2880 International Circle, Suite 110
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Use checklist for Final drainage report

PPR2410

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	X	
2	Existing/Historic and Developed Conditions Plans at the end of the report	X	
	General Location		
1	City and County, and local streets within and adjacent to the subdivision.	X	
2	Township, Range, section, 1/4 section.	X	
3	Major drainage ways and existing facilities.	X	
4	Names of surrounding platted developments.	X	
	Description of Property		
1	Area in acres	X	
2	Ground cover, (type of trees, shrubs, vegetation)	X	
3	General topography	X	
4	General soil conditions	X	
5	Major drainageways	X	
6	Irrigation facilities	NA	
7	Utilities and other encumbrances	USP	
	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.	X	
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.	X	
3	Major basin drainage characteristics.	X	
4	Identification of all nearby irrigation facilities and other obstructions which could influence or be influenced by local drainage.	NA	
	Sub-Basin Descriptions		
1	Discussion of historic drainage patterns of the property in question	X	
2	Discussion of offsite drainage flow patterns and their impact on the development	X	

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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.	X	
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	X	
	Four-Step Process		
1	Runoff reduction proposed.	X	
2	Stabilization of drainage ways proposed/discussed.	X	
3	Proposed Stormwater Quality Capture Volume (WQCV) proposed.	X	
4	Identify Best Management Practices (BMP's) to be used to control industrial and commercial pollutants.	X	
	Hydrologic Criteria		
1	Identify design rainfall.	X	
2	Identify runoff calculation method.	X	
3	Identify design storm recurrence intervals	X	
4	Identify detention discharge and storage calculation method.	X	
5	Note ECM Appendix I Full Spectrum Detention (FSD) requirement.	X	
	Drainage Facility Design - General Concept		
1	Discussion of compliance with offsite runoff considerations.	X	
2	Discussion of anticipated and proposed drainage patterns.	X	
3	Discussion of the content of tables, charts, figures, plates or drawings presented in the report.	X	
	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.	X	
2	Presentation of approach to accommodate drainage impacts on existing or proposed improvements and facilities.	X	
3	Presentation of proposed facilities with respect to alignment, material and structure type.	X	
4	Discussion of drainage impact of site constraints such as streets, utilities, existing and proposed structures.	X	
5	Environmental features and issues shall be presented if applicable.	X	
6	Discussion of maintenance access and aspects of the preliminary design.	X	
7	Discussion and analysis of existing and proposed downstream drainage facilities and their ability to convey developed runoff from the proposed development.	X	
	Drawing Contents		
1	General Location Map: A map shall be provided in sufficient detail to identify drainage flows entering and leaving the GHYHORSPHQW DQG JHQHUDO GUDLQDJH SDWWHUQV 7KH PDS VKRX 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.	X	
2	'UDLQDJH 3ODQ 0DS V RI WKH SURSRVHG GHYHORSPHQW DW D VFD existing and proposed conditions on or adjacent to the site in question.	X	
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.	X	

This needs to be a Final Drainage Report

Preliminary Drainage Report

for

The Shire at Old Ranch
PPR2410

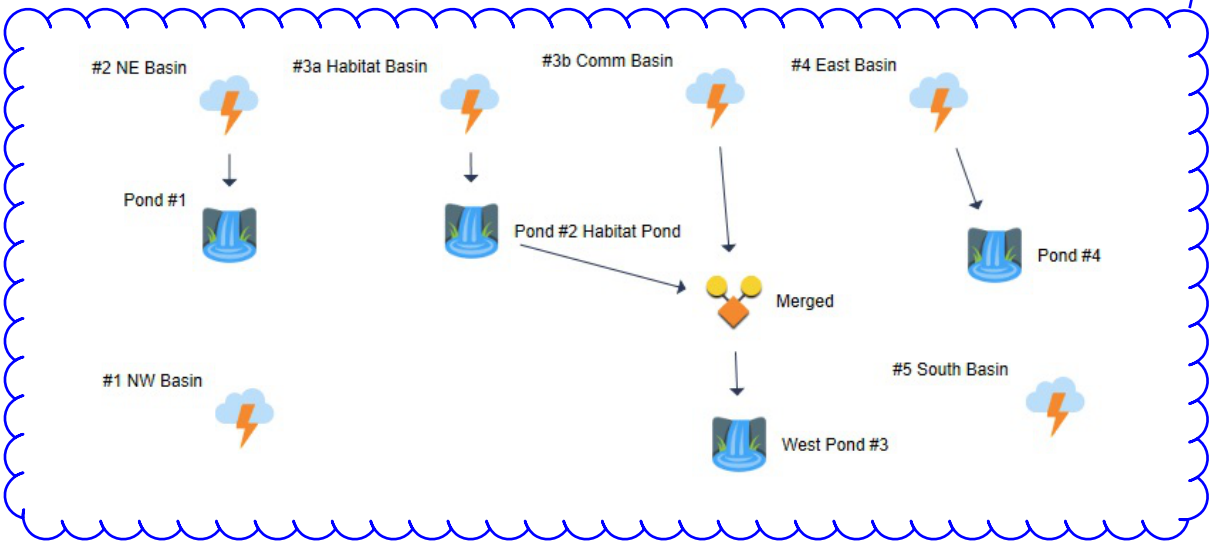
Prepared for KESS Properties

July 10, 2026

by
Art of Engineering, Inc.
515 Manitou Ave. #260
Manitou Springs, CO 80829

TABLE OF CONTENTS

Remove this information



Design Engineer's Statement:

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


include stamp

_____ __25aug2026_____

Scott Harvey, P.E. #28758 Date

Owner/Developer's Statement:

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

_____ __25aug2026_____

Mark Phelan Date
Old Ranch Road Properties LLC
4955 Austin Bluffs Pkwy
Colorado Springs, CO 80918

El Paso County:

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

_____ _____

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

Conditions:

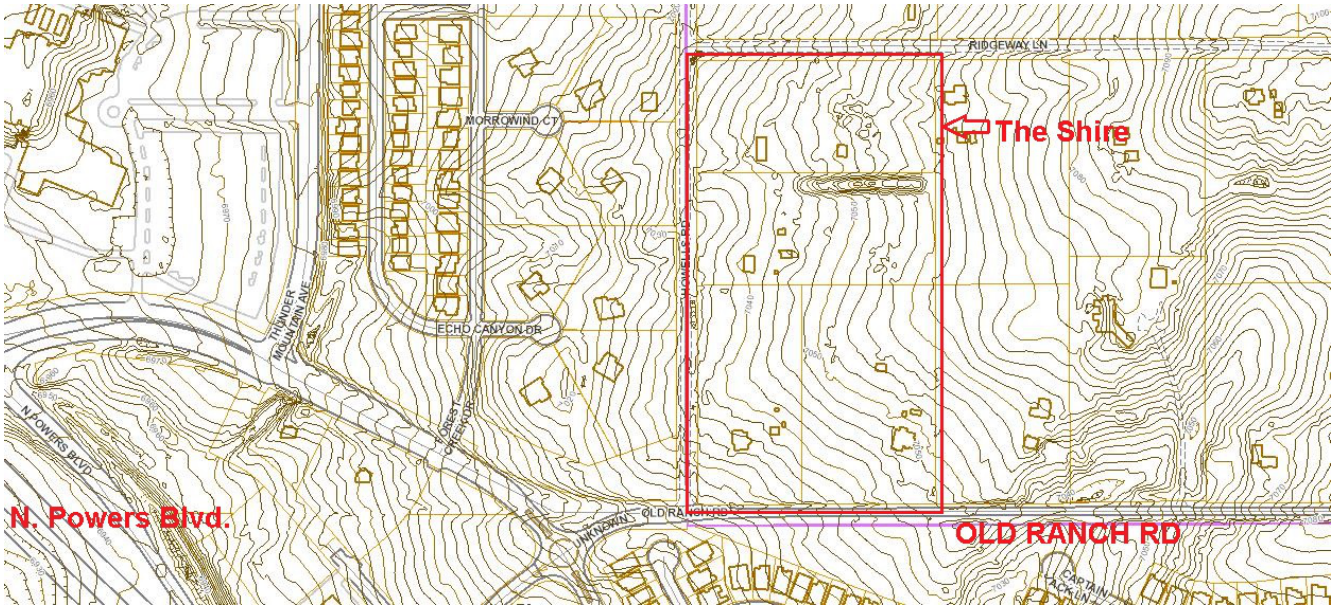
I PROJECT OVERVIEW

The Shire at Old Ranch is private development by the long time owners and gardeners with the intent to create an educational and commercial experience focusing on gardening, health and wellness, and community. The project will include a garden center, cafe, meeting house, hand-craft workshops and agricultural endeavors including small animals and classes. The bulk of the land will be used for growing nursery and food crops.

II. GENERAL LOCATION

The project is located east of the intersection of Powers Blvd and Old Ranch Road. It is bounded by Old Ranch Rd to the south, Howells Rd to the west, Ridgeway Ln. to the north and adjacent properties to the east.

Township12S Range 66W SW4SW4 Sec 23 El Paso County, Colorado
These parcels are at the very southwest corner of the Black Forest and located within the Kettle Creek Drainage Basin. Most of the land to the north and east of the Shire has not been developed beyond large-lot residential uses.



There are no drainageways on our property and there are no indications of anything other than sheet flow entering or leaving the property. The North Fork at Briargate to the west of this property has built three detention ponds.
Surrounding Platted Developments include :

1. Several small platted properties to the east
2. Academy High School Filing No. 5 and North Fork at Briargate Filing No. 6 to the west
3. Several Cordera Filings to the south
4. There aren't any new plattings filed to the north.

III.

DESCRIPTION OF PROPERTY

The project is comprised of four contiguous 5 acre parcels, these parcels are at the very southwest corner of the Black Forest.:

3820 Old Ranch Rd #6226000061
3890 Old Ranch Rd. #6226000060
10655 Howells Rd. #6226000059
10755 Howells Rd. #6226000058

Each of the four five acre properties has a single family residence with wells and individual septic systems. These septic systems will remain as they are and not used for the new development.

Water Well and Septic Information

	Water Well				Septic		
Address	Well Permit #	Depth (ft)	Yield (gpm)	Constructed	Permit #	Tank Size (gal)	Leach Area (sf)
3820 Old Ranch Rd	111264--A	275	9.2	Oct 1979	info not available		
3890 Old Ranch Rd.	55612-F	435	12	April 2000	4541 (file)	1250	345
10655 Howells Rd.	97002-VE	250	?	Jan 1997	23070	2250	899
10755 Howells Rd.	96161-VE	480	10	May 1996	0N0001957	1000	536

Each of the properties has it's own existing well as listed above (and shown on plans as 100 radius circle) The Shire has procured additional rights to water from the well at 3890 Old Ranch Rd via an augmentation plan. No changes to the existing septic or well systems is planned for those addresses. Separation distances between any wells or septic 'leach fields' will be maintained.

The land hasn't been reshaped over the years and has natural grasses, small trees and shrubs throughout. The land slopes generally to the west at 2-5%. There are three sub-drainages within the 20 acres that flow to the northwest, west and south. The property is bound by Ridgeway Ln to the north, Howells Rd. to the west and Old Ranch Rd. to the south respectively.

The existing vegetation consists of trees (Blue Spruce, Sib Elm, Scrub Oak, Ponderosa, Black Locust...), Shrubs (Juniper, Choke Cherry, Goji, Elderberry, American Plum, Sib. Pea, Currants, Goose Cherry...),
all of which will be kept.

Based on geotechnical explorations that have been done, the soils beneath a few inches of top soil are fairly consistent fine sands, SW, SM. Sandstone was hit at 13' in just one test hole in the upper reach (east side). All other test bores showed sand/silt down to 20' maximum test depth. Percolation tests have found the soil capable of infiltrating water at 1.18 to 1.67 inches/hour (Test Reports in the Appendix)

USDA identifies this soils as sandy loam with some sand-clay loam (Peyton-Pring). The soil has a hydrologic Group B classification and a capacity of the most limiting layer to be 2.0-6.0 inches/hour.
Areas to the east and north of the Shire have similar soil (Group B) and slopes.

Previously stated there were single family residences on each lot

There are no drainageways or structures on the property and there is no sign that anything other than sheet flow may have ever entered the property along the east side or flowed off this property. There are no irrigation systems presently however the project will employ high efficiency irrigation methods when built. The only utilities within the property are those serving the existing residences.

IV. MAJOR BASIN DESCRIPTION

The property is within the area studied by JR Engineering in April 2001 for the Kettle Creek Drainage Basin-Old Ranch Road Tributary Drainage Basin Planning Study and Master Development Plan. This in the first study to to address the entire Kettle Creek Watershed. Our property is within this study area near Basin Identifiers D10 & D12 . The drainage management plan proposed in this study 'calls for the major land owners/developers in the study area to construct the drainage infrastructure required to support the proposed development within the study area' and 'calls for several regional detention facilities'. The study acknowledges that much of the Kettle Creek Watershed is within the city limits of Colorado Springs and they would have jurisdiction. Also, since the watershed flows to the US Air Force Academy property, the City required 2,5,10,25, 50 and 100 year storm events to be analyzed.

