing No. 1 swale. From here, the flow is captured by a 30-in FES and conveyed by storm sewer south down Atchison Way and outfall into a channel adjacent to Pond C1. This offsite runoff bypasses Mayberry detention ponds.

OS2 runs along the western site boundary. Runoff from this basin overland flows east toward the site before being intercepted by a proposed swale that will divert runoff south around the site. The swale will outfall near the southwest corner of the site. Outfall protection will be analyzed in final design. This offsite runoff bypasses Mayberry detention ponds.

3. Drainage Design Criteria

3.1 Development Criteria Reference

The Site's drainage analysis is performed in accordance with the current El Paso County Drainage Criteria Manual (DCM) and Mile High Flood District (MHFD) "Urban Storm Drainage Criteria Manual" (USDCM).

The drainage design for the Site is influenced by the following previous studies:

- "Final Drainage Report for Mayberry, Colorado Springs – Filing No. 1A Replat" (PCD File No. VR2113) prepared by JPS Engineering, dated November 19, 2021, revised April 8, 2022.
- "Mayberry Communities Master Development Drainage Plan for Mayberry, Colorado Springs" (EPC Project No. SKP236) dated July 2023, revised December 2024.

3.2 Four-Step Process

3.2.1 Runoff Reduction

The Mayberry Phase 2 development is proposing a grass soccer field and a large park space with grass open space and gravel walking paths. Beyond these green spaces, there are limited opportunities to provide runoff reduction to impervious areas. The MDDP has several channels planned which would provide runoff reduction for the overall Mayberry Communities development.

3.2.2 Stabilization of Drainageways

The Mayberry Phase 2 does not propose any channels or drainageway. The MDDP includes several channels and stabilization for those channels will be provided during site design for those phases. There are two swales proposed with the Phase 2 development – one temporary and one permanent. Stabilization for both of these swales will be considered in final design. Types of stabilization may include erosion control blankets, riprap, and or vegetation.

3.2.3 Proposed WQCV

The entire site area will drain to on site full spectrum detention ponds – Pond C1 and Temporary Pond A1. Both ponds provided WQCV that MHFD requires which will treated site runoff before being released offsite.

3.2.4 BMP for Commercial and Industrial Pollutants

This site does not include any commercial and industrial areas therefore, this section does not apply.

3.3 Hydrologic Criteria

Calculations were performed to determine the existing and proposed runoff quantities for the 5-yr (minor storm) and 100-yr (major storm) 1-hour storm events for developed conditions using the Rational Method as required by El Paso County for basins containing less than 100 acres. Percent imperviousness and runoff coefficients for different land uses were calculated using Eq 5-2 of the DCM. Times of concentration (tc) were calculated as described in Section 5.2.3 of the DCM. Rainfall intensity (i) was calculated using the IDF equations in Figure 5-1. Figures and equations used are included in Appendix B. Flows will ultimately be routed to the existing Detention Pond C1 and proposed Temporary Detention Pond A1. Both full spectrum detention ponds were designed using MHFD Detention spreadsheet. (Pond C1 version 4.06, Temporary Pond A1 version 4.08). Ponds will be restricted to discharge a maximum of 90% of the historic flow rates.

4. Drainage Facility Design

4.1 General Concept

Consistent with generally accepted practices in eastern El Paso County, the general concept for stormwater management from development of Mayberry Phase 2 proposes to construct a storm sewer system which will outfall into existing detention pond, Pond C1 and proposed temporary detention pond, Pond A1.

The existing drainage ditch south of Highway 94 will be enhanced if necessary to keep CDOT R.O.W. offsite drainage from flowing into Tract K. This will be analyzed during final design in CDs.

4.2 Specific Details

4.2.1 Existing Drainage Conditions

Mayberry Drive (formerly named "New Log Road"), a portion of Village Main Street, and Marketplace Drive currently exist as part of Mayberry Filing No. 1A. The rest of the Site is undeveloped.

A majority of the site is located within basins designated as C1.1, C1.2, and C1.7B in the Filing No. 1A approved Drainage Report. See existing drainage map prepared by JPS. The Mayberry Phase 2 basins have been overlayed onto this existing drainage plan as well.

Basin C1.1 is a total of 9.38 acres and is ultimately captured by the existing inlet at design point C1.1 along Cattlemen Run and is conveyed to Pond C1. Tract K (of the proposed Basin C) contains 1.98 acres of basin C1.1. The 1.98 acres of Tract K will now be captured by proposed inlets and routed through DP C1.2C before outfalling into Pond C1. Runoff from this area was designed to be routed through DP C1.1 in Filing No. 1. Storm pipe capacities will be confirmed during final design.

Basin C1.2 is a total of 7.97 acres and encompasses the remaining area of Tract K, the existing Mayberry Drive, and portion of Village Main Street. In the existing condition, runoff goes to DP C1.2C and is conveyed to Pond C1. In the proposed condition, the storm sewer system will be extended from DP C1.2C into the residential neighborhood proposed in Tract K. The existing Basin C1.2 will still be conveyed to Pond C1 in the proposed condition.

Basin C1.7B is a total of 4.34 acres and encompasses the proposed soccer field within proposed Basin A and C. Basin C1.7B is ultimately captured by the existing inlet at design point C1.7B and conveyed to Pond C1 in the existing condition. In the proposed condition, a portion of Basin C1.7B will be conveyed to Temporary Pond A1 while the other portion will be conveyed to Pond C1.

The majority of the project site falls within basins C1.2 and C1.7B, which had a combined allowance to Pond C1 of 25.10 cfs for the 5-year storm and 53.20 cfs for the 100-year storm as determined by JPS. See Appendix B for the approved Drainage Report supporting calculations.

4.2.2 Proposed On-Site Basins

Refer to the Proposed Drainage Map located in Appendix C for drainage basin locations and boundaries.

Basin A (4.66 ac) consists of Positive Place, Mayberry Drive, and Griffith Square. Land use type is a mix of streets, recreational fields and courts, landscape, hardscape, and roof coverage. Surface runoff (sheet flow) will be captured by proposed curb and gutter, various storm inlets, and trench drains and will be conveyed to a proposed flared end section at design point 1A that outfalls to Temporary Pond A1. Should any inlets or trench drains become clogged or otherwise nonfunctional, stormwater will overtop into existing Basins C1.7B and C1.10. from Filing No. 1. Basin A has been split into six (6) smaller basins for each design point. See Table 1 below for basin summary and flowrates.

In the ultimate build out condition, runoff from Basin A will be routed to Pond A. The ultimate Pond A will be constructed when development occurs adjacent to where Pond A is shown on the MDDP at Design Point 1. A temporary pond located closer to the site will improve access and limit offsite disturbance during initial phases, while preserving flexibility for future design changes around Pond A.

Basin C (14.62 ac) consists of Village Main Street, South and North Mayberry Drive, the Entry Park, and Tract K. Land use type is a mix of streets, dense single-family homes, parks, landscape and hardscape. Surface runoff (sheet flow) will be captured by proposed curb and gutter and various storm inlets and will be conveyed to existing Type R inlets. Should any inlets become clogged or otherwise nonfunctional, stormwater will overtop into existing Basin C1.3. from Filing No. 1. Basin C has been split into eighteen (18) smaller basins for each design point. See Table 1 below for basin summary and flowrates.

Storm infrastructure that drains Mayberry Phase 2 Basin C, was built with Mayberry Filing 1A. Table 2 below compares the initial flowrates that were assumed for Basin C in Filing 1A to what is proposed in Phase 2 for Basin C. The flowrates proposed in Phase 2 are lower than what was assumed in Filing 1A which suggests that the existing storm infrastructure was sized adequately for the Phase 2 development. Storm infrastructure design will be analyzed in final design to confirm.

Table 1. Runoff Summary

Summary Runoff Table					
Design Point	Tributary Basins	Tributary Area	Composite Imperv. %	Runoff (CFS)	
				5-Year	100-Year
2A	A2	0.57	85%	2.27	4.29
3A	A3	0.56	85%	2.24	4.23
4A	A4	2.07	9%	1.28	6.27
5A	A5	0.27	80%	1.03	1.98
6A	A6	0.31	80%	1.18	2.26
7A	A7	0.87	82%	3.38	6.44
1A	**Basin A**	**4.66**	**50%**	**6.79**	**15.49**
C1.2C	C1.2	4.20	64%	9.63	20.32
C1.7B	C1.7B	2.02	73%	6.07	12.03
2C	C2	0.43	63%	1.03	2.27
3C	C3	0.78	69%	2.25	4.66
4C	C4	0.35	77%	1.20	2.36
5C	C5	0.45	74%	1.41	2.82
6C	C6	0.26	75%	0.84	1.67
7C	C7	0.50	64%	1.31	2.81
8C	C8	1.17	68%	3.11	6.59
9C	C9	0.70	61%	1.80	3.93
10C	C10	0.22	69%	0.71	1.44
11C	C11	0.55	57%	1.26	2.87
12C	C12	0.42	61%	1.07	2.34
13C	C13	0.55	57%	1.26	2.87
14C	C14	0.62	60%	1.51	3.35
15C	C15	0.40	90%	1.70	3.14
16C	C16	0.93	80%	3.52	6.76
17C	C17	0.05	97%	0.23	0.42
C1.2C	**Basin C**	**14.62**	**67%**	**23.23**	**48.12**
1OS	OS1	0.60	7%	0.32	1.75
2OS	OS2	12.71	7%	2.06	11.21

Table 2. Filing 1A & Phase 2 Flowrate Comparison for Basin C

Filing 1A & Phase 2 Flowrate Comparison for Basin C				
Filing/Phase	Basins	Area	Q5	Q100
Filing 1A	C1.2 & C1.7B	12.31	25.10	53.20
Phase 2	Basin C	14.62	23.23	48.12
The Phase 2 proposed flows for the tributary area to Pond C is less than what was assumed in Mayberry Filing 1A.				

4.2.3 Full Spectrum Detention Pond

Existing Pond C1 was designed as a full spectrum detention pond that provides WQCV, EURV, and 100-year + ½ WQCV detention volume. With the Mayberry Phase 2 development, about 0.8 acres of area is being proposed to go to Temporary Pond A1 that was initially intended for existing Pond C1 but the approved Filing 1A Pond C1 impervious value is 51.7% and the Phase 2 proposed value is 54.1%. To check if the impervious increase will cause any adverse effects within the development or downstream, existing Pond C1 has been reanalyzed to see if the existing design volume is adequate. This analysis is provided in Appendix B. The new required Pond C1 volume is 4.78 ac-ft and the volume provided below the spillway is approximately 5.03 ac-ft which suggests that existing Pond C1 has capacity for the additional tributary area. The approved Filing 1A Pond C1 detention sheet does not include the additional ½ WQCV with the 100-year volume. To be conservative and to be consistent with the MDDP, the Phase 2 analysis of Pond C1 includes the additional 1/2 WQCV with the 100-year detention volume. Additional pond analysis will be provided during final design in CDs. See Table 3 below. Pond C1 tributary areas have been marked on the Filing 1A and MDDP excerpt in Appendix C.

Table 3. Pond C1 Watershed Summary

Pond C1 Watershed Summary				
Filing/Phase	Basin	Area	Imp%	Notes
Phase 2	C1.2	4.20	64%	Modified for Phase 2 development
Phase 2	C1.7B	2.02	73%	Modified for Phase 2 development
Phase 2	C2	0.43	63%	
Phase 2	C3	0.78	69%	
Phase 2	C4	0.35	77%	
Phase 2	C5	0.45	74%	
Phase 2	C6	0.26	75%	
Phase 2	C7	0.50	64%	
Phase 2	C8	1.17	68%	
Phase 2	C9	0.70	61%	
Phase 2	C10	0.22	69%	
Phase 2	C11	0.55	57%	
Phase 2	C12	0.42	61%	
Phase 2	C13	0.55	57%	
Phase 2	C14	0.62	60%	
Phase 2	C15	0.40	90%	
Phase 2	C16	0.93	80%	
Phase 2	C17	0.05	97%	
Filing No. 1	C1.3	3.02	52.5%	
Filing No. 1	C1.4	3.23	52.5%	
Filing No. 1	C1.5	3.18	52.5%	
Filing No. 1	C1.6	3.01	52.5%	
Filing No. 1	C1.7A	0.58	52.5%	
Filing No. 1	C1.8	3.89	52.5%	
Filing No. 1	C1.9	4.39	52.5%	
Filing No. 1	C1.1	6.93	26.0%	Modified based on Phase 2 Basins
Filing No. 1	C1.10	1.20	84.5%	Modified based on Phase 2 Basins
	Total for Pond C1:	44.04	54.1%	
	Approved Filing 1A Pond C1:	44.81	51.7%	
Revised Req. 100YR Volume (acft)=		**4.78**		
Ex. Provided Volume (acft)*=		**5.03**		

*Available volume is measured up to spilllway invert. Volume above spillway is reserved for emergency overflow and freeboard.