Most of the land to the north and east of the Shire has not been developed beyond large lot residential. The Kettle Creek and Old Ranch Road Drainage Basin Planning Studies address drainage for the larger area whereas the a Drainage Report for the new subdivision (North Fork at Briargate Fil 2 # 2015.06.22) is the nearest and most recent drainage study, albeit down stream from our project.

Amendment No. 2 to the Pine Creek Drainage Basin Planning Study and M.D.D.P. For the Pine Creek Subdivision, October 1998, by JR Engineering identifies watershed drainage south of this current study.

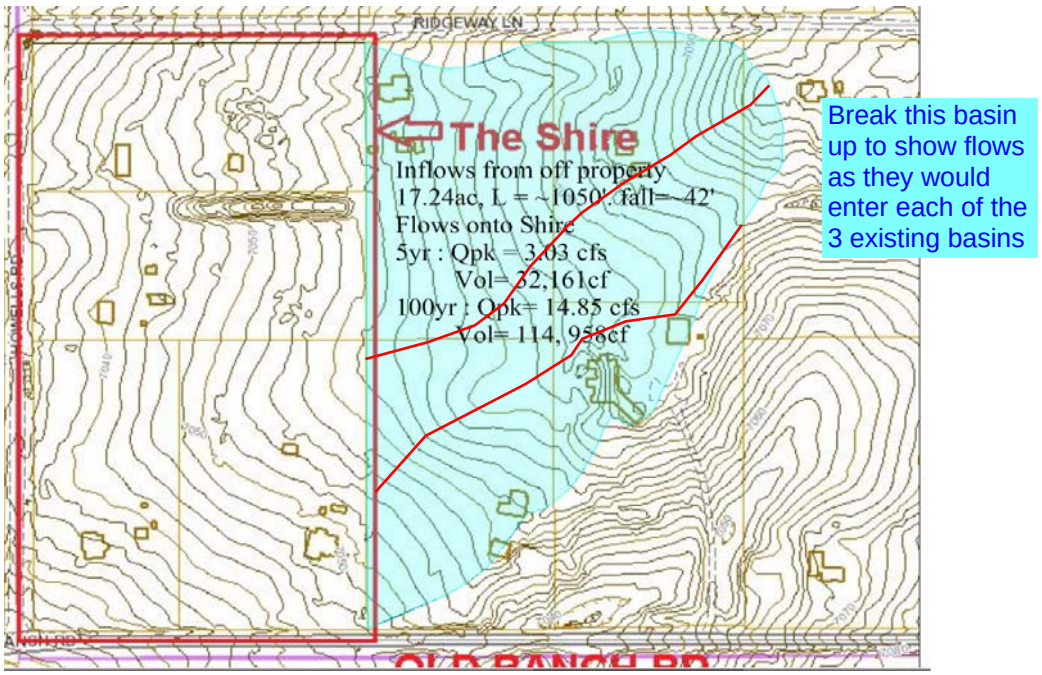
Final Drainage Report for Old Ranch Road, June 1997 by JR Engineering was provided for a portion of Old Ranch Road and Thunder Mountain Road near Pine Creek High School, northwest of this current study.

Final Drainage Report for Academy High School No. 5, January 1997 by Martin and Martin Inc, specifically for the development of the high school (Pine Creek High School).

The property is not within a designated floodplain and FEMA classifies our property as “Area of Minimal Flood Hazard” (Firmette #08030CO507G)

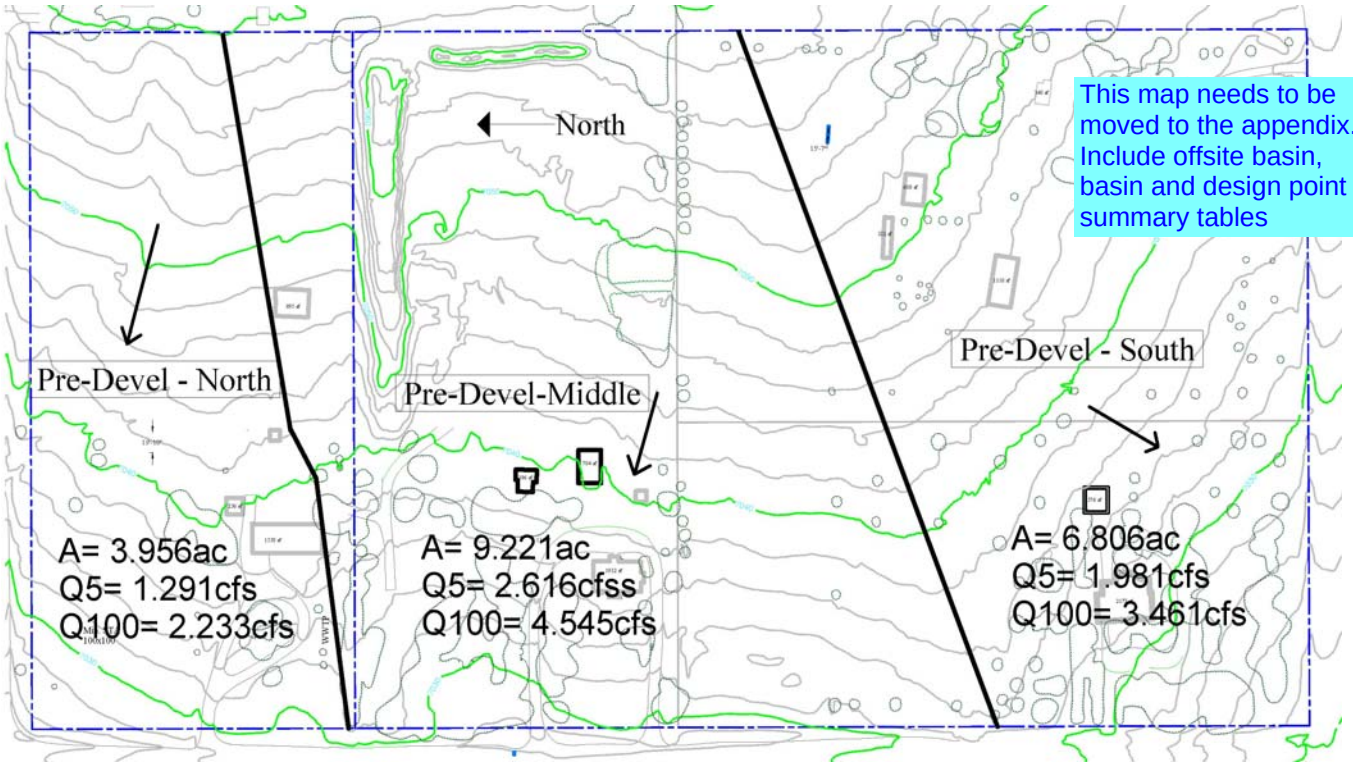
INFLOWS FROM OFF SITE

The inflows to the Shire would come from the east. That contributing basin is ~ 17.24 ac. The inflows from a 5 year storm would be Qpk=3.3 cfs, Vol= 32,161cf. From a 100 year storm the inflows would be 14.85 cfs and Vol = 114,958cf. However there are no indications of inflow occurring other than surface/sheet flow.



. PRE DEVELOPMENT BASIN DESCRIPTION

Historic drainage patterns within the property generally flow to the west or southwest. Three existing sub-basins have been identified to show the directions for the historic runoff. To compare the Pre Development flows to the post development flows, the entire property was calculated for runoff.



Historic Runoff

please correct this value

Analysis of the existing hydrologic conditions reveal a 5 year storm produces 1.1 Acre-Feet of runoff (Q5= 5.88cfs) and 1.91 Acre-Feet for a 100 year storm (Q100= 1-.24cfs). Flow rates are calculated for each sub-basin along with stormwater volume using the Rational Method. Hydrographs of these basins is found in the Appendix.

VI. DESIGN CRITERIA

The Kettle Creek/ORR DBPS used 2,5,10,25, 50 and 100 year storm events to be analyzed whereas our project uses 5 and 100 year storm events. Design Storm for this report is the Rational Method and SCS Type II 24 hour storm for both 5 year and 100 year event. Hydrologic analysis was done using HYDROLOGY STUDIO v3.0.0.26 software. Rainfall data was downloaded from NOAA for Colorado Springs.

FOUR STEP

1. Runoff Reduction

Land disturbance of the 20.05 acre project is reduced 4.255 ac with the protected areas (yellow hatch pattern).

2. General runoff reduction methods will include : Limiting hardscape to heavy traffic areas, use of permeable pavers in most walkways, rooftop waters directed to ponds, limited concrete curb and gutter (another

4.?

hardscape). Many areas with roads or building outside of the commercial core area will be well landscaped including 'contour plowing' in crop areas, maintaining many areas with dense vegetation.
3. Stormwater quality capture volume is 100% in ponds #1, 2, 3 through infiltration. The WQCV for Pond #4 (which discharges) is 1700cf (~12% of pond capacity).

clarify, based on the below discussion not 100% of the WQCV of the site is draining to the ponds.

Maintaining stable drainageways will be simplified by employing ; numerous low volume, low velocity drainageways and allowing historic sheet flow to run directly to dedicated ponds. Some roof waters will be piped but most conveyances will be via small channels.

e areas excluded from Permanent Control Measures are the two Basins 1 & #5 which are largely unchanged, as follows:

Complete sentence

Site the applicable County exclusion. See ECM Section I.6 for all applicable PCM exclusions. Reference the exact exclusion and section

Undisturbed Area

What other exclusion is being proposed? 3.44 ac is the total area and 2.25 ac are listed as undisturbed?

Excluded Areas

On Site

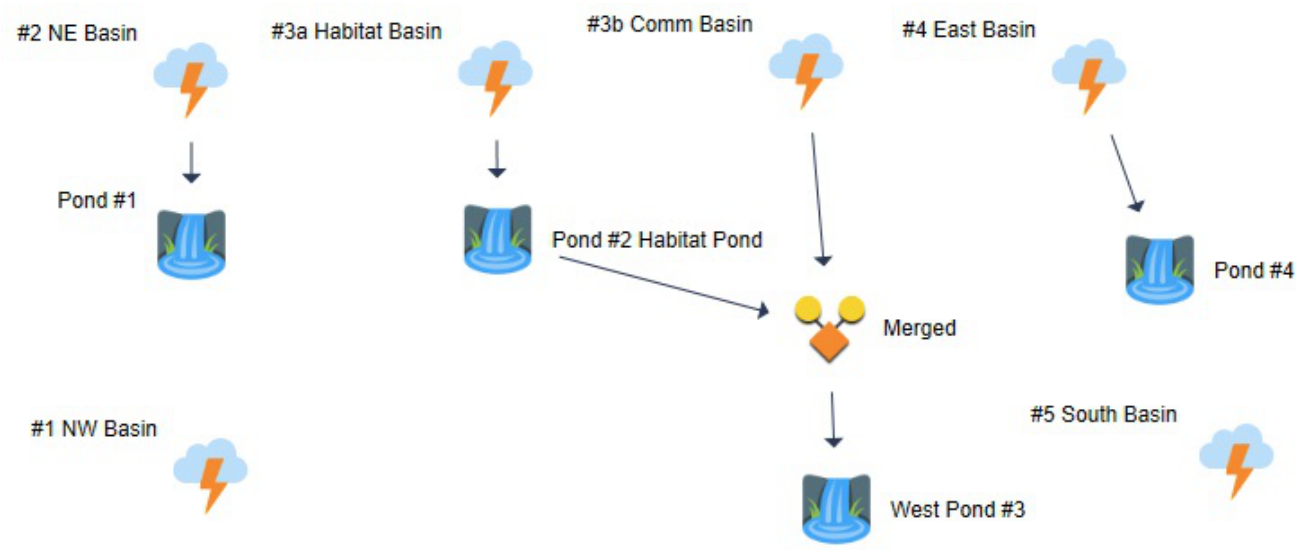
Basin	Gross Area (ac)	Preserved Area (ac) *	Excluded from PCM's (ac)
#1 Northwest Basin	3.438	2.25	3.44
#5 South Basin	4.421	2.01	4.42
Off Site Utility Work, Roadway widening			0.25
			8.11

* Undisturbed land need not have PCM ?

please provide sub-basin descriptions for the existing conditions as well

SUB-BASIN DESCRIPTIONS

There are six post development sub-basins used in the runoff calculations.
NOTE, #3 Basin has two sub-basins within it.



Please provide a design check of ditch in appendix. Show and label ditch on both drainage maps.

please list the area and the exclusion that is being applied,

#1 Northwest Basin

Includes two residences with preserved area, their leach fields, and dedicated space for a future soil treatment area. Some of this basin will be excluded PCM's. There is no control measures in this basin and any surface flows would be toward the ditch along Howells Rd.

please include a design point for this basin

Indicate if flows are greater than existing and how this affects the ditch.