Temporary Pond A1 is designed as a full spectrum detention pond and will provide WQCV, EURV, and 100-year + ½ WQCV detention volume for the Phase 2 A basins. Temporary Pond A1 is only designed for the Phase 2 A basins. See Table 4 below for Pond A1 watershed summary. When future developments within the MDDP Basin A occur, revisions or additional analysis for the temporary pond will need to be completed or additional ponds will be required. See the MDDP excerpt in Appendix C and the pond calculations in Appendix B.

Table 4. Temporary Pond A1 Watershed Summary

Temporary Pond A1 Watershed Summary			
Filing/Phase	Basin	Area	Imp%
Phase 2	A2	0.57	85%
Phase 2	A3	0.56	85%
Phase 2	A4	2.07	9%
Phase 2	A5	0.27	80%
Phase 2	A6	0.31	80%
Phase 2	A7	0.87	82%
	Total for Pond A1	4.66	50%
Required 100YR Volume (acft) =		**0.47**	
Provided Volume (acft) =		**1.07**	

El Paso County drainage criteria refers to the City of Colorado Spring drainage criteria manual and according to Colorado Spring Drainage Criteria Manual Volume 1 (DCM V1), Full Spectrum Detention (FSD) facilities do not need to provide an additional ½ WQCV to the 100-year storage volume because the ½ WQCV is included in the EURV volume provided. This is stated in CO Springs DCM V1 Chapter 13 Section 4.1 (Page 255 of the CO Springs DCM V1). Pond C1, Temporary Pond A1 and all ponds approved in the MDDP were designed as FSD facilities and they also include the additional ½ WQCV added to the flood storage volume. This additional ½ WQCV has not been removed from any of the Mayberry ponds at this time, but it is noted that additional storage volume is being provided that does not seem to be required by code.

4.2.4 Maintenance Access

Maintenance access for storm infrastructure and detention ponds will be provided by public and private streets. If there are areas that need additional access, such as access to pond bottoms, gravel maintenance paths will be provided. Additional details for maintenance access will be provided during final design in the CDs. Ownership and maintenance of all drainage facilities and improvements shall be provided by Mayberry Metropolitan District.

4.2.5 Downstream conveyance

For the Mayberry Phase 2 development, site runoff will be captured and conveyed to full spectrum detention ponds. The release rate of each detention pond is restricted to 90% of the historic predeveloped release rate. The historic predeveloped release rate is calculated in the MHFD Detention spreadsheet on the outlet structure tab. The release rates for Pond C1 and Temporary Pond A1 will be restricted to 90% of the historic rate which will provide that the downstream conveyance will have capacity to convey the post development flowrates. Both ponds will outfall to the south to follow historic drainage patterns. Further analysis will be completed during final design.

5. Conclusion

The proposed Mayberry Phase 2 development includes residential lots, public streets, a park, pickleball courts, a soccer field, an amphitheater, public infrastructure such as water, sanitary, and storm sewer systems. Runoff from the proposed development will drain to two full spectrum detention ponds that will provide WQCV, EURV, and detention for the 5-year to 100-year storm event. Pond release rates are

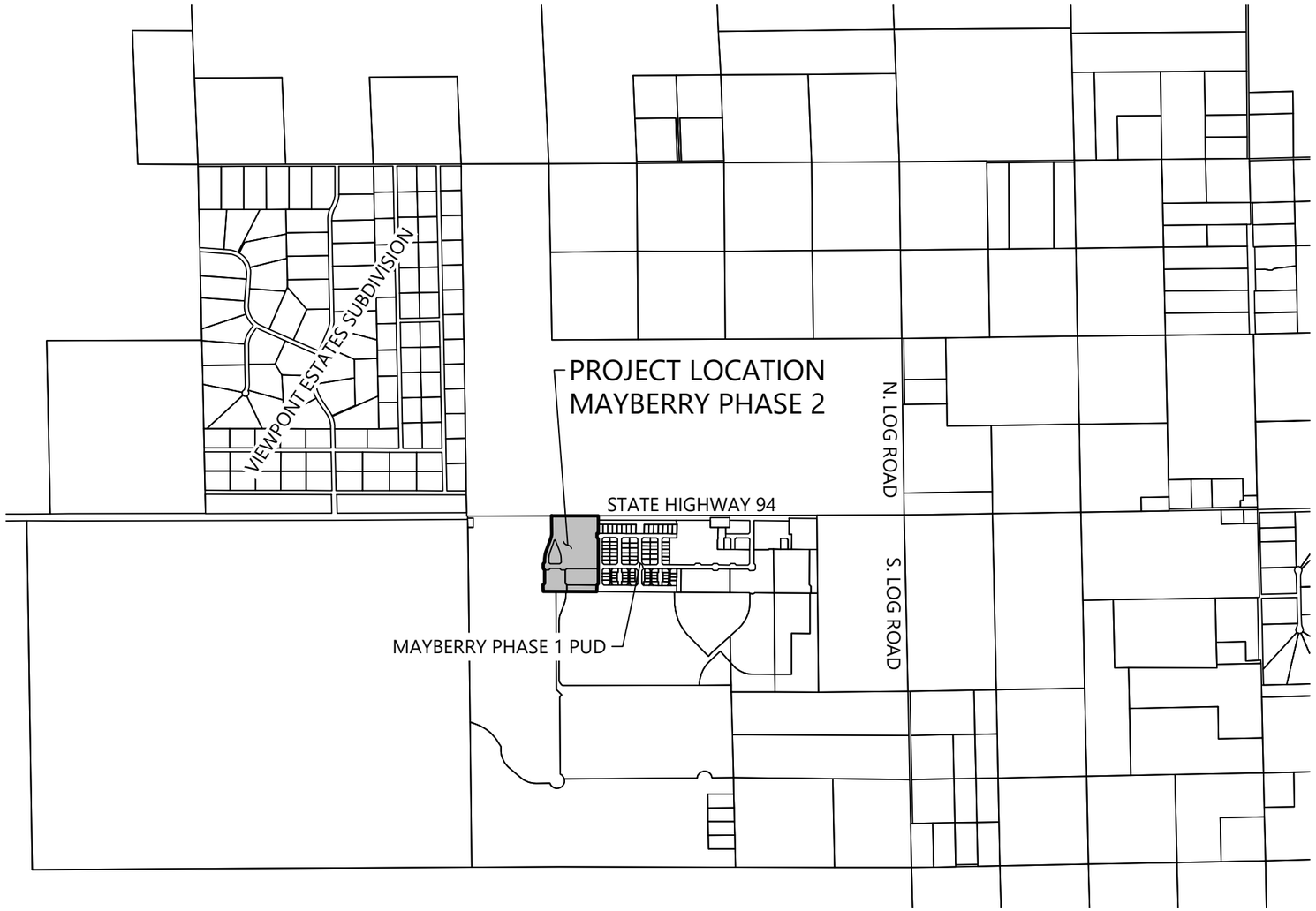
restricted to 90% of the historic flow rates with the intent that the development will not adversely affect downstream or surrounding areas.

All drainage facilities described herein and shown on the included drainage plans are subject to change due to final design considerations. Any revisions will continue to adhere to the Master Development Drainage Plan.

This drainage analysis has been prepared in accordance with the current El Paso County Drainage Criteria Manual and the Urban Storm Drainage Criteria Manual. Supporting information is included in the Appendix.

Appendix A. Vicinity Map, Soils, FEMA

A1 Vicinity Map



2000 0 1000 2000

SCALE
1 inch = 2000 ft.

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Proj. Name: Mayberry Phase 2
Location: El Paso County, Colorado
Plan Set: --
Sheet Name: Vicinity Map

Date: 06/12/2026
Job No.: 8787-0001

Scale H: 1" = 2000'
Scale V: N/A

Prepared: RNM
Approved: AKM

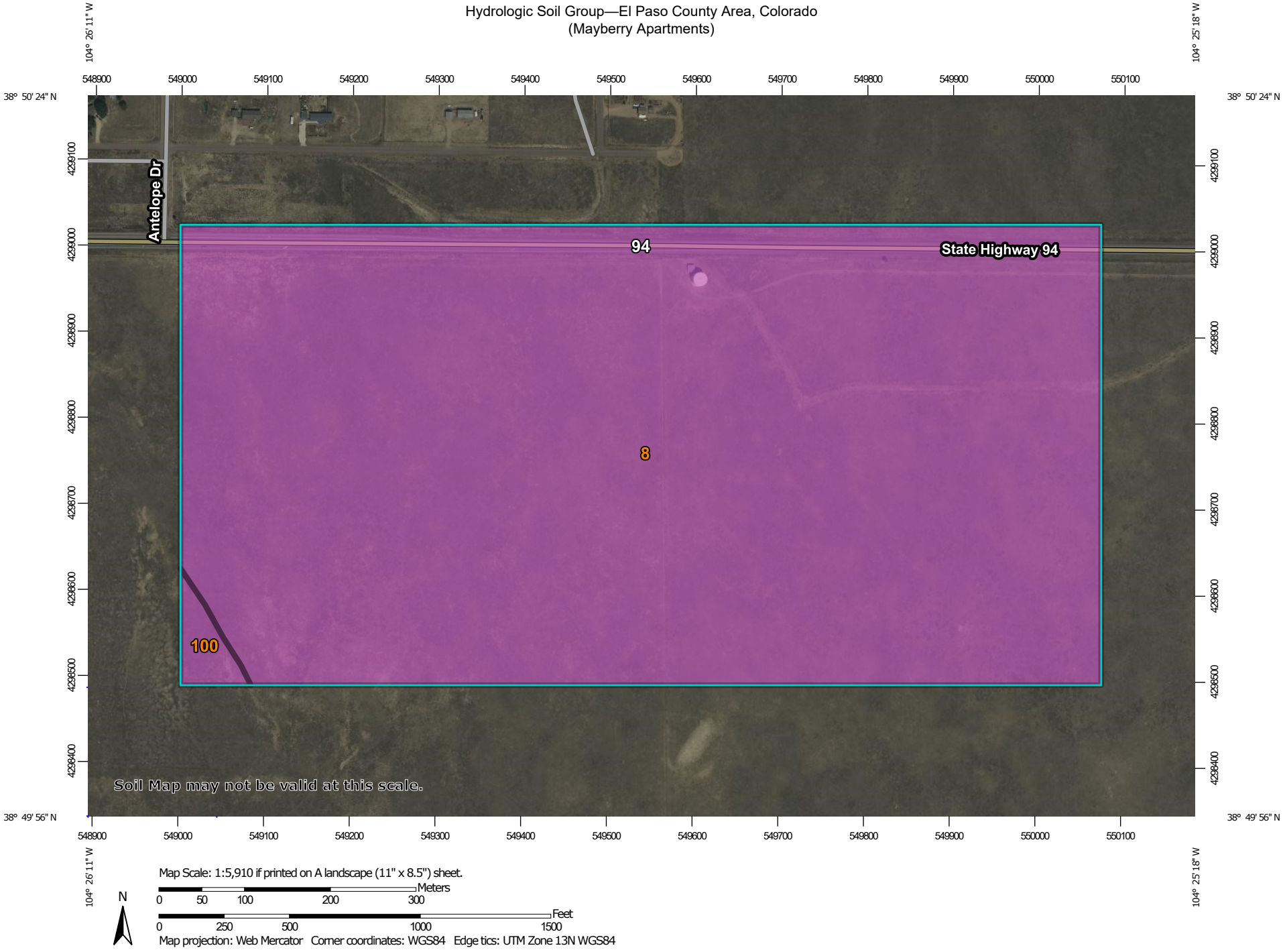
Know what's below.
Call before you dig.