#1 NW Basin - Post Development

	Qpk (cfs)	Volume (cf)
5 yr	0.821	5,171
100 yr	4.879	22,541
Area (ac)	4.273	

#2 Northeast Basin – Design Points A to B

This area includes a greenhouse and parking lot with most of the basin area used for agricultural purposes. This area flows to an infiltration pond (#1) which has the capacity to hold four 100 year storms. It could over flow to pond #2. The runoff for this basin is shown below. This pond is projected to infiltrate it's waters within 13 hours.

#2 NE Basin - Post Development

	Qpk (cfs)	Volume (cf)
5 yr	0.328	1,809
100 yr	2.088	9,647
	Pond Capacity	43,971
Area (ac)	1.71	
Time to fully infiltrate(hrs) (5 / 100)	3	13

How does this flow reach Pond 3 from the outlet pipe? Please discuss and show label on drainage mp.

#3a The Habitat Basin – Design Points B to C

This area includes six earth sheltered homes, open field, gravel and asphalt roadway. The runoff in this basin is surface flow to the west and flows into Pond #2 (Habitat Pond). This pond is long and narrow and functions as a slow channel with large infiltration before outflowing through a structure to Pond #3 (West Pond). Pond #2 could hold 10,000cf as compared to the 100yr runoff volume of 9,000cf.. The flows off this basin is combined with the flows from Basin 3b.

NOTE, Pond #2 flows and empties into Pond #3 so the time to infiltrate is invalid unless the outflow is blocked.

#3a Habitat Basin POST

	Qpk (cfs)	Volume (cf)
5 yr	3.141	10,555
100 yr	8.696	29,218
	Pond Capacity	9,486
Area (ac)	4.194	
Time to fully infiltrate(5 / 100)	50	139

If pond is not an infiltration pond, should be designed with a normal outlet structure.

what flow from this basin reaches DP E? the basin flows west with DP E on the east side of the basin. There should not be more than one DP per basin. Split the basin if needed.

#3b The commercial core area – Design Points E to D
Dominated by roofs, walkways, asphalt roadways, this area naturally flows to the west via surface flows to Pond #3 (West Pond), a full infiltration pond. Pond #3 has a capacity of 140,000cf of detention, enough to hold more than two 100 year storms.

#3b Commercial Basin POST

	Qpk (cfs)	Volume (cf)
5 yr	3.748	13,494
100 yr	9.054	23,903
	Pond Capacity	140,400
Area (ac)	3.525	

Ponds are supposed to infiltrate within 12 hours.

Stated above pond could hold 2 100-year storm.

Pond #3 West Pond – Design Points B to D
Receives runoff from Basin #3a (Habitat Basin) and from Basin 3b (Commercial Core). It is a large infiltration pond with a capacity of !40,000 cf. A 100yr storm would fill it 1/3 full. This pond is projected to infiltrate it's waters within 29 hours, and hold another 100yr storm. This pond is made essential due to the being no practical way to discharge concentrated flows the new hardscape has created. The ditch along the Howells Road is shallow to nonexistent and discharged runoff would flow across the road.

Merged Basins 3ab POST

	Qpk (cfs)	Volume (cf)
5 yr	6.125	23,271
100 yr	14.41	52,271
	Pond Capacity	140,400

Time to fully infiltrate(5 / 100)

separate into multiple basins if flow is going to both DPs. The description and the map do not make it clear.

#4 The East Basin – Design Points F to G
This area has mainly asphalt and roof surfaces. These waters flow via roadway to Pond #4 (South Pond). This pond has an outlet structure and the design discharge is 0.401cfs.

#4 East Basin - Post Development

	Target Qpk (cfs)	Volume (cf)
5 yr	3.23	10,076
100 yr	6.604	13,868
	Pond Capacity	14,364
Area (ac)	1.822	

Discuss ditch along Old Ranch Road flow releases into. Provide design check of ditch in appendix. Show and label ditch on both drainge maps. Indicate how this flow relates to existing flow in the ditch

list exclusions

#5 The South Basin

This basin has two residences and large preserved space. It has some new runoff associated with the entrance road. This area free flows off site without PCM's.

#5 South Basin

#4 East Basin - Post Development

	Target Qpk (cfs)	Volume (cf)
5 yr	3.23	10,076
100 yr	6.604	13,868
	Pond Capacity	14,364
Area (ac)	1.822	

State this basin has no PCM's, so why is there a pond capacity listed?

COMPARING THE PRE-DEVELOPMENT AND POST DEVELOPMENT RUNOFF'S

All 20 Acres - Pre Development

	Qpk (cfs)	Volume (cf)
5 yr	5.888	47,831
100 yr	10.239	83,193

Basin Outflows

	5 yr		100yr	
Basin	Qp (cfs)	Volume (cf)	Qp (cfs)	Volume (cf)
Pre Development	**5.888**	**47,831**	**10.239**	**83,193**
Post Development				
#1 NW Basin	0.821	5,171	4.879	22,541
#2 NE Basin				
#3a Habitat Basin				
#3b Commercial Basin				
#4 East Basin (maximum)	3.23	10,076	6.604	13,868
#5 South Basin	1.474	6,281	8.703	29,243
Totals	5.525	21528	20.186	65652

This flow shall be reduced to meet historic values.

VIII. HYDROLOGIC CRITERIA

Design Storm for this report is the Rational Method and SCS Type II 24 hour storm for both 5 year and 100 year event. Hydrologic analysis was done using HYDROLOGY STUDIO v3.0.0.26 software. Rainfall data was downloaded from NOAA for Colorado Springs. This plan is in accordance with the El Paso County Drainage Criteria Manual, Oct. 2018

To size infiltration ponds, the Pond Design feature was utilized with the outflow volume reduced to 0.0001cfs. This gives the required size of pond to capture 100% of a given storm flow entirely.

IX. DRAINAGE FACILITY DESIGN CONCEPTS

A major objective of the project is to require the least amount of overlot grading and to maintain the historic drainage patterns. Our Drainage Strategies will not exceed calculated maximum flows. Using numerous mini-basins, basins will collect and infiltrate their waters.Most surface areas would utilize historic sheet flows directed to infiltration ponds. Agricultural areas would utilize strategies such as 'contour plowing'. Pocket garden will be proliferate.

Drainage from Basin #3a (Habitat Basin) flows into a long pond that itself flows into Pond #3 (West Pond), the large infiltration pond.

Outflow from Pond #4 is discharged in the ditch along Old Ranch Road. The additional lanes to be installed will crowd this ditch and may require shifting the ditch onto Shire property.

X. DRAINAGE FACILITY DESIGN-DETAILS

A project goal is to limit water flowing off property to volumes less than the historic, calculated volume. Throughout the property various combinations of strategies for reducing run-off will be used.

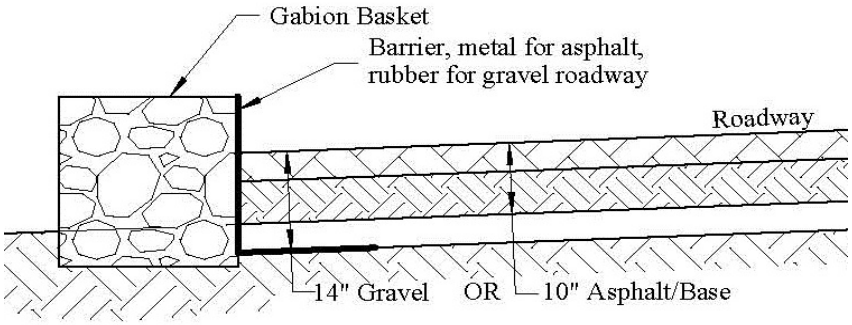
We will employ low impact land use and drainage strategies that :

1. Minimize grading
2. Use heavy vegetation and contour plowing to achieve lower run-off
3. Employ planters and gardens in small depressions to collect and infiltrate on the spot
4. Require the least curb and gutter
5. Maximize sheet flow directly into dedicated infiltration ponds

Different pond styles will be employed, both sloped side basins and some vertical wall ponds to conserve space. Details of the Pond Types is found in the large format attachements.

Where curb and gutter is necessary, Owners wish to pursue a less carbon intensive manner as shown below. Uphill edges of roadways and parking would have no curb. Wheel stops would be used in parking areas. The 'barrier' noted in the diagram could be notched to allow water to spill over barrier and through the Gabion basket and then surface flow to it's dedicated pond. A similar detail could be used on the uphill side to route waters to a strategic road crossing.

Gabion Basket Curb



Our drainage strategies will not adversely affect streets and utilities. Many intentions for the project will result in positive environmental elements that will enhance the visitor experience at the Shire. Since we will infiltrate rather than discharge to other drainage systems, we expect to have a very positive affect on downstream drainage systems.FINAL DRAINAGE STRATEGIES

Our drainage strategies involve numerous small collection and infiltration ponds which take advantage of the existing terrain with limited over-lot grading. The property has been broken into mini-basins that take advantage of proposed roadways, buildings and surfaces to allow waters to flow in small volumes to adjacent ponds. All surfaces have been colored and numbered.

CALCULATION METHODS

For both the pre and post development runoff analysis, the contributing surfaces and their coefficient of runoff, slope and time of concentration were calculated.

Coefficients of Runoff used are as follows

Runoff Coefficients

Surface	5 Year	100 year
Land (Ag/Native)	0.09	0.36
Gravel	0.59	0.7
Roofs	0.73	0.81
Asphalt / Concrete	0.9	0.96
Lawns	0.08	0.35

Source : El Paso County Drainage Criteria Manual-2018

5 yr

Tc should be found using equations 6-8, 6-9 & 6-10.

The Time of Concentration was typically quite long for pre-development flows and was adjusted for post development flows by weighting the Tc x Area to find a composite Tc. The infiltration ponds (#1,2,3) were sized as large as practical for the area they are in. The time to infiltrate a full storm event (10 or 100yr) was calculated by Volume/Infiltration Rate/area of pond water surface when half full.

FREE FLOWING AREAS

Some areas were found not to be good candidates for managing stormwater, usually areas at the bottom of the basins or areas with heavy vegetation. These areas are on the south and west sides of the property. Runoff from these areas was calculated for the 5 and 100 year storms to find there rate of flow and total runoff that would be discharged.

This is a summary of those areas which will be allowed to flow off site. Waters from these areas would tend to accumulate in borrow ditches along Old Ranch and Howells Roads. There no indications that anything other than sheet flow has ever occurred in off-site flows.

Unresolved: The state must be contacted to verify the acceptability of infiltrating all stormwater. Ensure water rights aren't in conflict with changing drainage patterns.

Some contacts you can reach out to for water rights questions regarding full infiltration basins/stock ponds:
rachel.zancanella@state.co.us
bethany.arnold@state.co.us

Run off Areas

	5 year (Qcfs)	100 year (Qcfs)
#1 Northwest Basin	0.821	4.879
#5 South Basin	1.465	8.703

PONDED BASINS

The bulk of the property has been broken into mini-basins with infiltration ponds dedicated to the runoff in that basin. Ponds are placed where they can collect surface flows without channels as often as possible. Grassed Swales are employed when needed to convey waters.

The ponds are sized based on two parameters : the total volume required to collect storm waters, and the required infiltrative area to 'perc' storm waters into the ground within 12 hours. The width on a horizontal plane when the pond is half full was generally used as the 'infiltrative surface area'. The ponds will be maintained.

Discuss the software being used and how the design parameters are demonstrated in the calcs. Many of the sheets show a peak flow of 0 cfs.

A copy of the Percolation Tests performed by Entech Engineering is in the Appendix. These will be performed again at the bottom of the pond excavations.

A complete design needs to be provided now, but changes needed can be captured with plan revisions or as-builts.

The pond sizes in this report may vary as the infiltration rate may differ (new infiltration tests will be concluded in the excavated pond), and pond shape may change as development proceeds, hence we will work with the owner during construction and offer final design afterward. A 6" high freeboard is required on all ponds and channels. Owner may ask to use 2:1 side slopes with vegetation or riprap.

Maintenance of the ponds. Ramp access to the ponds must be accebible to the standard skid steer excavator. Creating a calm low spot near the inflow point can keep any required cleaning confined to a smaller area. Grass lined swales should shaped in a manner that allows for easy mowing.

please state the responsible party for maintenance

if slopes greater than 2:1 are proposed ECB or other erosion control product will be needed.