No. EX1

I:\JOB FOLDERS\0000-0000 - MAYBERRY\ENGINEERING\04 DRAWINGS\PRELIMINARY PLANS\DRAINAGE\VICINITY MAP PRINTED ON: 6/12/2026 12:09 PM

A2 Soils Map

Hydrologic Soil Group—El Paso County Area, Colorado
(Mayberry Apartments)



Map Scale: 1:5,910 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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 19, Aug 31, 2021

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

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	141.2	99.0%
100	Truckton-Bresser complex, eroded	A	1.4	1.0%
Totals for Area of Interest			**142.6**	**100.0%**

Description

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

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

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

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

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

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

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

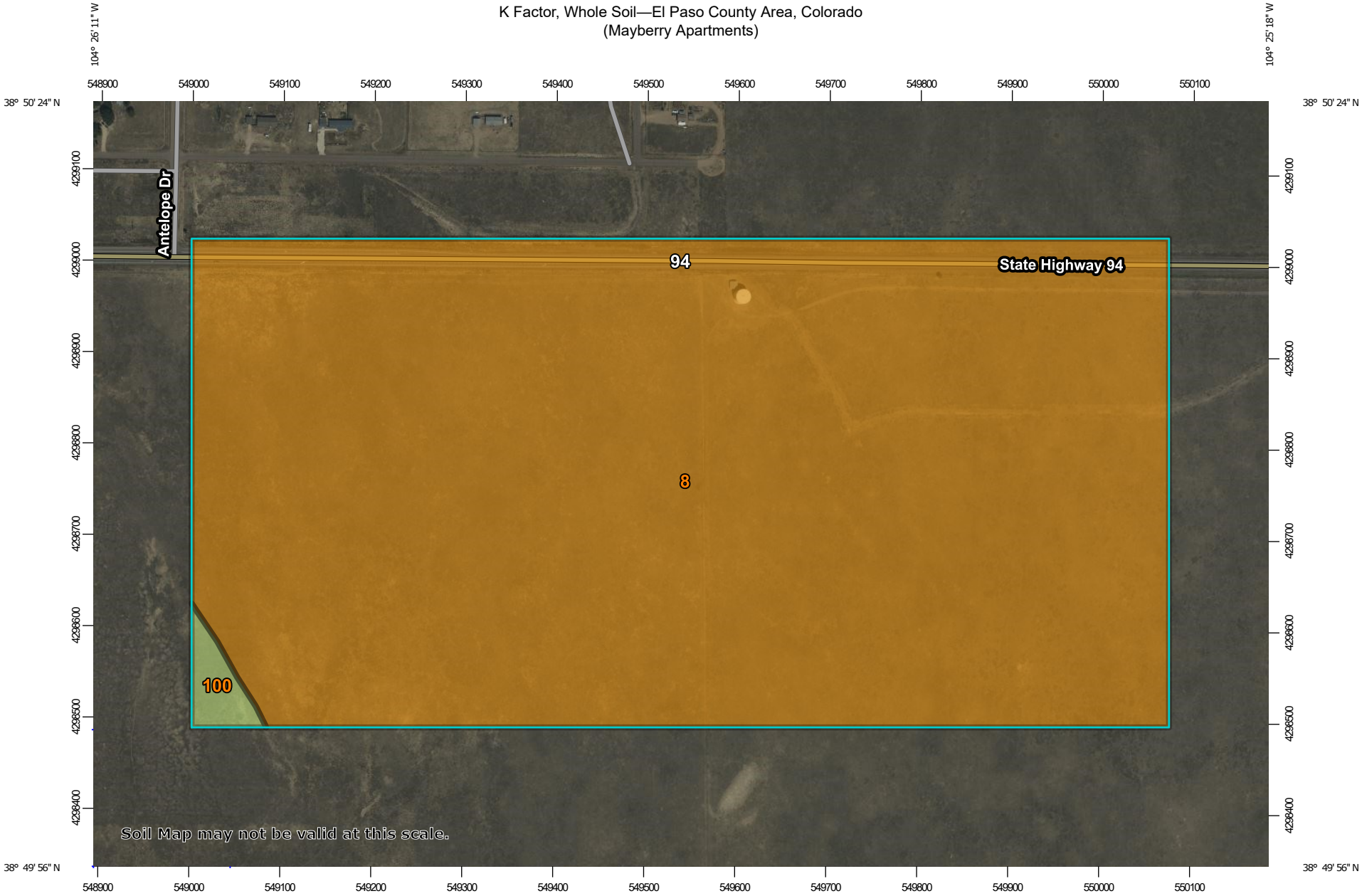
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

K Factor, Whole Soil—El Paso County Area, Colorado
(Mayberry Apartments)



Map Scale: 1:5,910 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- 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

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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 19, Aug 31, 2021

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

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

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

K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	.10	141.2	99.0%
100	Truckton-Bresser complex, eroded	.24	1.4	1.0%
Totals for Area of Interest			**142.6**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

A3 FEMA

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

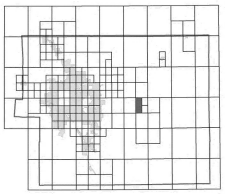
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

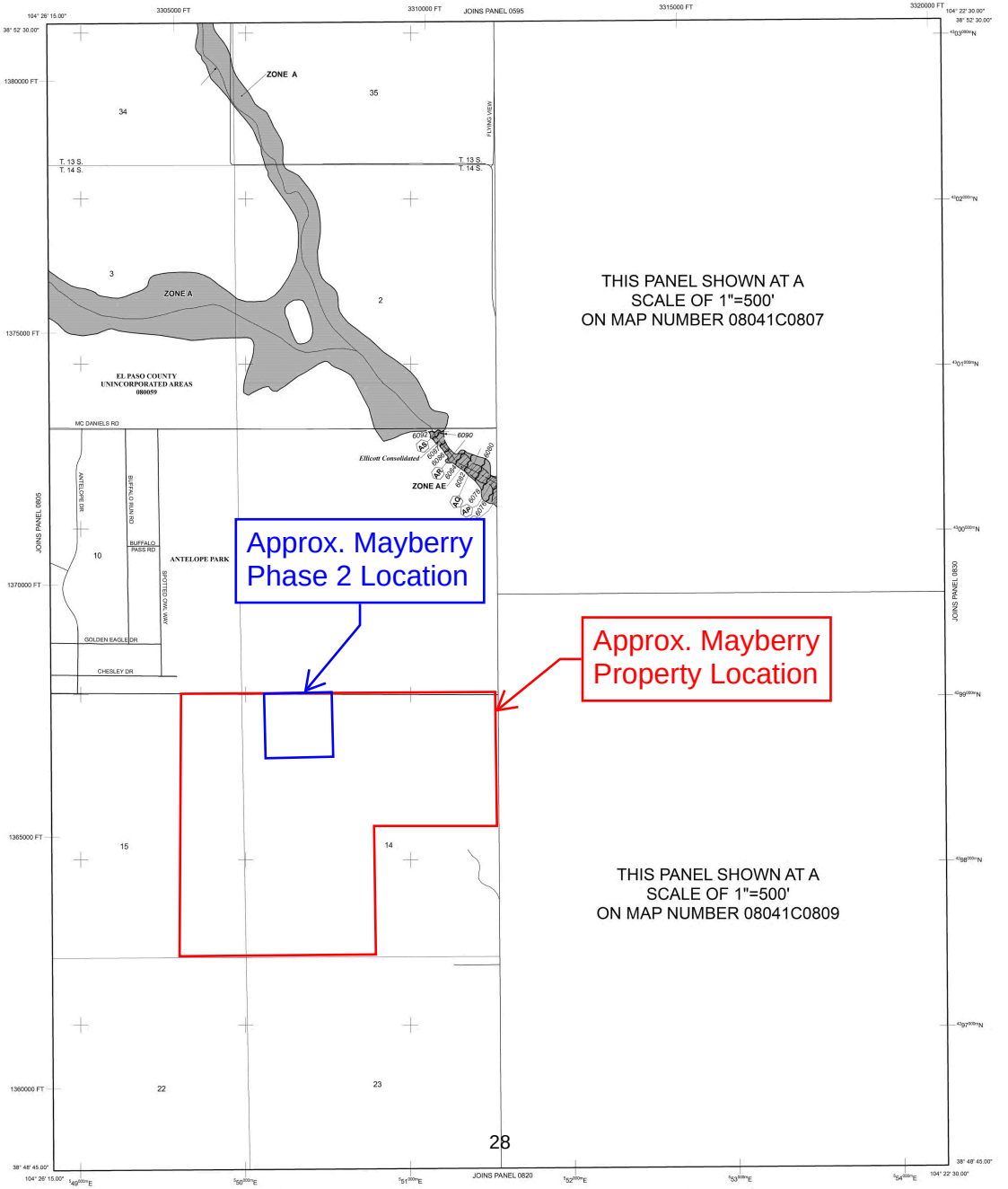
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 SOUTH, RANGE 63 WEST, AND TOWNSHIP 14 SOUTH, RANGE 63 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, A0, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line
23 — 23 — Transect line
97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 0810G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 810 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0810	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 08041C0810G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

Appendix B. Hydrology Calculations

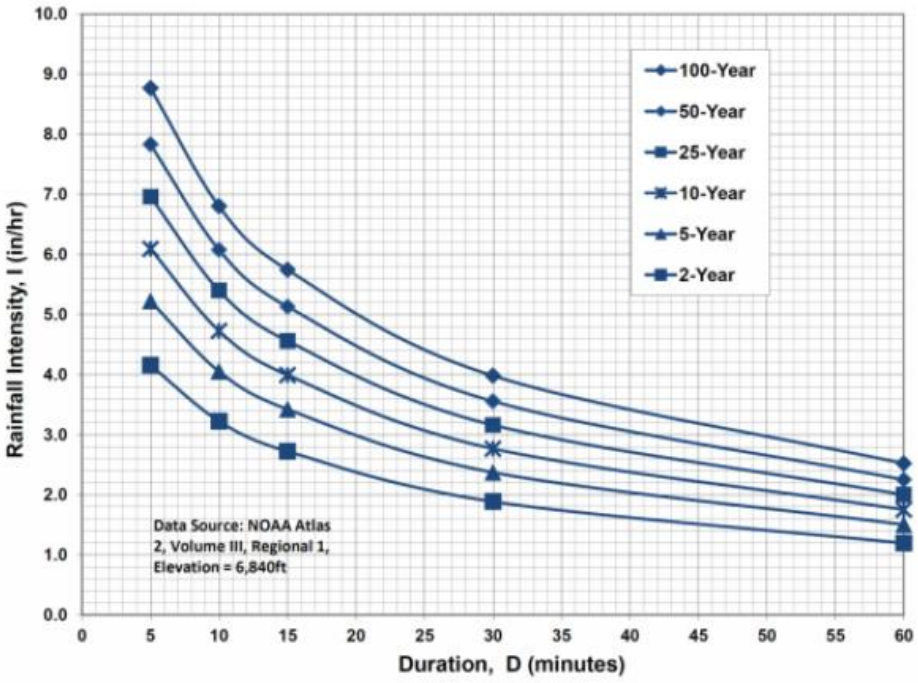
B1 CO Springs Runoff Coefficient Table

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

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

B2 Runoff Calculations

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

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

$I_{50} = -2.25 \ln(D) + 11.375$

$I_{25} = -2.00 \ln(D) + 10.111$

$I_{10} = -1.75 \ln(D) + 8.847$

$I_{5} = -1.50 \ln(D) + 7.583$

$I_{2} = -1.19 \ln(D) + 6.035$

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

Lot and ROW Impervious Calculations

Front Loaded Paired Homes - Impervious Calc

8787-0001
06/12/26

Single Lot Area (sf): 2,027.0

Surface	Area (sf)	C_5	C_{100}	Impervious (%)
Landscape	733.00	0.12	0.39	7%
Roof	1,111.00	0.90	0.96	100%
Concrete Drive/Walk	183.00	0.90	0.96	100%
Composite Site Values:		0.58	0.76	66%
Composite % Impervious Used:		0.57	0.75	65%

Rear Loaded Paired Homes - Impervious Calc

8787-0001
06/12/26

Single Lot Area (sf): 2,035.0

Surface	Area (sf)	C_5	C_{100}	Impervious (%)
Landscape	794.00	0.12	0.39	7%
Roof	1,111.00	0.90	0.96	100%
Concrete Drive/Walk	130.00	0.90	0.96	100%
Composite Site Values:		0.56	0.75	64%
Composite % Impervious Used:		0.57	0.75	65%