Noted, updated infiltration test results will be required prior to Preliminary Acceptance during construction

Provide calculations for Tc

Hydrograph 5-yr Summary

Hydrology Studio v 3.0.0.44

File: 14010 Shire-All Basins -8july2026-5yr.hys
07-09-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	#3a Habitat Basin	3.141	0.93	10,555	----		
2	Rational	#3b Comm Basin	3.748	1.00	13,494	----		
3	Pond Route	#2 Habitat Pond	2.466	1.13	9,777	1	7037.48	3,177
4	Junction	#4 Junction	6.125	1.00	23,271	2, 3		
5	Pond Route	#3 West Pond	0.000	0.00	0.000	4	7029.66	23,271
6	Rational	#2 NE Basin	0.328	1.53	1,809	----		
7	Pond Route	Pond #1	0.000	1.07	0.000	6	7044.05	604
8	Rational	#1 NW Basin	0.884	1.75	5,570	----		
9	Rational	#4 East Basin	3.230	0.87	10,076	----		
10	Pond Route	Pond #4	1.484	1.33	8,134	9	7028.54	6,449
11	Rational	South Basin	1.474	1.18	6,281	----		

Design Storm Report

Custom Storm filename: COS Rainfall SCS Type IIA-SH.cds

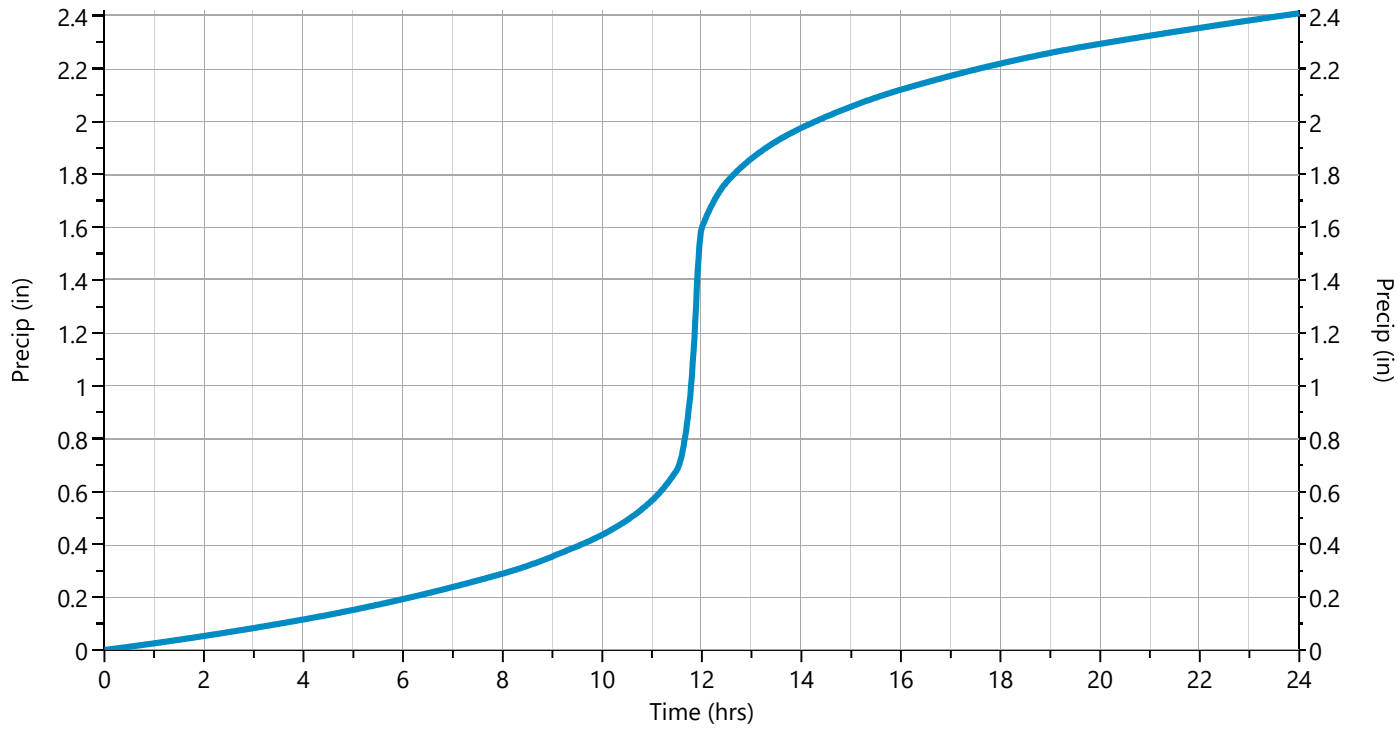
Hydrology Studio v 3.0.0.44

07-09-2026

Storm Distribution: NRCS/SCS - Type II, 24-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	✔ 5-yr	10-yr	25-yr	50-yr	100-yr	
24 hrs	1.62	1.89	0.00	2.41	2.92	3.72	4.43	5.21	

Incremental Rainfall Distribution, 5-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
11.42	0.004467	11.60	0.013539	11.78	0.035211	11.97	0.033161	12.15	0.006776
11.43	0.004531	11.62	0.015124	11.80	0.039620	11.98	0.023126	12.17	0.006623
11.45	0.004595	11.63	0.016709	11.82	0.044030	12.00	0.013091	12.18	0.006471
11.47	0.004659	11.65	0.018295	11.83	0.048439	12.02	0.008267	12.20	0.006318
11.48	0.004724	11.67	0.019880	11.85	0.052849	12.03	0.007845	12.22	0.006166
11.50	0.004788	11.68	0.021465	11.87	0.057258	12.05	0.007692	12.23	0.006013
11.52	0.005631	11.70	0.023050	11.88	0.061667	12.07	0.007539	12.25	0.005860
11.53	0.007198	11.72	0.024636	11.90	0.066077	12.08	0.007387	12.27	0.005708
11.55	0.008783	11.73	0.026221	**11.92**	**0.070486**	12.10	0.007234	12.28	0.005555
11.57	0.010368	11.75	0.027806	11.93	0.046092	12.12	0.007081	12.30	0.005402
11.58	0.011954	11.77	0.030568	11.95	0.043196	12.13	0.006929	12.32	0.005250



IDF Report

IDF filename: Colorado Springs.idf

Hydrology Studio v 3.0.0.44

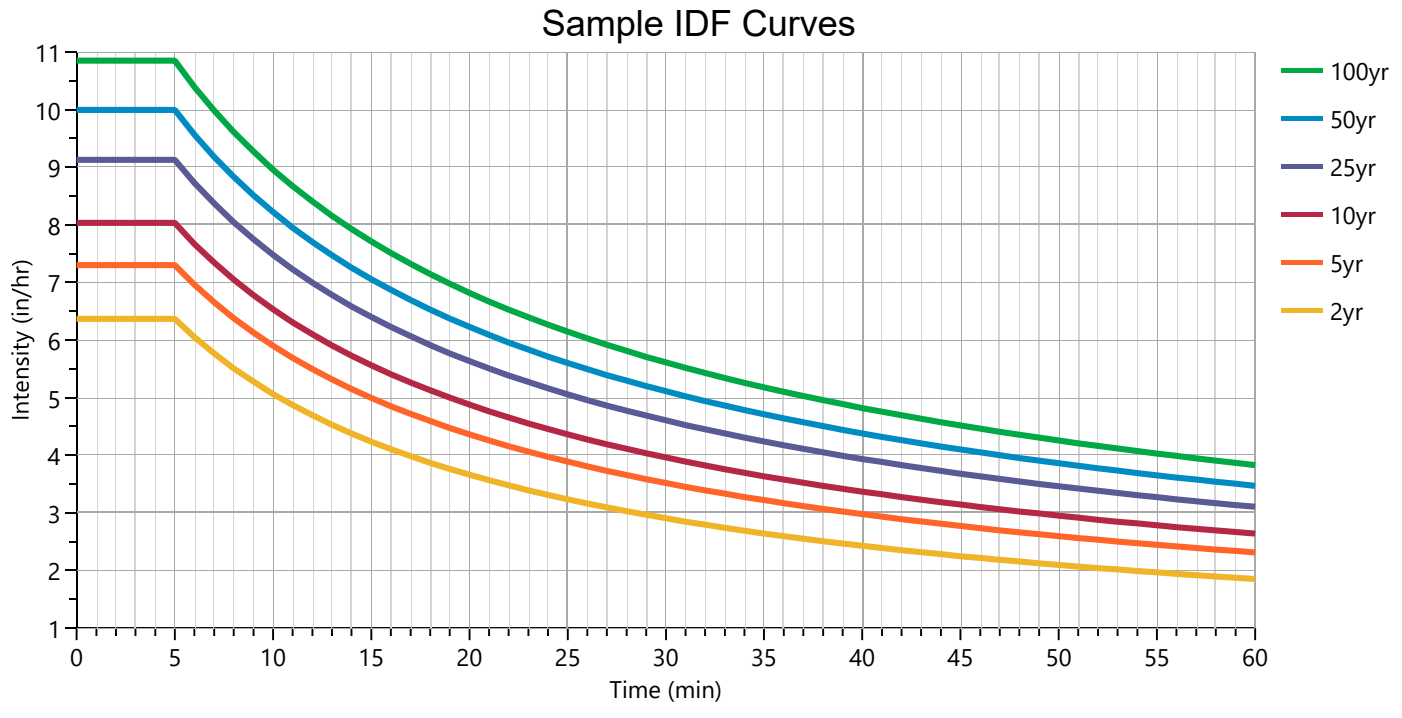
07-09-2026

Equation Coefficients	Intensity = B / (Tc + D)^E (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
B	0.0000	58.1215	0.0000	57.1446	58.8780	63.5498	67.7965	72.2003	
D	0.0000	10.3000	0.0000	10.3000	10.3000	10.4000	10.5000	10.6000	
E	0.0000	0.8106	0.0000	0.7542	0.7303	0.7097	0.6986	0.6898	

Minimum Tc = 5 minutes

Tc (min)	Intensity Values (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
Cf	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
5	0	6.37	0	7.30	8.03	9.13	9.99	10.85	
10	0	5.06	0	5.90	6.53	7.48	8.22	8.96	
15	0	4.24	0	5.00	5.56	6.40	7.06	7.71	
20	0	3.66	0	4.36	4.88	5.63	6.23	6.82	
25	0	3.23	0	3.89	4.36	5.06	5.60	6.14	
30	0	2.90	0	3.52	3.96	4.60	5.11	5.61	
35	0	2.64	0	3.22	3.64	4.24	4.71	5.18	
40	0	2.43	0	2.98	3.37	3.94	4.38	4.82	
45	0	2.25	0	2.77	3.14	3.68	4.10	4.52	
50	0	2.10	0	2.60	2.95	3.46	3.86	4.26	
55	0	1.96	0	2.44	2.78	3.27	3.65	4.03	
60	0	1.85	0	2.31	2.64	3.10	3.47	3.83	

Cf = Correction Factor applied to Rational Method runoff coefficient.



Precipitation Report

Precipitation filename: ColoradoSpringsCO.pcp

Hydrology Studio v 3.0.0.44 (Rainfall totals in Inches)

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active					✔				
SCS Storms	**> SCS Dimensionless Storms**								
SCS 6hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
Type I, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type IA, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type II, 24-hr	✔	1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type II FL, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type III, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Synthetic Storms	**> IDF-Based Synthetic Storms**								
1-hr		0	1.85	0	2.31	2.64	3.10	3.47	3.83
2-hr		0	2.24	0	2.90	3.36	4.01	4.51	5.01
3-hr		0	2.48	0	3.27	3.82	4.60	5.20	5.79
6-hr		0	2.89	0	3.96	4.70	5.73	6.53	7.32
12-hr		0	3.33	0	4.75	5.73	7.08	8.13	9.17
24-hr		0	3.82	0	5.66	6.94	8.70	10.07	11.42
Huff Distribution	**> 1st Quartile (0 to 6 hrs)**								
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
Huff Distribution	**> 2nd Quartile (>6 to 12 hrs)**								
8-hr		0	0	0	0	0	0	0	0
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
Huff Distribution	**> 3rd Quartile (>12 to 24 hrs)**								
18-hr		0	0	0	0	0	0	0	0
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Custom Storms	**> Custom Storm Distributions**								
Colorado Springs		0	0	0	0	0	0	0	0
My Custom Storm 2		0	0	0	0	0	0	0	0
My Custom Storm 3		0	0	0	0	0	0	0	0
My Custom Storm 4		0	0	0	0	0	0	0	0
My Custom Storm 5		0	0	0	0	0	0	0	0
My Custom Storm 6		0	0	0	0	0	0	0	0
My Custom Storm 7		0	0	0	0	0	0	0	0
My Custom Storm 8		0	0	0	0	0	0	0	0
My Custom Storm 9		0	0	0	0	0	0	0	0
My Custom Storm 10		0	0	0	0	0	0	0	0

Precipitation Report Cont'd

Precipitation filename: ColoradoSpringsCO.pcp

Rainfall totals in Inches

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active					✔				
Huff Indiana	**> Indianapolis**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> Evansville**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> Fort Wayne**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> South Bend**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21