SFH Fil 1 w/ Front Street Road - Impervious Calc

8787-0001
06/12/26

Single Lot Area (sf): 7,665.0

Surface	Area (sf)	C_5	C_{100}	Impervious (%)
Landscape	4,207.00	0.12	0.39	7%
Roof	1,663.00	0.90	0.96	100%
Concrete Drive/Walk	1,795.00	0.90	0.96	100%
Composite Site Values:		0.44	0.68	49%
Composite % Impervious Used:		0.47	0.70	52.5%

75' ROW

8787-0001
06/12/26

ROW WIDTH: 75.0

Surface	Length (ft)	C_5	C_{100}	Impervious (%)
Landscape	16.00	0.12	0.39	7%
Street/Walk	59.00	0.90	0.96	100%
Composite Site Values:		0.73	0.84	80%

70' ROW

8787-0001
06/12/26

ROW WIDTH: 70.0

Surface	Length (ft)	C_5	C_{100}	Impervious (%)
Landscape	9.00	0.12	0.39	7%
Street/Walk	61.00	0.90	0.96	100%
Composite Site Values:		0.80	0.89	88%

90' ROW

8787-0001
06/12/26

ROW WIDTH: 90.0

Surface	Length (ft)	C_5	C_{100}	Impervious (%)
Landscape	15.00	0.12	0.39	7%
Street/Walk	75.00	0.90	0.96	100%
Composite Site Values:		0.77	0.87	85%

62' ROW

8787-0001
06/12/26

ROW WIDTH: 62.0

Surface	Length (ft)	C_5	C_{100}	Impervious (%)
Landscape	7.00	0.12	0.39	7%
Street/Walk	55.00	0.90	0.96	100%
Composite Site Values:		0.81	0.90	90%

100' ROW

8787-0001
06/12/26

ROW WIDTH: 100.0

Surface	Length (ft)	C_5	C_{100}	Impervious (%)
Landscape	22.00	0.12	0.39	7%
Street/Walk	78.00	0.90	0.96	100%
Composite Site Values:		0.73	0.83	80%

Land Use Is Comprised of following Surface Characteristics:

NRCS Soil Group A	Imperviousness	C_5	C_{100}
Residential (1/8-Acre or Less)	65%	0.45	0.59
Street/Walks	100%	0.90	0.96
Landscape/Parks	7%	0.12	0.39

Project Name

Basin Weighted Runoff Coefficient Calculations

Land Use Is Comprised of following Surface Characteristics:						
NRCS Soil Group	A	Imperviousness	C_2	C_5	C_{10}	C_{100}
A	Residential (1/8-Acre or Less)	65%		0.45		0.59
B	Drive/Walks	100%		0.90		0.96
C	Landscape/Parks	7%		0.12		0.39
D	62' ROW	90%		0.81		0.90
E	70' ROW	88%		0.80		0.89
F	75' & 100' ROW	80%		0.73		0.84
G	90' ROW	85%		0.77		0.87

Project No.: 8787-0001

Date: 6/12/2026

Basin ID	Total Area (Ac.)	A Area (Ac.)	B Area (Ac.)	C Area (Ac.)	D Area (Ac.)	E Area (Ac.)	F Area (Ac.)	G Area (Ac.)	Weighted Imp. I (%)	Weighted Runoff Coefficients C_2	C_5	C_{10}	C_{100}
Developed													
A2	0.57							0.57	85%	0.00	0.77	0.00	0.87
A3	0.56							0.56	85%	0.00	0.77	0.00	0.87
A4	2.07		0.05	2.02					9%	0.00	0.14	0.00	0.40
A5	0.27						0.27		80%	0.00	0.73	0.00	0.84
A6	0.31						0.31		80%	0.00	0.73	0.00	0.84
A7	0.87		0.70	0.17					82%	0.00	0.75	0.00	0.85
Basin A	4.66	0.00	0.75	2.19	0.00	0.00	0.58	1.13	50%	0.00	0.48	0.00	0.65
C1.2	4.20	1.05	0.34	0.93		0.94	0.94		64%	0.00	0.55	0.00	0.70
C1.7B	2.02		1.43	0.59					73%	0.00	0.67	0.00	0.79
C2	0.43	0.34	0.04	0.04					63%	0.00	0.46	0.00	0.61
C3	0.78	0.39	0.27	0.12					69%	0.00	0.56	0.00	0.69
C4	0.35	0.09	0.21	0.06					77%	0.00	0.67	0.00	0.78
C5	0.45	0.21	0.19	0.04					74%	0.00	0.61	0.00	0.73
C6	0.26	0.13	0.11	0.02					75%	0.00	0.61	0.00	0.73
C7	0.50	0.29	0.13	0.08					64%	0.00	0.51	0.00	0.65
C8	1.17	0.87	0.22	0.08					68%	0.00	0.51	0.00	0.65
C9	0.70	0.33	0.20	0.17					61%	0.00	0.50	0.00	0.65
C10	0.22	0.03	0.13	0.06					69%	0.00	0.61	0.00	0.74
C11	0.55	0.36	0.07	0.12					57%	0.00	0.44	0.00	0.60
C12	0.42	0.19	0.12	0.10					61%	0.00	0.50	0.00	0.65
C13	0.55	0.36	0.07	0.12					57%	0.00	0.44	0.00	0.60
C14	0.62	0.37	0.12	0.13					60%	0.00	0.47	0.00	0.62
C15	0.40				0.40				90%	0.00	0.81	0.00	0.90
C16	0.93						0.93		80%	0.00	0.73	0.00	0.84
C17	0.05		0.05	0.002					97%	0.00	0.88	0.00	0.94
Basin C	14.62	5.01	3.72	2.67	0.40	0.94	1.87	0.00	67%	0.00	0.57	0.00	0.71
Developed Imp.	**19.28**	**5.01**	**4.48**	**4.86**	**0.40**	**0.94**	**2.45**	**1.13**	**63%**	**0**	**0.55**	**0**	**0.69**
C1.1	6.93	2.27		4.66					26%	0.00	0.23	0.00	0.46
C1.10	1.20							1.20	85%	0.00	0.77	0.00	0.87
OS1	0.60			0.60					7%	0.00	0.12	0.00	0.39
OS2	12.71			12.71					7%	0.00	0.12	0.00	0.39
Total Offsite	**21.43**	**2.27**	**0.00**	**17.97**	**0.00**	**0.00**	**0.00**	**1.20**	**17%**	**0**	**0.19**	**0**	**0.44**

Time of Concentration

Project No.:

Sh. 1 of 3

6/12/2026

Basin ID	C_5	Initial Flow Time T_i			Travel Time T_t							Tc Check				Final T_c
		Length Li (ft)	Slope (%)	T_i (min)	Length Lt (ft)	Slope (%)	Convey. Element	Convey. Coeff. K	Vel. (fps)	T_t (min)	Total T_c (min)	Imp. (dec)	Travel Length (ft)	Avg. Travel Slope (%)	$T_c = 26 - 17i + [Lt/\{60*(14i+9)*(S^{0.5})\}]$ (min)	(min)
Developed																
A2	0.77															5.0
A3	0.77															5.0
A4	0.14							Assumed Tc values								8.0
A5	0.73															5.0
A6	0.73															5.0
A7	0.75															5.0
Basin A	0.48	160	1.00	14.1	569	0.50	Street	20	1.4	6.7	20.8	50%	569	0.5	25.9	20.8
C1.2	0.55															10.0
C1.7B	0.67															8.0
C2	0.46															5.0
C3	0.56															5.0
C4	0.67															5.0
C5	0.61															5.0
C6	0.61															5.0
C7	0.51															5.0
C8	0.51							Assumed Tc values								5.0
C9	0.77															5.0
C10	0.67															5.0
C11	0.67															5.0
C12	0.67															5.0
C13	0.67															5.0
C14	0.67															5.0
C15	0.67															5.0
C16	0.67															5.0
C17	0.67															5.0
Basin C	0.48	55	2.00	6.6	1534	0.50	Street	20	1.4	18.1	24.7	50%	1534	0.5	40.1	24.7
OS1	0.12															8.0
OS2	0.12	824	2.00	40.4	1652	0.50	Swale	15	1.1	26.0	66.4	7%	1652	0.5	63.8	63.8

Basin Runoff Calculations - Direct Runoff

Project No.: 8787-0001

6/12/2026

Basin ID	Design Point	Total Area (Ac.)	Imp (%)	Tc (min)	Runoff Coeff.		Rainfall Intensity		Runoff Flow	
					C_5	C_{100}	I_5	I_{100}	Q_5	Q_{100}
Developed										
A2	2A	0.57	85%	5.00	0.77	0.87	5.17	8.68	2.27	4.29
A3	3A	0.56	85%	5.00	0.77	0.87	5.17	8.68	2.24	4.23
A4	4A	2.07	9%	8.00	0.14	0.40	4.46	7.49	1.28	6.27
A5	5A	0.27	80%	5.00	0.73	0.84	5.17	8.68	1.03	1.98
A6	6A	0.31	80%	5.00	0.73	0.84	5.17	8.68	1.18	2.26
A7	7A	0.87	82%	5.00	0.75	0.85	5.17	8.68	3.38	6.44
Basin A	1A	4.66	50%	20.84	0.48	0.65	3.03	5.08	6.79	15.49
C1.2	C1.2C	4.20	64%	10.00	0.55	0.70	4.13	6.93	9.63	20.32
C1.7B	C1.7B	2.02	73%	8.00	0.67	0.79	4.46	7.49	6.07	12.03
C2	2C	0.43	63%	5.00	0.46	0.61	5.17	8.68	1.03	2.27
C3	3C	0.78	69%	5.00	0.56	0.69	5.17	8.68	2.25	4.66
C4	4C	0.35	77%	5.00	0.67	0.78	5.17	8.68	1.20	2.36
C5	5C	0.45	74%	5.00	0.61	0.73	5.17	8.68	1.41	2.82
C6	6C	0.26	75%	5.00	0.61	0.73	5.17	8.68	0.84	1.67
C7	7C	0.50	64%	5.00	0.51	0.65	5.17	8.68	1.31	2.81
C8	8C	1.17	68%	5.00	0.51	0.65	5.17	8.68	3.11	6.59
C9	9C	0.70	61%	5.00	0.50	0.65	5.17	8.68	1.80	3.93
C10	10C	0.22	69%	5.00	0.61	0.74	5.17	8.68	0.71	1.44
C11	11C	0.55	57%	5.00	0.44	0.60	5.17	8.68	1.26	2.87
C12	12C	0.42	61%	5.00	0.50	0.65	5.17	8.68	1.07	2.34
C13	13C	0.55	57%	5.00	0.44	0.60	5.17	8.68	1.26	2.87
C14	14C	0.62	60%	5.00	0.47	0.62	5.17	8.68	1.51	3.35
C15	15C	0.40	90%	5.00	0.81	0.90	5.17	8.68	1.70	3.14
C16	16C	0.93	80%	5.00	0.73	0.84	5.17	8.68	3.52	6.76
C17	17C	0.05	97%	5.00	0.88	0.94	5.17	8.68	0.23	0.42
Basin C	C1.2C	14.62	67%	24.67	0.57	0.71	2.77	4.66	23.23	48.12
OS1	1OS	0.60	7%	8.00	0.12	0.39	4.46	7.49	0.32	1.75
OS2	2OS	12.71	7%	63.83	0.12	0.39	1.35	2.26	2.06	11.21

Intensity = $I_5 = -1.50 \ln(D) + 7.583$

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

Where Duration (D) is equal to Time of Concentration (Tc)

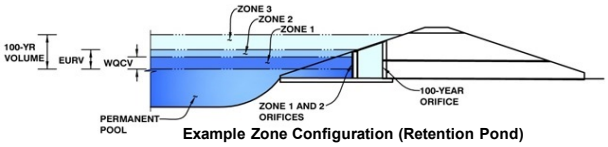
B3 Detention Pond Calculations

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.08 (April 2026)

Project: Mayberry Phase 2

Basin ID: Temporary Pond A1



Example Zone Configuration (Retention Pond)

Pond Bottom = 6066.17

Watershed Information

Selected SCM Type =	**EDB**	
Watershed Area =	4.66	acres
Watershed Length =	1,099	ft
Watershed Length to Centroid =	587	ft
Watershed Slope =	0.008	ft/ft
Watershed Imperviousness =	50.00%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

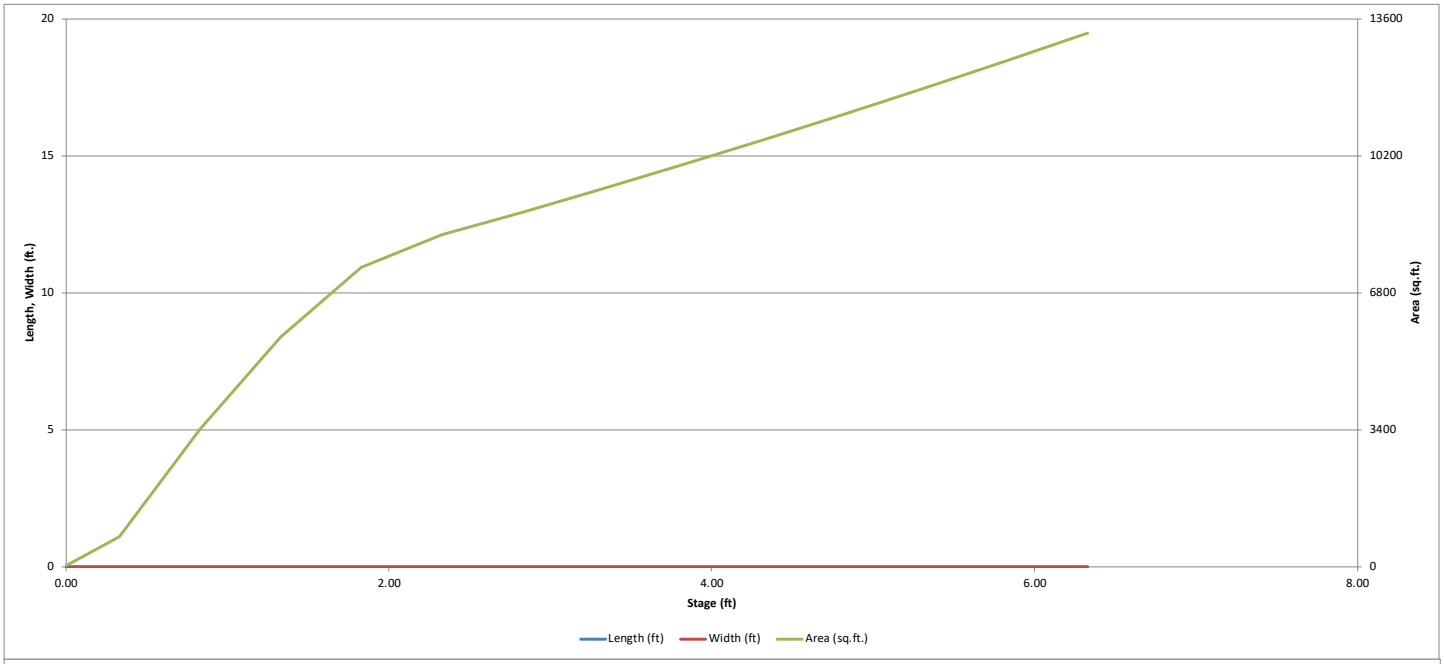
			Optional User Overrides
Water Quality Capture Volume (WQCV) =	0.080	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	0.269	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.202	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.268	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	0.321	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	0.405	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	0.487	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	0.591	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.14 in.) =	0.817	acre-feet	3.14 inches
Approximate 2-yr Detention Volume =	0.173	acre-feet	
Approximate 5-yr Detention Volume =	0.227	acre-feet	
Approximate 10-yr Detention Volume =	0.278	acre-feet	
Approximate 25-yr Detention Volume =	0.340	acre-feet	
Approximate 50-yr Detention Volume =	0.379	acre-feet	
Approximate 100-yr Detention Volume =	0.427	acre-feet	

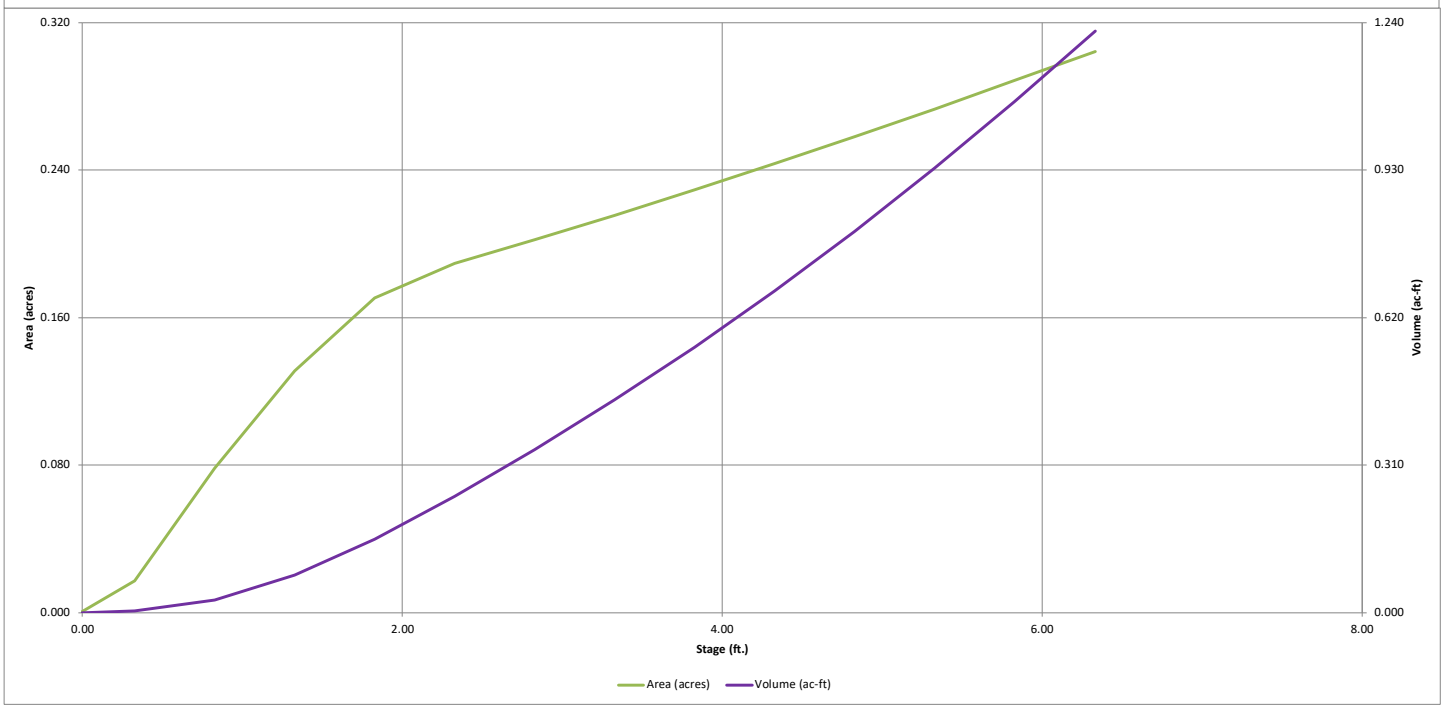
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.080	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.189	acre-feet
Zone 3 (100yr + 1 / 2 WQCV - Zones 1 & 2) =	0.198	acre-feet
Total Detention Basin Volume =	0.467	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	30	0.001		
6066.5	--	0.33	--	--	--	744	0.017	128	0.003
6067.0	--	0.83	--	--	--	3,417	0.078	1,168	0.027
6067.5	--	1.33	--	--	--	5,705	0.131	3,448	0.079
6068.0	--	1.83	--	--	--	7,432	0.171	6,733	0.155
6068.5	--	2.33	--	--	--	8,241	0.189	10,651	0.245
6069.0	--	2.83	--	--	--	8,803	0.202	14,912	0.342
6069.5	--	3.33	--	--	--	9,384	0.215	19,459	0.447
6070.0	--	3.83	--	--	--	9,983	0.229	24,301	0.558
6070.5	--	4.33	--	--	--	10,601	0.243	29,447	0.676
6071.0	--	4.83	--	--	--	11,237	0.258	34,906	0.801
6071.5	--	5.33	--	--	--	11,892	0.273	40,689	0.934
6072.0	--	5.83	--	--	--	12,566	0.288	46,803	1.074
6072.5	--	6.33	--	--	--	13,258	0.304	53,259	1.223


20
15
10
5
0
Length, Width (ft.)
13600
10200
6800
3400
0
Area (sq.ft.)
0.00
2.00
4.00
6.00
8.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)

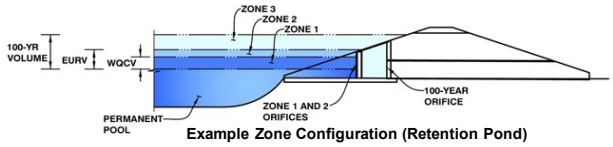

0.320
0.240
0.160
0.080
0.000
Area (acres)
1.240
0.930
0.620
0.310
0.000
Volume (ac-ft)
0.00
2.00
4.00
6.00
8.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: Mayberry Phase 2

Basin ID: Pond C1 (Stage 0 = 6046.50)



Example Zone Configuration (Retention Pond)

Bottom of Pond = 6046.5

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	44.04	acres
Watershed Length =	2,700	ft
Watershed Length to Centroid =	1,350	ft
Watershed Slope =	0.010	ft/ft
Watershed Imperviousness =	54.20%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

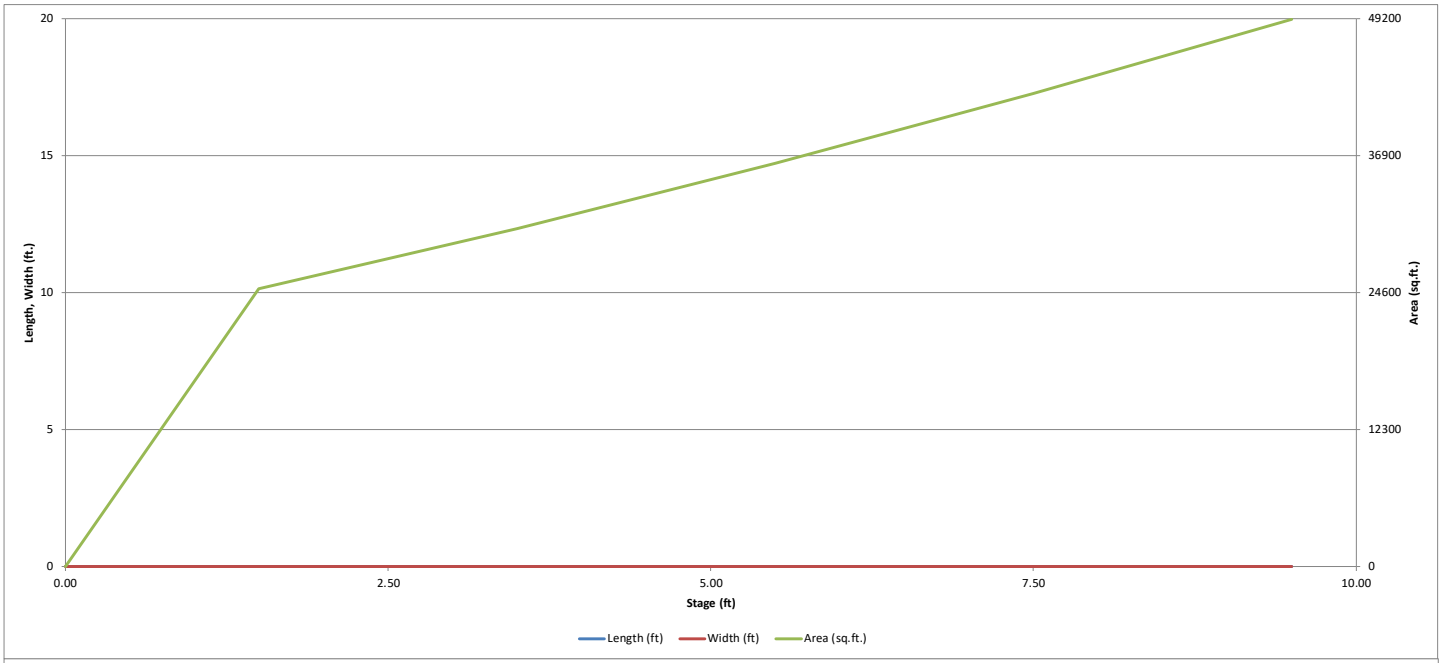
			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.800	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	2.815	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	2.112	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	2.796	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	3.343	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	4.155	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	4.949	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	5.947	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.14 in.) =	8.111	acre-feet	3.14	inches
Approximate 2-yr Detention Volume =	1.817	acre-feet		
Approximate 5-yr Detention Volume =	2.386	acre-feet		
Approximate 10-yr Detention Volume =	2.901	acre-feet		
Approximate 25-yr Detention Volume =	3.531	acre-feet		
Approximate 50-yr Detention Volume =	3.925	acre-feet		
Approximate 100-yr Detention Volume =	4.382	acre-feet		