Precipitation Report Cont'd

Precipitation filename: ColoradoSpringsCO.pcp

Rainfall totals in Inches

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active					✔				
NRCS Storms	**> NRCS Dimensionless Storms**								
NRCS MSE1, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE2, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE3, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE4, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE5, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE6, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-A, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-B, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-C, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-D, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-A, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-B, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-C, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-D, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-1, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-2, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-3, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-4, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-5, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-6, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
FDOT Storms	**> Florida DOT Storms**								
FDOT, 1-hr		0	0	0	0	0	0	0	0
FDOT, 2-hr		0	0	0	0	0	0	0	0
FDOT, 4-hr		0	0	0	0	0	0	0	0
FDOT, 8-hr		0	0	0	0	0	0	0	0
FDOT, 24-hr		0	0	0	0	0	0	0	0
FDOT, 72-hr		0	0	0	0	0	0	0	0
SFWMD, 72-hr		0	0	0	0	0	0	0	0
Austin Storms	**> Austin Frequency Storms**								
Austin Zone 1, 24-hr		0	0	0	0	0	0	0	0
Austin Zone 2, 24-hr		0	0	0	0	0	0	0	0

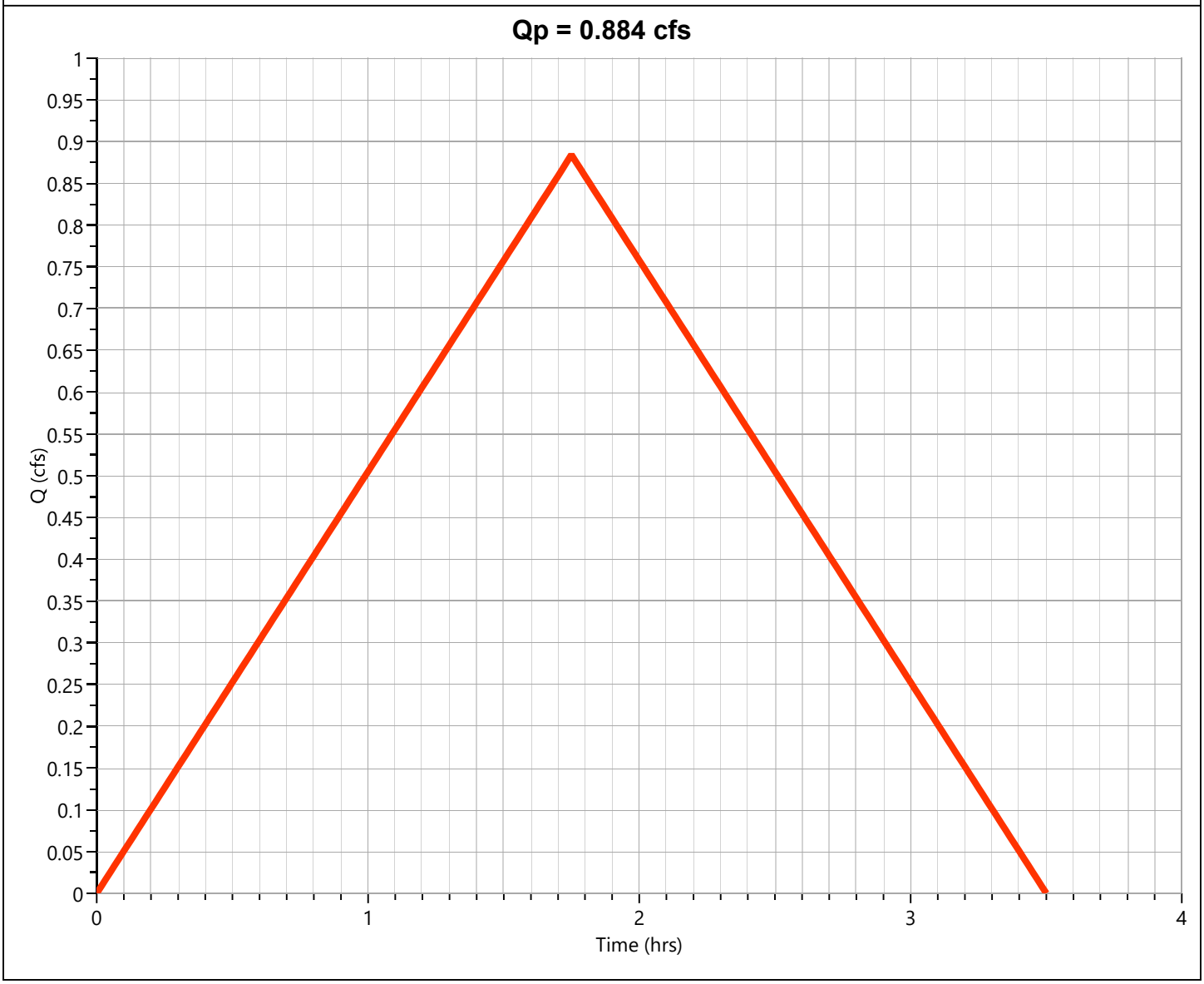
#1 NW Basin

Hyd. No. 8

Hydrograph Type	= Rational	Peak Flow	= 0.884 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.75 hrs
Time Interval	= 1 min	Runoff Volume	= 5,570 cuft
Drainage Area	= 4.273 ac	Runoff Coeff.	= 0.13*
Tc Method	= User	Time of Conc. (Tc)	= 105.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 1.59 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.107	0.73	Roof
0.223	0.59	Gravel
3.943	0.09	Land
4.273	**0.13**	



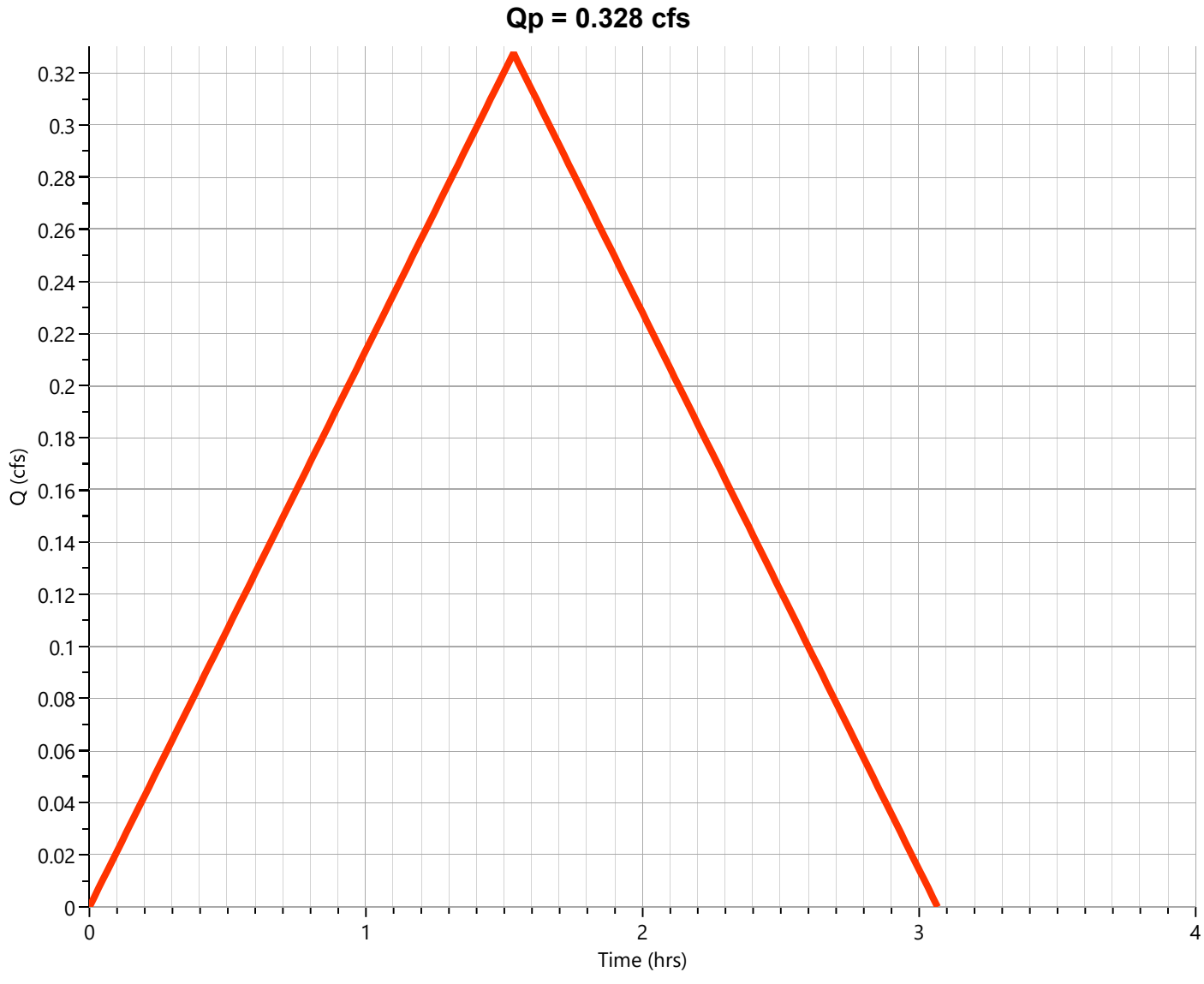
#2 NE Basin

Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 0.328 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.53 hrs
Time Interval	= 1 min	Runoff Volume	= 1,809 cuft
Drainage Area	= 1.71 ac	Runoff Coeff.	= 0.11*
Tc Method	= User	Time of Conc. (Tc)	= 92.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 1.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.048	0.73	Roof
1.662	0.09	Land
1.71	**0.11**	



Suggest using Mile High Flood District spreadsheet for pond design.

Hydrograph Report

Hydrology Studio v 3.0.0.44

File: 14010 Shire-All Basins -8july2026-5yr.hys
07-09-2026

Pond #1

How is the pond modeled? Without flows it is unclear what the design calcs are showing

Is this peak flow out or in?

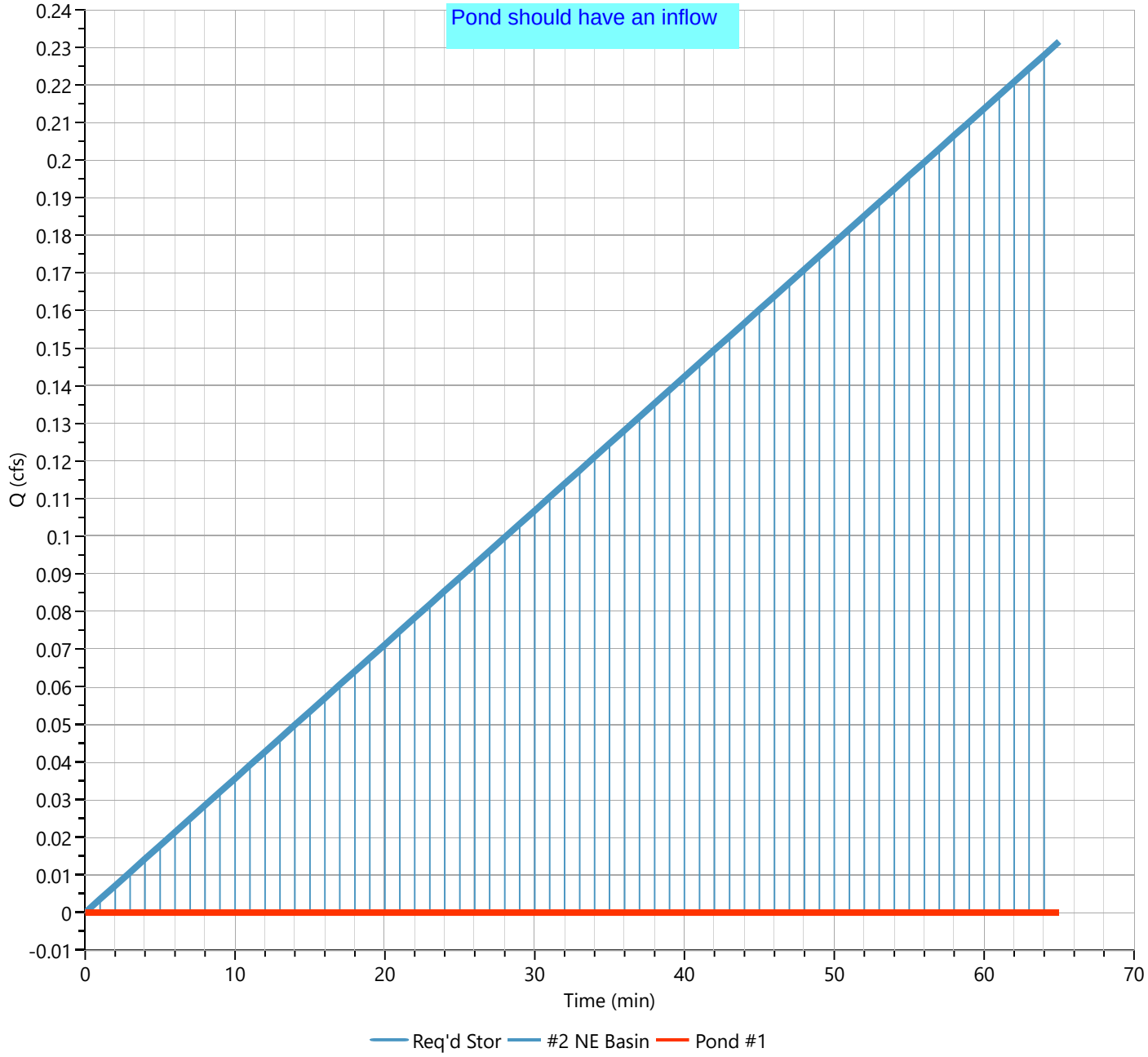
Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.07 hrs
Time Interval	= 1 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 6 - #2 NE Basin	Max. Elevation	= 7044.05 ft
Pond Name	= Pond #1 NE	Max. Storage	= 604 cuft

Pond Routing by Storage Indication Method

Qp = 0.000 cfs

Pond should have an inflow



Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

Hydrology Studio v 3.0.0.44

07-09-2026

Clarify what 100% voids means. If this table is assuming the soil volume is 100% voids that could be contributing to a higher infiltration rate.

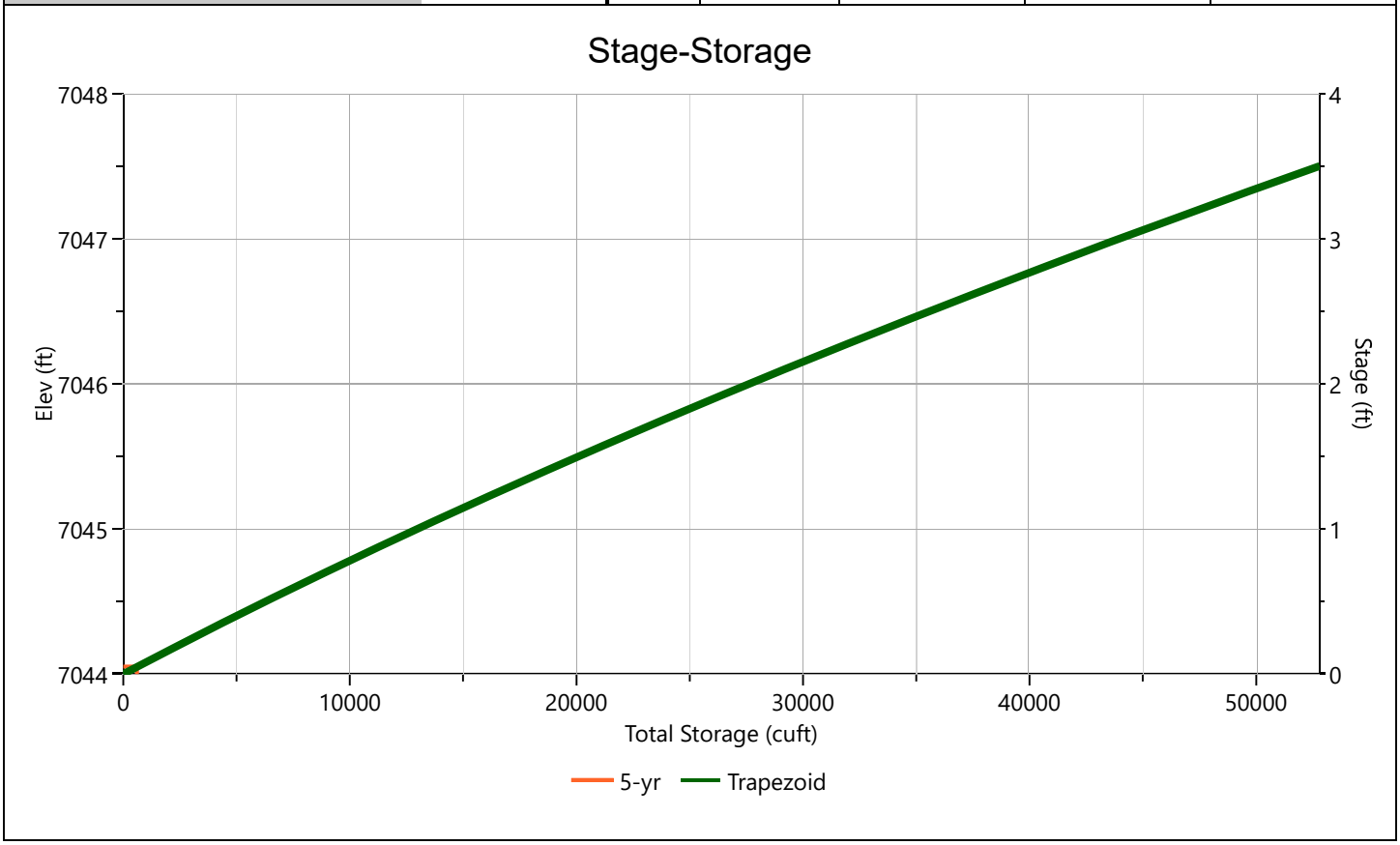
Pond #1 NE

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7044.00
Bottom Length, ft	200.00
Bottom Width, ft	61.00
Side Slope, H:1	3.00
Total Depth, ft	3.50
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7044.00	12,200	0.000	0.000
0.18	7044.18	12,475	2,159	2,159
0.35	7044.35	12,753	2,207	4,366
0.53	7044.53	13,032	2,256	6,623
0.70	7044.70	13,314	2,305	8,928
0.88	7044.88	13,598	2,355	11,283
1.05	7045.05	13,884	2,405	13,687
1.23	7045.23	14,172	2,455	16,142
1.40	7045.40	14,463	2,506	18,648
1.58	7045.58	14,756	2,557	21,204
1.75	7045.75	15,051	2,608	23,812
1.93	7045.93	15,348	2,660	26,472
2.10	7046.10	15,647	2,712	29,184
2.28	7046.28	15,949	2,765	31,949
2.45	7046.45	16,253	2,818	34,766
2.63	7046.63	16,559	2,871	37,637
2.80	7046.80	16,867	2,925	40,562
2.97	7046.98	17,177	2,979	43,541
3.15	7047.15	17,490	3,033	46,574
3.32	7047.33	17,805	3,088	49,663
3.50	7047.50	18,122	3,144	52,806



Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

Hydrology Studio v 3.0.0.44

07-09-2026

Pond #1 NE

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice		
		1	2	3
Rise, in				
Span, in				
No. Barrels				
Invert Elevation, ft				
Orifice Coefficient, Co				
Length, ft				
Barrel Slope, %				
N-Value, n				

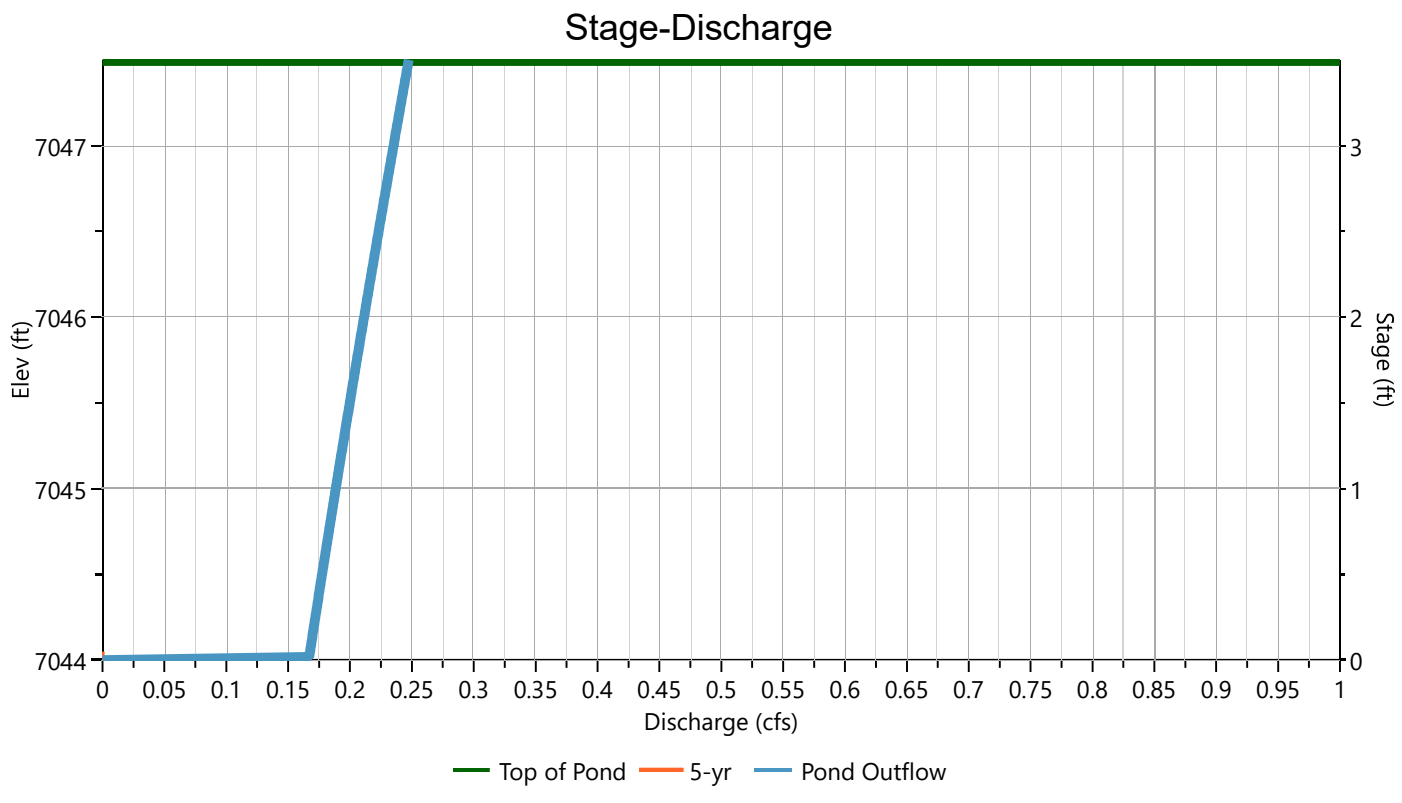
Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Weirs	Riser	Weir		
		1	2	3
Shape / Type				
Crest Elevation, ft				
Crest Length, ft				
Angle, deg				
Weir Coefficient, Cw				

Ancillary	
Exfiltration, in/hr	0.59**

Include design of 12" culvert for overflow

***Exfiltration extracted from outflow hydrograph. Rate applied to contours.*



Pond #1 NE

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7044.00	0.000										0.000		0.000
0.18	7044.18	2,159										0.170		0.170
0.35	7044.35	4,366										0.174		0.174
0.53	7044.53	6,623										0.178		0.178
0.70	7044.70	8,928										0.182		0.182
0.88	7044.88	11,283										0.186		0.186
1.05	7045.05	13,687										0.190		0.190
1.23	7045.23	16,142										0.194		0.194
1.40	7045.40	18,648										0.198		0.198
1.58	7045.58	21,204										0.202		0.202
1.75	7045.75	23,812										0.206		0.206
1.93	7045.93	26,472										0.210		0.210
2.10	7046.10	29,184										0.214		0.214
2.28	7046.28	31,949										0.218		0.218
2.45	7046.45	34,766										0.222		0.222
2.63	7046.63	37,637										0.226		0.226
2.80	7046.80	40,562										0.230		0.230
2.97	7046.98	43,541										0.235		0.235
3.15	7047.15	46,574										0.239		0.239
3.32	7047.33	49,663										0.243		0.243
3.50	7047.50	52,806										0.247		0.247