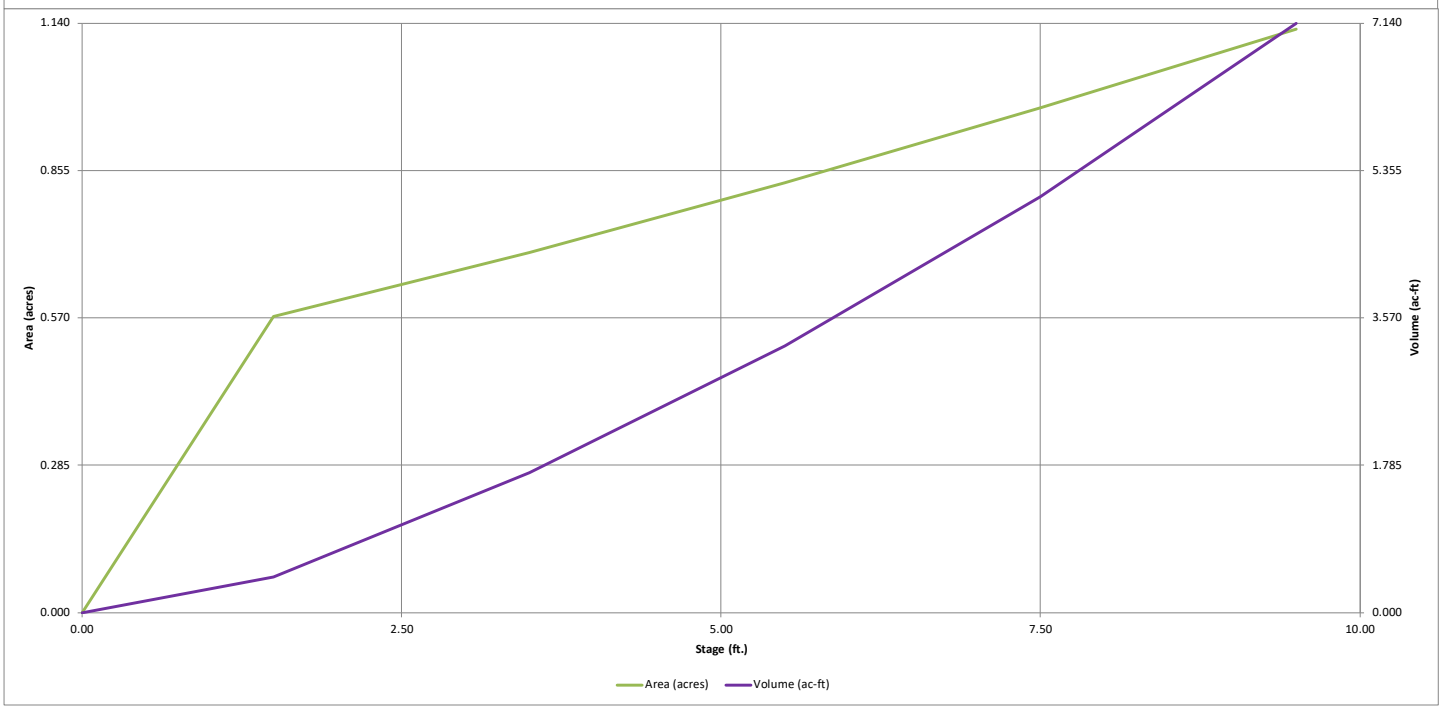
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.800	acre-feet
Zone 2 Volume (EURV - Zone 1) =	2.015	acre-feet
Zone 3 (100yr + 1 / 2 WQCV - Zones 1 & 2) =	1.967	acre-feet
Total Detention Basin Volume =	4.782	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	user	acre-feet

Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	10	0.000		
6048	--	1.50	--	--	--	24,952	0.573	18,721	0.430
6050	--	3.50	--	--	--	30,324	0.696	73,997	1.699
6052	--	5.50	--	--	--	36,200	0.831	140,521	3.226
6054 - Spillway	--	7.50	--	--	--	42,486	0.975	219,207	5.032
5056	--	9.50	--	--	--	49,161	1.129	310,854	7.136


20
15
10
5
0
Length, Width (ft.)
49200
36900
24600
12300
0
Area (sq.ft.)
0.00
2.50
5.00
7.50
10.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)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0.855
0.570
0.285
0.000
Area (acres)
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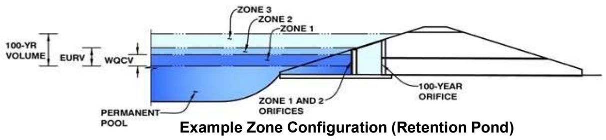
5.355
3.570
1.785
0.000
Volume (ac-ft)
0.00
2.50
5.00
7.50
10.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.04 (February 2021)

Project: **Mayberry, Colorado Springs**

Basin ID: **Detention Basin C1**



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	44.81	acres
Watershed Length =	2,660	ft
Watershed Length to Centroid =	1,330	ft
Watershed Slope =	0.010	ft/ft
Watershed Imperviousness =	51.69%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.788	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	2.696	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	2.026	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	2.688	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	3.218	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	4.035	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	4.833	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	5.841	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.14 in.) =	8.027	acre-feet	3.14	inches
Approximate 2-yr Detention Volume =	1.736	acre-feet		
Approximate 5-yr Detention Volume =	2.283	acre-feet		
Approximate 10-yr Detention Volume =	2.782	acre-feet		
Approximate 25-yr Detention Volume =	3.396	acre-feet		
Approximate 50-yr Detention Volume =	3.784	acre-feet		
Approximate 100-yr Detention Volume =	4.247	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.788	acre-feet
Zone 2 Volume (EURV - Zone 1) =	1.908	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.552	acre-feet
Total Detention Basin Volume =	4.247	acre-feet

Depth Increement = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	10	0.000		
Bot EL=6047.0	--	0.50	--	--	--	19,780	0.454	4,946	0.114
	--	1.50	--	--	--	22,256	0.511	25,964	0.596
	--	2.50	--	--	--	27,421	0.629	50,803	1.166
	--	4.50	--	--	--	30,168	0.693	108,392	2.488
Spillway=6054.0	--	7.50	--	--	--	39,229	0.901	212,487	4.878
Top EL=6056.o	--	9.50	--	--	--	45,565	1.046	297,281	6.825
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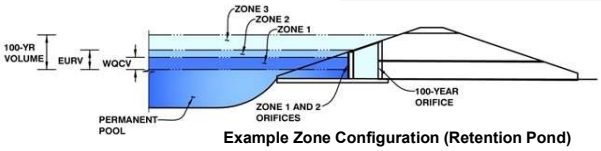
DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Project: **Mayberry, Colorado Springs**

Basin ID: **Detention Basin C1**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.86	0.788	Orifice Plate
Zone 2 (EURV)	4.80	1.908	Orifice Plate
Zone 3 (100-year)	6.78	1.552	Weir&Pipe (Restrict)
Total (all zones)		4.247	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	5.083E-02	ft^2
Depth at top of Zone using Orifice Plate =	4.80	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	7.32	sq. inches (use rectangular openings)	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.60	4.50					
Orifice Area (sq. inches)	7.32	7.32	7.32					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected			Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	N/A	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A	feet
Vertical Orifice Diameter =	N/A	N/A	inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe))

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	5.80	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	5.80	N/A	feet
Overflow Weir Front Edge Length =	4.00	N/A	feet	Overflow Weir Slope Length =	4.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	14.68	N/A	
Horiz. Length of Weir Sides =	4.00	N/A	feet	Overflow Grate Open Area w/o Debris =	11.14	N/A	ft^2
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	5.57	N/A	ft^2
Debris Clogging % =	50%	N/A	%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected			Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	0.76	N/A	ft^2
Outlet Pipe Diameter =	18.00	N/A	inches	Outlet Orifice Centroid =	0.39	N/A	feet
Restrictor Plate Height Above Pipe Invert =	8.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.46	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	7.50	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.91	feet
Spillway Crest Length =	24.00	feet	Stage at Top of Freeboard =	9.41	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	1.04	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	6.73	acre-ft

Calculated Parameters for Spillway

Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.14
CUHP Runoff Volume (acre-ft) =	0.788	2.696	2.026	2.688	3.218	4.035	4.833	5.841	8.027
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	2.026	2.688	3.218	4.035	4.833	5.841	8.027
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.2	0.4	0.6	5.3	10.6	17.6	32.7
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.00	0.01	0.01	0.12	0.24	0.39	0.73
Peak Inflow Q (cfs) =	N/A	N/A	21.5	28.4	33.7	47.1	57.9	71.1	98.3
Peak Outflow Q (cfs) =	0.5	1.1	0.8	1.0	1.2	4.8	9.1	9.7	40.4
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	2.4	2.1	0.9	0.9	0.6	1.2
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	0.3	0.7	0.7	0.7
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	65	58	66	70	73	71	70	67
Time to Drain 99% of Inflow Volume (hours) =	**40**	69	62	70	75	79	79	79	77
Maximum Ponding Depth (ft) =	1.87	4.80	3.60	4.53	5.22	6.06	6.53	7.41	8.04
Area at Maximum Ponding Depth (acres) =	0.55	0.71	0.66	0.69	0.74	0.80	0.83	0.89	0.94
Maximum Volume Stored (acre-ft) =	0.793	2.699	1.871	2.502	2.998	3.645	4.029	4.788	5.366

Appendix C. PDR Checklist

2880 International Circle, Suite 110
Colorado Springs, CO 80910
Phone 719-520-6300
Fax 719-520-6695
www.elpasoco.com

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

PRELIMINARY DRAINAGE REPORT (PDR) CHECKLIST

Revised: January 2022

Preliminary Drainage Report

The purpose of the Preliminary Drainage Report is to identify specific solutions to problems onsite and offsite resulting from proposed land development, including issues existing prior to development. The PDR shall generally conform to the following outline format and major headings, and contain the applicable information listed.

		Applicant	PCD
	Please confirm each item below has been included by placing a check mark in the "Applicant" column. See right for an example. The "PCD" column is for office use only.	✓	Office use only
	Report Contents		
1	Table of contents, pages numbered	☑	
2	Existing/Historic and Developed Conditions Plans at the end of the report	☑	
	General Location		
1	City and County, and local streets within and adjacent to the subdivision.	☑	
2	Township, Range, section, 1/4 section.	☑	
3	Major drainage ways and existing facilities.	☑	
4	Names of surrounding platted developments.	☑	
	Description of Property		
1	Area in acres	☑	
2	Ground cover, (type of trees, shrubs, vegetation)	☑	
3	General topography	☑	
4	General soil conditions	☑	
5	Major drainageways	☑	
6	Irrigation facilities	☑	
7	Utilities and other encumbrances	☑	
	Major Basin Descriptions		
1	Reference should be made to major drainageway planning studies; Such as Drainage Basin Planning Studies; Flood Hazard delineation reports, and flood insurance studies or maps if available.	☑	
2	A floodplain statement shall be provided indicating whether any portion of the development is in a designated floodplain as delineated on the current FEMA mapping.	☑	
3	Major basin drainage characteristics.	☑	
4	Identification of all nearby irrigation facilities and other obstructions which could influence or be influenced by local drainage.	☑	
	Sub-Basin Descriptions		
1	Discussion of historic drainage patterns of the property in question	☑	
2	Discussion of offsite drainage flow patterns and their impact on the development	☑	

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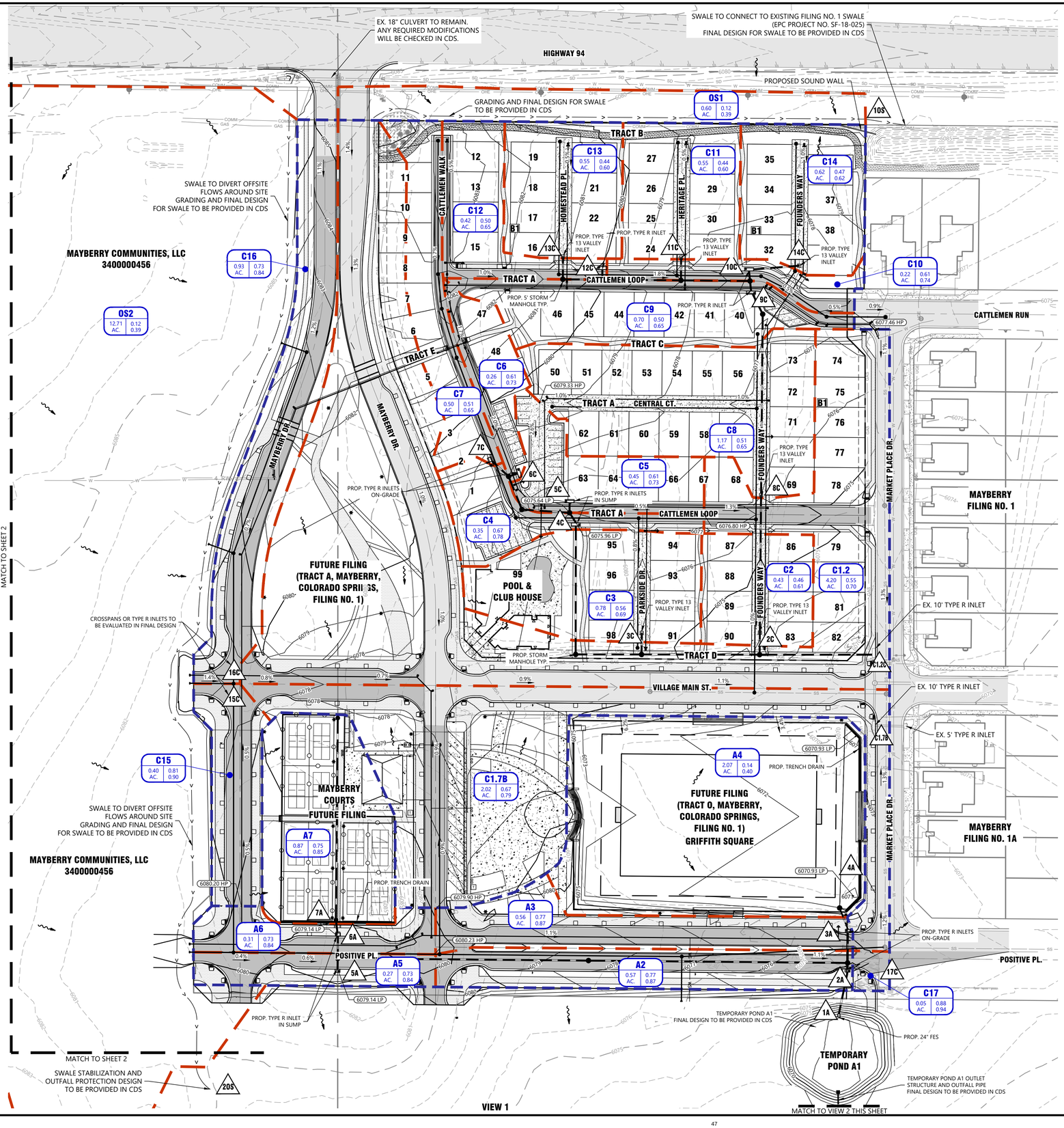
EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

PRELIMINARY DRAINAGE REPORT (PDR) CHECKLIST

Revised: January 2022

	Drainage Design Criteria		
1	Reference all criteria, master plans, and technical information used for report preparation and design; any deviation from such material must be discussed and justified.	☑	
2	Discussion of previous drainage studies (i.e. PDR, drainage basin planning studies, master plans, flood insurance studies) for the site in question that influence or are influenced by the drainage design and how the studies affect drainage design for the site	☑	
	Four-Step Process		
1	Runoff reduction proposed.	☑	
2	Stabilization of drainage ways proposed/discussed.	☑	
3	Proposed Stormwater Quality Capture Volume (WQCV) proposed.	☑	
4	Identify Best Management Practices (BMP's) to be used to control industrial and commercial pollutants.	☑	
	Hydrologic Criteria		
1	Identify design rainfall.	☑	
2	Identify runoff calculation method.	☑	
3	Identify design storm recurrence intervals	☑	
4	Identify detention discharge and storage calculation method.	☑	
5	Note ECM Appendix I Full Spectrum Detention (FSD) requirement.	☑	
	Drainage Facility Design - General Concept		
1	Discussion of compliance with offsite runoff considerations.	☑	
2	Discussion of anticipated and proposed drainage patterns.	☑	
3	Discussion of the content of tables, charts, figures, plates or drawings presented in the report.	☑	
	Drainage Facility Design - Specific Details		
1	Presentation of existing and proposed hydrologic conditions including approximate flow rates entering and exiting the subdivision with all necessary calculations.	☑	
2	Presentation of approach to accommodate drainage impacts on existing or proposed improvements and facilities.	☑	
3	Presentation of proposed facilities with respect to alignment, material and structure type.	☑	
4	Discussion of drainage impact of site constraints such as streets, utilities, existing and proposed structures.	☑	
5	Environmental features and issues shall be presented if applicable.	☑	
6	Discussion of maintenance access and aspects of the preliminary design.	☑	
7	Discussion and analysis of existing and proposed downstream drainage facilities and their ability to convey developed runoff from the proposed development.	☑	
	Drawing Contents		
1	General Location Map: A map shall be provided in sufficient detail to identify drainage flows entering and leaving the development and general drainage patterns. The map should be at a scale of 1"=50' to 1"=2000'. The map shall identify any major construction (i.e. development, irrigation ditches, existing detention facilities, culverts, storm sewers, etc.) that shall influence or be influenced by the subdivision.	☑	
2	Drainage Plan: Map (s) of the proposed development at a scale of 1"=20' to 1"=200' shall be included to identify existing and proposed conditions on or adjacent to the site in question.	☑	
3	The drainage plan shall delineate all sub-basins and proposed initial and major facilities as well as provide a summary of all initial and major flow rates at design points. All floodplains affecting the site shall be shown.	☑	

Appendix D. Drainage Plans



LEGEND

- Property Line
- Right of Way Line
- Centerline
- Lot Line
- Easement Line
- Setback Line
- Swale Line
- Storm Manhole
- Type 'R' Inlet
- Storm Sewer Line
- Ex. Storm Manhole
- Ex. Storm Inlet
- Ex. Storm Sewer Line
- Proposed Major Contour (5280)
- Proposed Minor Contour
- Existing Major Contour (5280)
- Existing Minor Contour
- Drainage Flow Direction
- Major Basin Boundary
- Minor Basin Boundary
- Drainage Design Point (1)
- Drainage Basin ID (Name; Area AC.; C5 Minor Storm Runoff Coefficient (C); C100 Major Storm C)

Summary Runoff Table

Design Point	Tributary Basins	Tributary Area	Composite Imperv. %	Runoff (CFS) 5-Year	Runoff (CFS) 100-Year
2A	A2	0.57	85%	2.27	4.29
3A	A3	0.56	85%	2.24	4.23
4A	A4	2.07	9%	1.28	6.27
5A	A5	0.27	80%	1.03	1.98
6A	A6	0.31	80%	1.18	2.26
7A	A7	0.87	82%	3.38	6.44
1A	**Basin A**	**4.66**	**50%**	**6.79**	**15.49**
C1.2C	C1.2	4.20	64%	9.63	20.32
C1.7B	C1.7B	2.02	73%	6.07	12.03
2C	C2	0.43	63%	1.03	2.27
3C	C3	0.78	69%	2.25	4.66
4C	C4	0.35	77%	1.20	2.36
5C	C5	0.45	74%	1.41	2.82
6C	C6	0.26	75%	0.84	1.67
7C	C7	0.50	64%	1.31	2.81
8C	C8	1.17	68%	3.11	6.59
9C	C9	0.70	61%	1.80	3.93
10C	C10	0.22	69%	0.71	1.44
11C	C11	0.55	57%	1.26	2.87
12C	C12	0.42	61%	1.07	2.34
13C	C13	0.55	57%	1.26	2.87
14C	C14	0.62	60%	1.51	3.35
15C	C15	0.40	90%	1.70	3.14
16C	C16	0.93	80%	3.52	6.76
17C	C17	0.05	97%	0.23	0.42
C1.2C	**Basin C**	**14.62**	**67%**	**23.23**	**48.12**
1OS	OS1	0.60	7%	0.32	1.75
2OS	OS2	12.71	7%	2.06	11.21

LJA
1765 W. 121st Avenue
Suite 300
Westminster, CO 80234
303-421-4224 • www.lja.com

Revision Type:

No.	Rev. Date:
1	
2	
3	
4	
5	
6	

Designed: RNM
Prepared: SCA
Approved: XWL

Job No.: 8787-0001
Scale Horiz: 1" = 60'
Scale Vert: N/A

Sheet: 1 of 1
Date: June 15, 2026

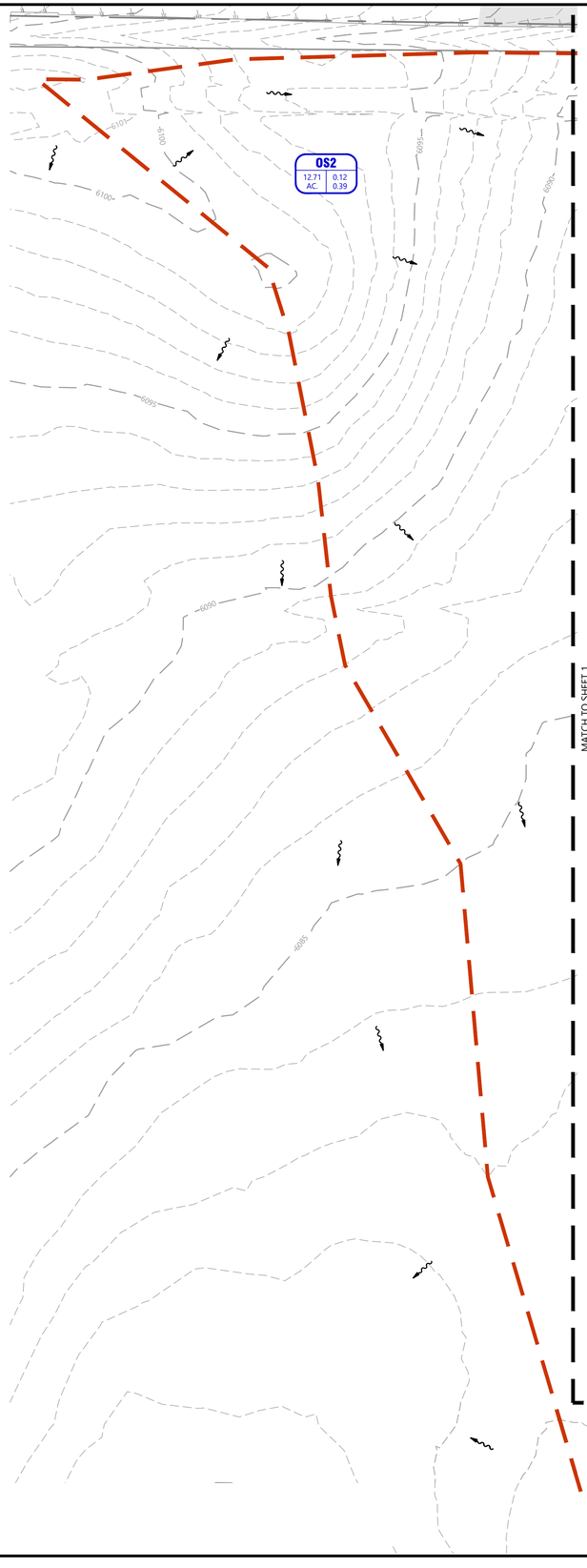
Proj. Name: Mayberry Phase 2
Location: El Paso County, Colorado
Plan Set: Preliminary Drainage Plans
Sheet Name: Proposed Drainage Plan

NOT FOR CONSTRUCTION

Know what's below. Call before you dig.

No. 1

SCALE 1 inch = 60 ft. (60 0 30 60)



LEGEND

- Property Line
- Right of Way Line
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- Major Basin Boundary
- Minor Basin Boundary
- Drainage Design Point (1)
- Drainage Basin ID (Name; Area AC.; C5; C100)
  - C5 Minor Storm Runoff Coefficient (C)
  - C100 Major Storm C

60 0 30 60

SCALE
1 inch = 60 ft.

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No.	Rev. Date:	Revision Type:
1		
2		
3		
4		
5		
6		

Designed: RNM
Prepared: SCA
Approved: XWL

Job No.: 8787-0001
Scale Horiz: 1" = 60'
Scale Vert: N/A

Sheet: 1 of 2
Date: June 15, 2026

Proj. Name: Mayberry Phase 2
Location: El Paso County, Colorado
Plan Set: Preliminary Drainage Plans
Sheet Name: Proposed Drainage Plan

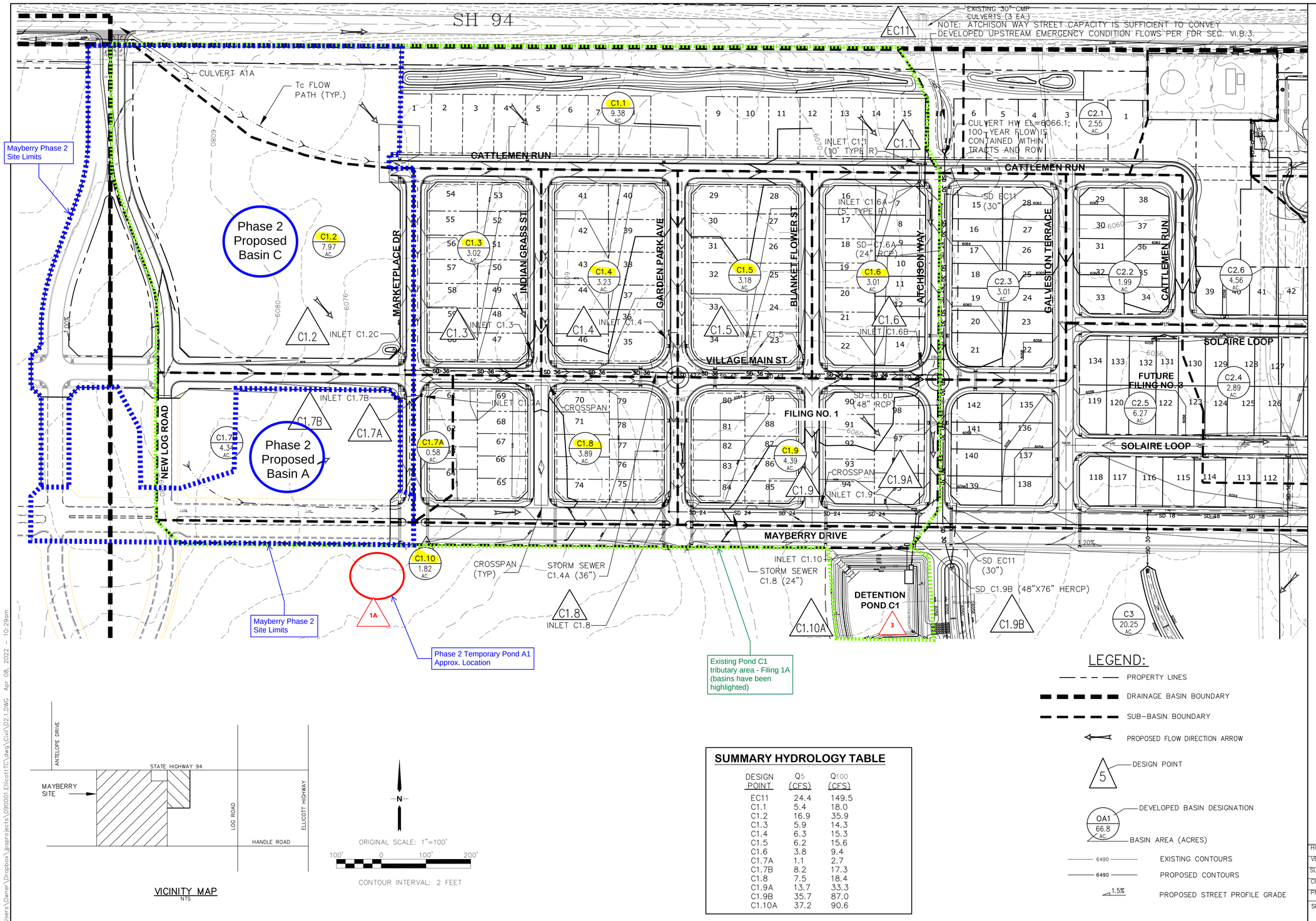
NOT FOR CONSTRUCTION

811 Know what's below. Call before you dig.

No. 2

I:\JOB FOLDERS\0000-0000 - MAYBERRY\ENGINEERING\04 DRAWINGS\PRELIMINARY PLANS\DRAINAGE\PRELIM - PROPOSED DRAINAGE PLAN PRINTED ON: 6/15/2026 11:55 AM

Existing Drainage Plan



VICINITY MAP
NTS

SUMMARY HYDROLOGY TABLE

DESIGN POINT	Q5 (CFS)	Q100 (CFS)
EC11	24.4	149.5
C1.1	5.4	18.0
C1.2	16.9	35.9
C1.3	5.9	14.3
C1.4	6.3	15.3
C1.5	6.2	15.6
C1.6	3.8	9.4
C1.7A	1.1	2.7
C1.7B	8.2	17.3
C1.8	7.5	18.4
C1.9A	13.7	33.3
C1.9B	35.7	87.0
C1.10A	37.2	90.6

LEGEND:

- PROPERTY LINES
- DRAINAGE BASIN BOUNDARY
- SUB-BASIN BOUNDARY
- PROPOSED FLOW DIRECTION ARROW
- 5 — DESIGN POINT
- OA1 / 66.8 AC. — DEVELOPED BASIN DESIGNATION / BASIN AREA (ACRES)
- 6490 — EXISTING CONTOURS
- 6490 — PROPOSED CONTOURS
- 1.5% — PROPOSED STREET PROFILE GRADE

MAYBERRY, COLORADO SPRINGS - FILING NO. 1

FILING NO. 1 DEVELOPED DRAINAGE PLAN

JPS ENGINEERING
19 E. Willamette Ave.
Colorado Springs, CO 80903
PH: 719-477-9429
FAX: 719-471-0766
www.jpsengr.com

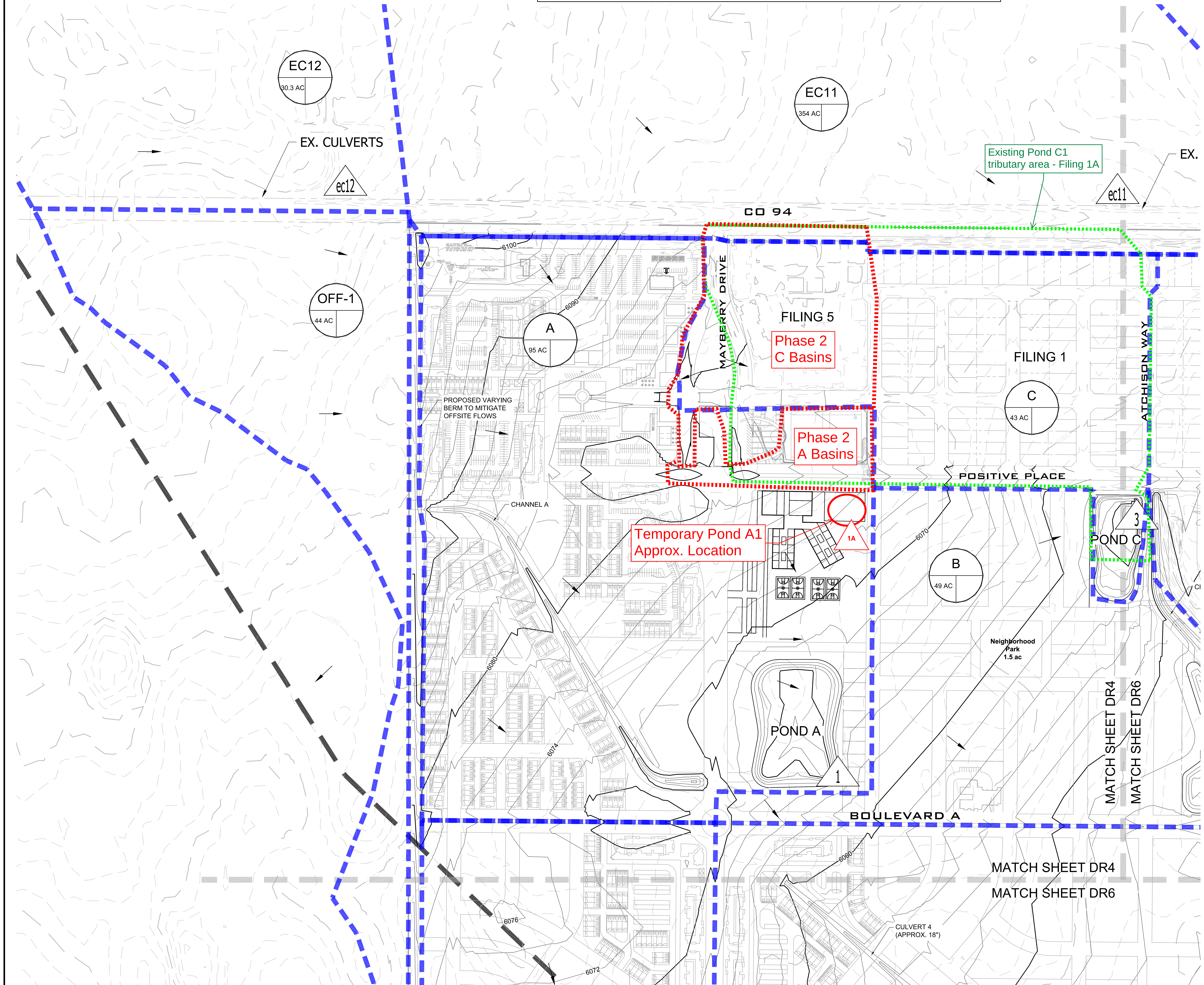
NO.	REVISION	BY	DATE

HORZ. SCALE:	1"=100'	DRAWN:	BJJ
VERT. SCALE:	N/A	DESIGNED:	JPS
SURVEYED:	RAMPART	CHECKED:	JPS
CREATED:	12/03/00	LAST MODIFIED:	4/7/22
PROJECT NO:	090001	MODIFIED BY:	JPS

SHEET: PROPOSED BASIN OVERLAY MAP BY R&R ENGINEERS

C:\Users\Owner\Dropbox\jpsprojects\090001 Ellicott TC\dwg\Civil\D2.1.DWG Apr 08, 2022 - 10:29am

Master Development Drainage Plan Excerpt



EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE	
	EASEMENT	
	EDGE OF PAVEMENT	
	VERTICAL CURB AND GUTTER	
	SPILL GUTTER	
	TRANSITION GUTTER	
5825	MAJOR CONTOUR	5825
5822	MINOR CONTOUR	5822
	STORM SEWER PIPE	
	DRAINAGE BASIN LABEL * BASIN LABEL ** TRIBUTARY AREA (AC)	X* / X**
	FLOW ARROW	
	DESIGN POINT	1
	DRAINAGE AREA BOUNDARY	

BASIN SUMMARY TABLE			
Basin	Area (acres)	5-yr (cfs)	100-yr (cfs)
A	95.00	154.99	286.8
B	49.00	67.48	143.6
C	43.00	59.08	121.5
D	110.00	145.86	309.1
E	73.00	106.61	215.9
F	75.00	71.09	145.1
G	160.00	173.79	364.6
EC12	30.30	16.67	40.3
EC11	354.00	24.40	149.5
EC10	320.00	18.40	144.7
OFF-1	44.00	5.90	25.8

DESIGN POINT SUMMARY TABLE				
Design Point	Contributing Basins	Area (acres)	5-yr (cfs)	100-yr (cfs)
1	A	95.00	147.81	273.86
2	B	49.00	64.15	136.63
3	C	43.00	56.01	115.33
4	D	110.00	138.30	293.42
5	E	73.00	101.07	204.91
6	F	75.00	70.97	145.03
7	G	160.00	166.68	350.13

NORTH

0 200' 400' 600'

SCALE: 1" = 200'

NO.	REVISION	BY	DATE

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MAYBERRY SKETCH PLAN

SITE ADDRESS: MAYBERRY, COLORADO SPRINGS
EL PASO COUNTY

PREPARED FOR: MAYBERRY COMMUNITIES, LLC
3296 DEVINE HEIGHTS #208
COLORADO SPRINGS, CO 80922

EXHIBIT

JOB NO. MC22208

ORG. SUBM. DATE

DWN: GWH CHKD: CJD

NAME

PROPOSED DRAINAGE MAP

NO. DR4