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

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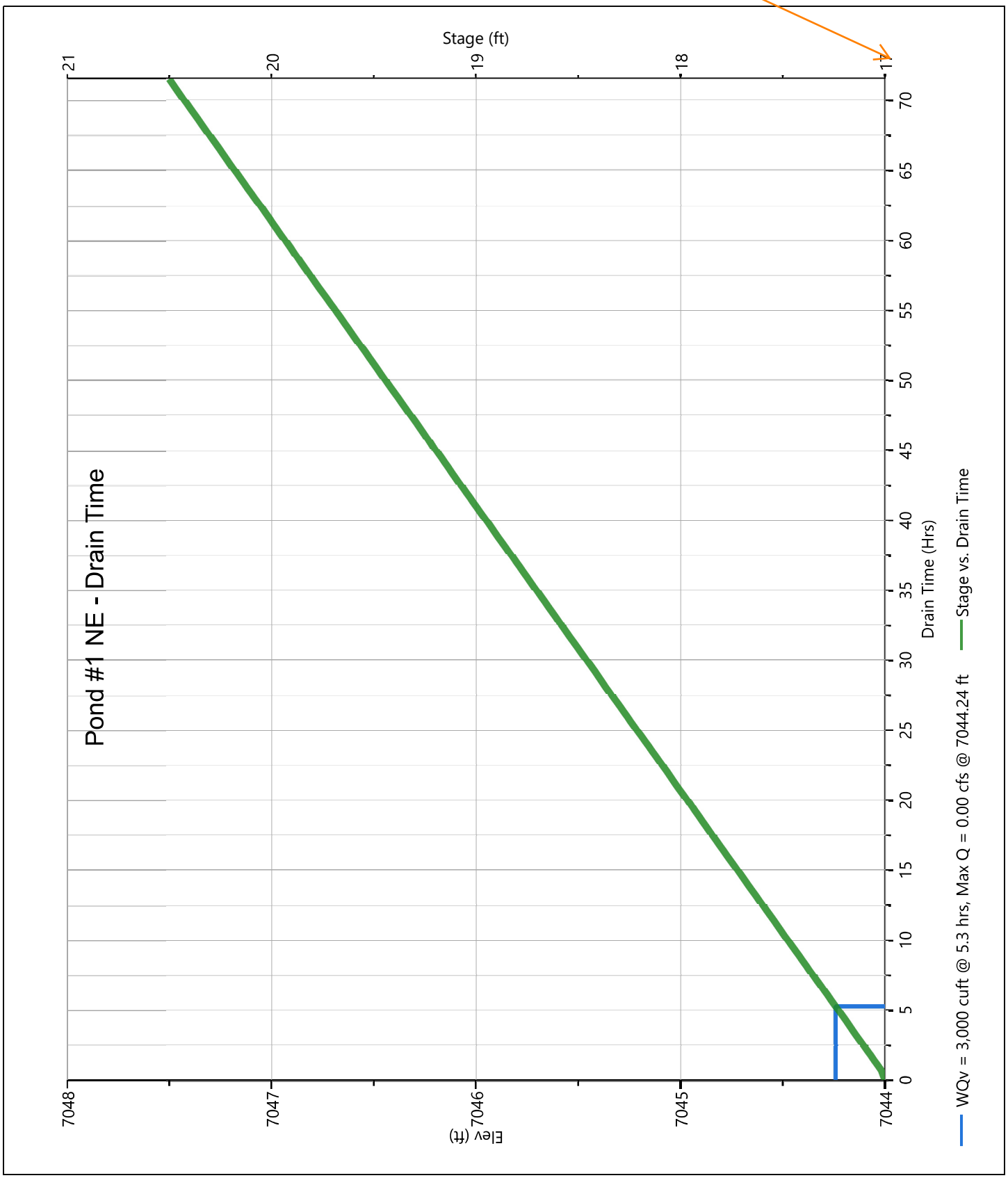
Pond #1 NE

This should be stage = 0?

Extended Detention



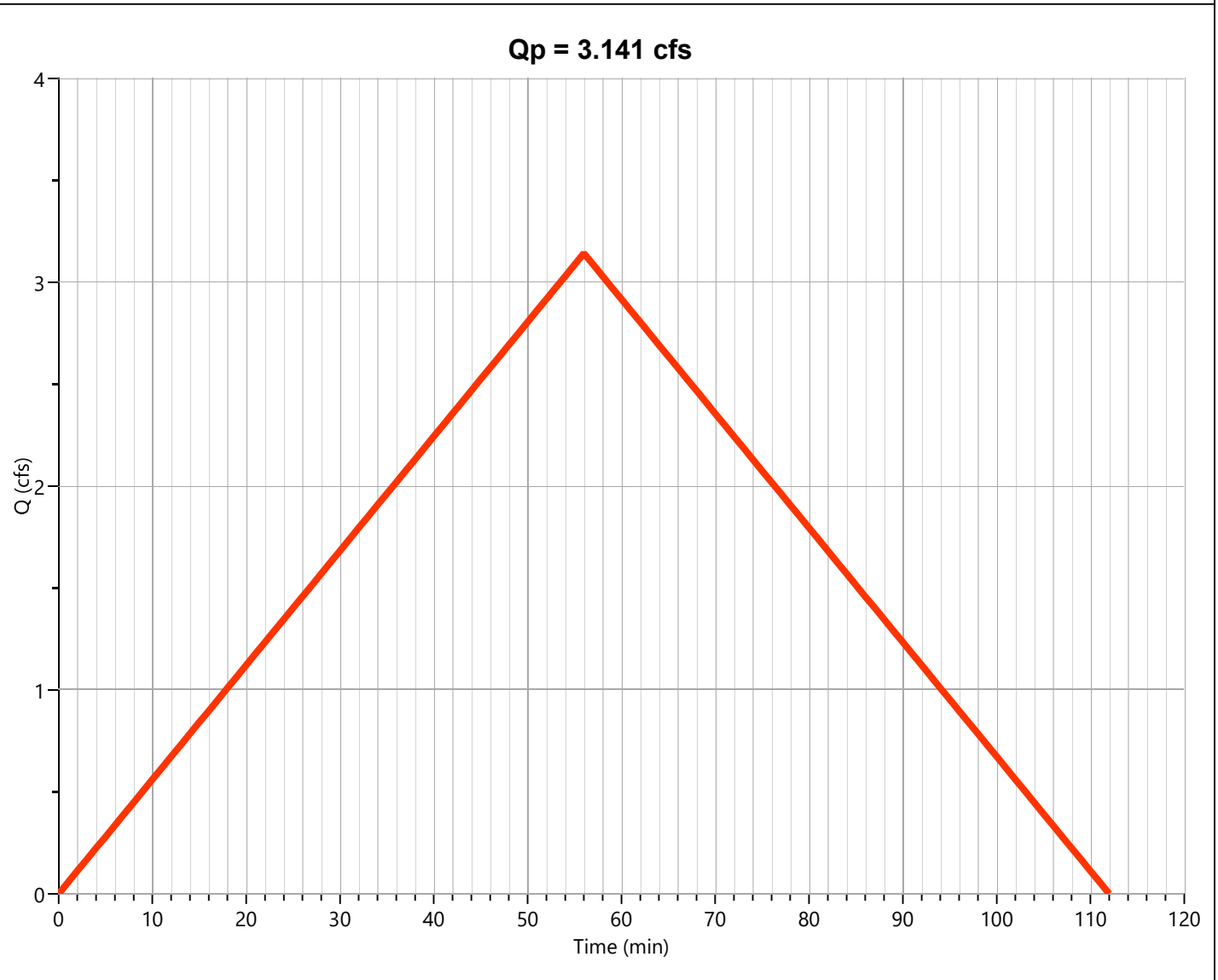
#3a Habitat Basin

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 3.141 cfs
Storm Frequency	= 5-yr	Time to Peak	= 0.93 hrs
Time Interval	= 1 min	Runoff Volume	= 10,555 cuft
Drainage Area	= 4.194 ac	Runoff Coeff.	= 0.31*
Tc Method	= User	Time of Conc. (Tc)	= 56.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 2.42 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
2.792	0.09	Ag
0.568	0.90	Concrete
0.558	0.59	Gravel
0.276	0.73	Roof
4.194	**0.31**	



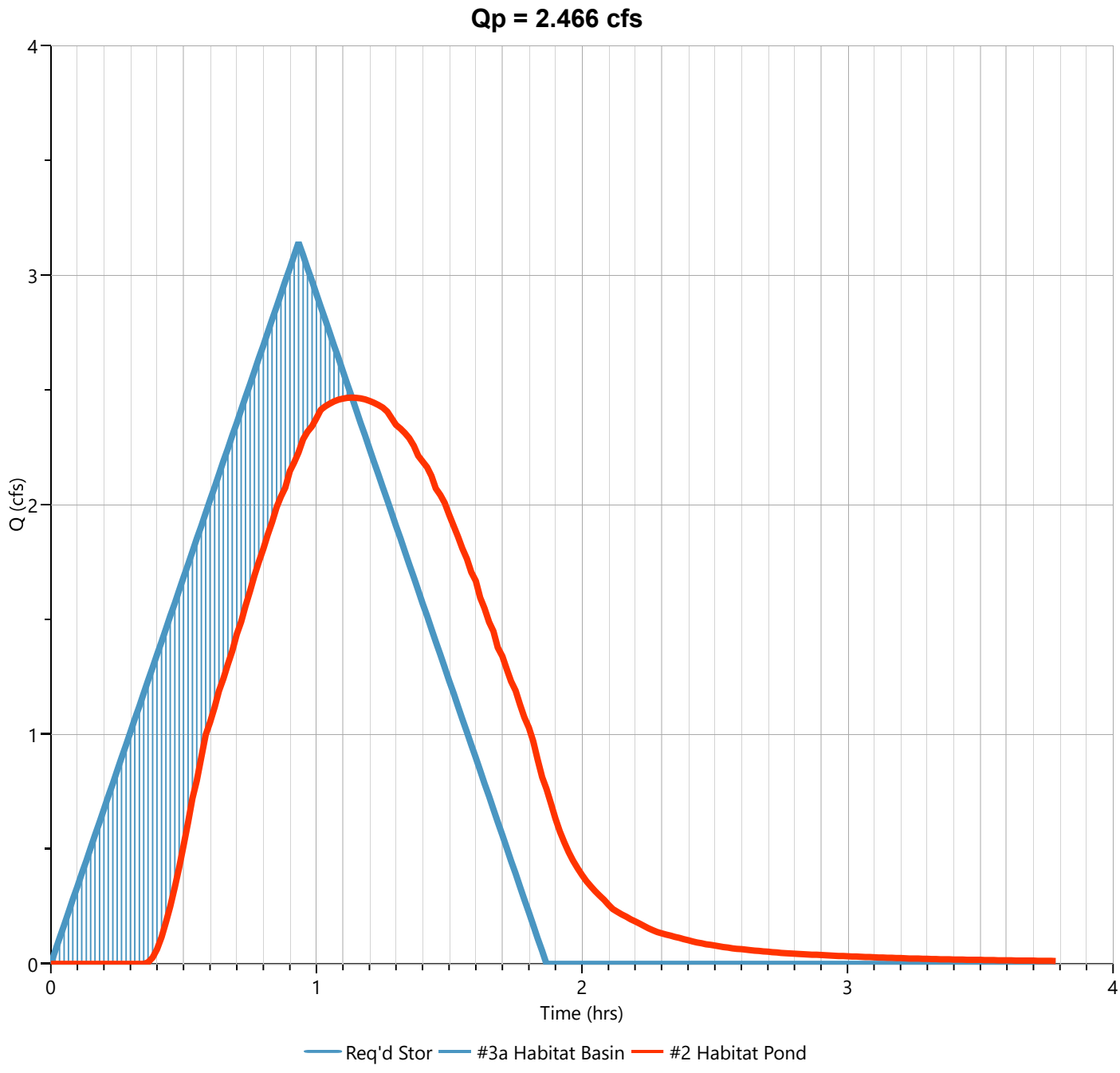
#2 Habitat Pond

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 2.466 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.13 hrs
Time Interval	= 1 min	Hydrograph Volume	= 9,777 cuft
Inflow Hydrograph	= 1 - #3a Habitat Basin	Max. Elevation	= 7037.48 ft
Pond Name	= Pond #2 Habitat	Max. Storage	= 3,177 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 19 min



Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

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07-09-2026

See previous comment

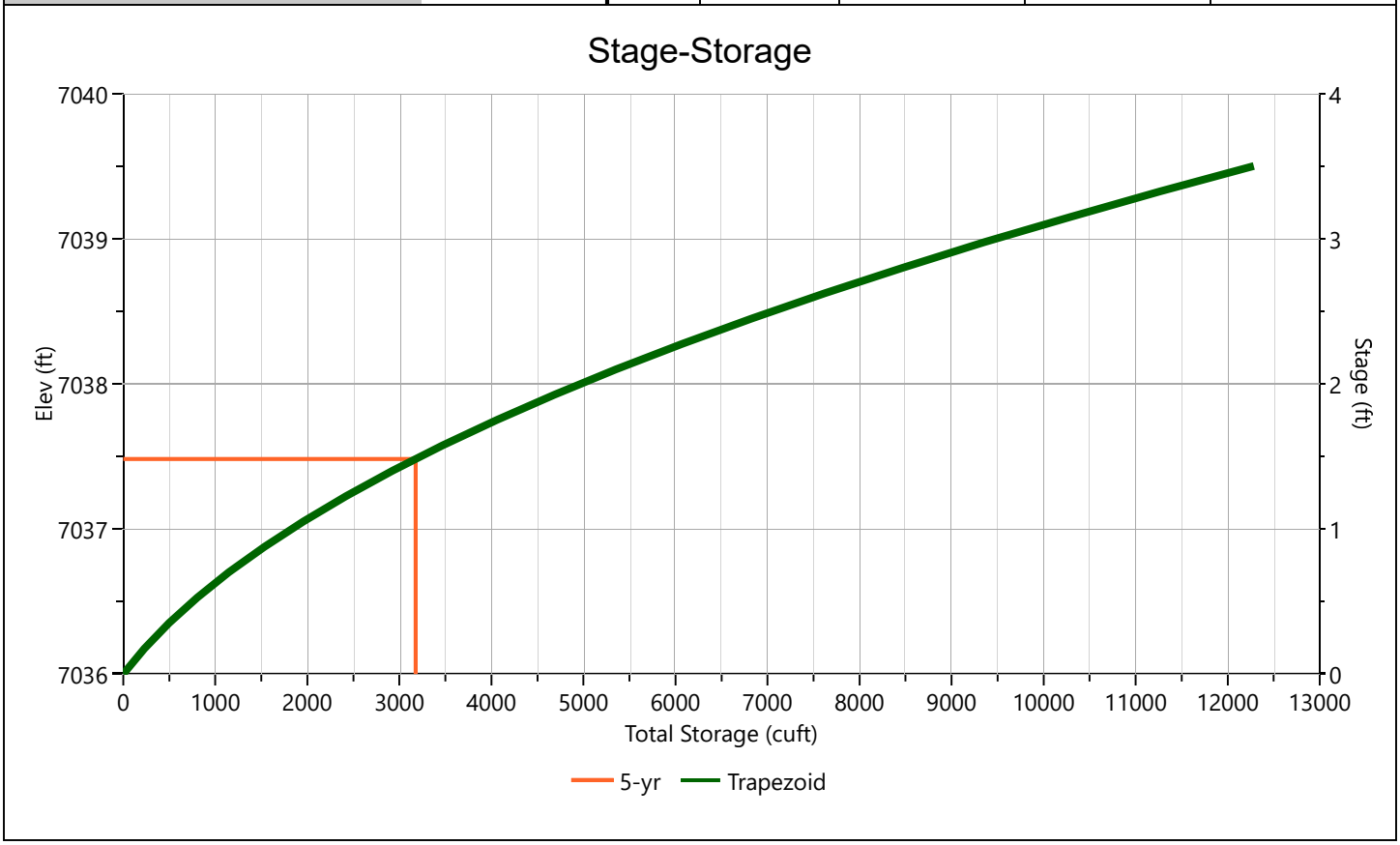
Pond #2 Habitat

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7036.00
Bottom Length, ft	200.00
Bottom Width, ft	6.00
Side Slope, H:1	3.00
Total Depth, ft	3.50
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7036.00	1,200	0.000	0.000
0.18	7036.18	1,417	229	229
0.35	7036.35	1,637	267	496
0.53	7036.53	1,859	306	802
0.70	7036.70	2,083	345	1,147
0.88	7036.88	2,309	384	1,531
1.05	7037.05	2,537	424	1,955
1.23	7037.23	2,768	464	2,419
1.40	7037.40	3,001	505	2,924
1.58	7037.58	3,236	546	3,470
1.75	7037.75	3,473	587	4,057
1.93	7037.93	3,713	629	4,686
2.10	7038.10	3,954	671	5,357
2.28	7038.28	4,198	713	6,070
2.45	7038.45	4,444	756	6,826
2.63	7038.63	4,693	799	7,625
2.80	7038.80	4,943	843	8,469
2.97	7038.98	5,196	887	9,356
3.15	7039.15	5,451	932	10,287
3.32	7039.33	5,708	976	11,263
3.50	7039.50	5,967	1,022	12,285



Pond Report

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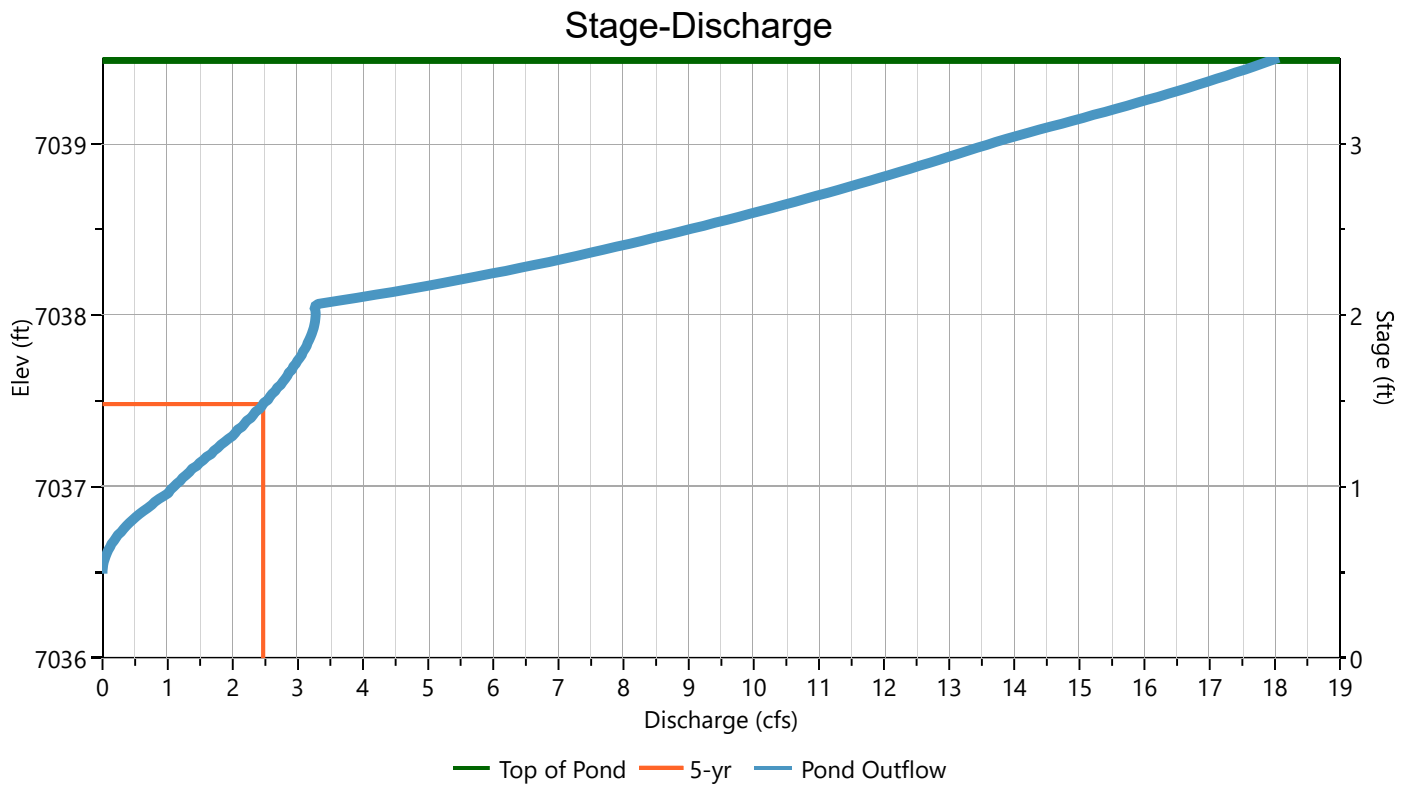
Pond #2 Habitat

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2 (m)	3		
Rise, in	24	16	16		Orifice Dia, in	
Span, in	24	16	16		No. Orifices	
No. Barrels	1	1	1		Invert Elevation, ft	
Invert Elevation, ft	7036.00	7036.50	7037.00		Height, ft	
Orifice Coefficient, Co	0.60	0.60	0.60		Orifice Coefficient, Co	
Length, ft	118					
Barrel Slope, %	.04					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1 (m)	2	3		
Shape / Type	Circular	Rectangular			Exfiltration, in/hr	
Crest Elevation, ft	7039	7038				
Crest Length, ft	8	4				
Angle, deg						
Weir Coefficient, Cw	3.3	3.3				

m = Flows through Culvert, i = Independent



Pond #2 Habitat

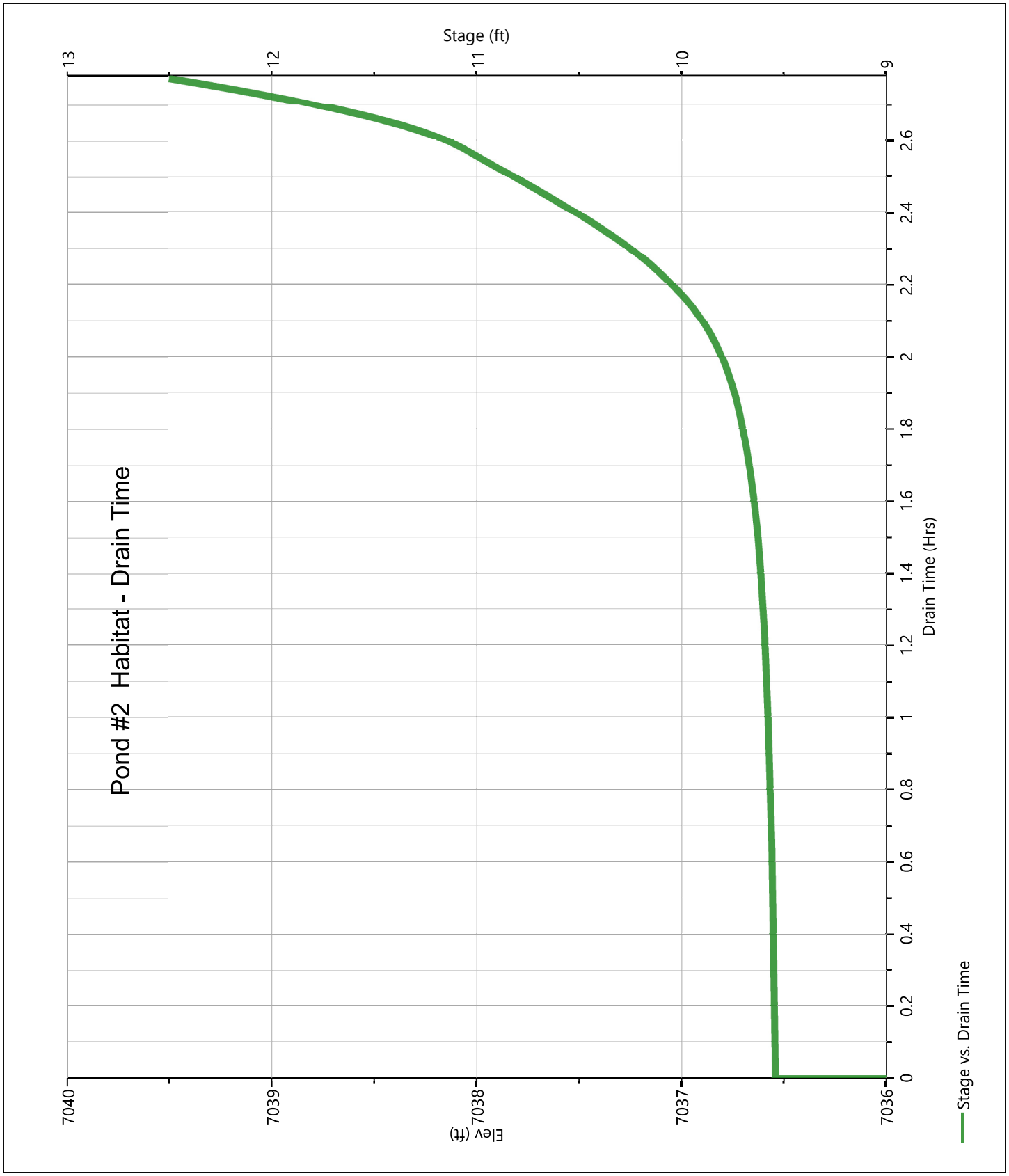
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7036.00	0.000	0.000	0.000	0.000		0.000	0.000						0.000
0.18	7036.18	229	0.000	0.000	0.000		0.000	0.000						0.000
0.35	7036.35	496	0.000	0.000	0.000		0.000	0.000						0.000
0.53	7036.53	802	0.004 oc	0.004	0.000		0.000	0.000						0.004
0.70	7036.70	1,147	0.204 oc	0.204	0.000		0.000	0.000						0.204
0.88	7036.88	1,531	0.691 oc	0.691	0.000		0.000	0.000						0.691
1.05	7037.05	1,955	1.230 oc	1.217	0.013		0.000	0.000						1.230
1.23	7037.23	2,419	1.769 oc	1.516	0.253		0.000	0.000						1.769
1.40	7037.40	2,924	2.277 oc	1.684	0.594		0.000	0.000						2.277
1.58	7037.58	3,470	2.684 oc	1.805	0.878		0.000	0.000						2.684
1.75	7037.75	4,057	3.027 oc	1.898	1.129		0.000	0.000						3.027
1.93	7037.93	4,686	3.241 oc	1.856	1.385		0.000	0.000						3.241
2.10	7038.10	5,357	3.908 oc	1.859	1.650		0.000	0.399 s						3.908
2.28	7038.28	6,070	6.415 oc	2.432	2.399		0.000	1.584 s						6.415
2.45	7038.45	6,826	8.474 oc	2.719	2.719		0.000	3.035 s						8.474
2.63	7038.63	7,625	10.29 oc	2.853	2.853		0.000	4.581 s						10.29
2.80	7038.80	8,469	11.93 oc	2.895	2.895		0.000	6.138 s						11.93
2.97	7038.98	9,356	13.43 oc	2.882	2.882		0.000	7.666 s						13.43
3.15	7039.15	10,287	15.05 oc	2.545	2.545		1.532	8.430 s						15.05
3.32	7039.33	11,263	16.67 oc	1.907	1.907		4.896	7.957 s						16.67
3.50	7039.50	12,285	18.06 oc	1.184	1.184		9.334	6.357 s						18.06

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #2 Habitat

Pond Drawdown



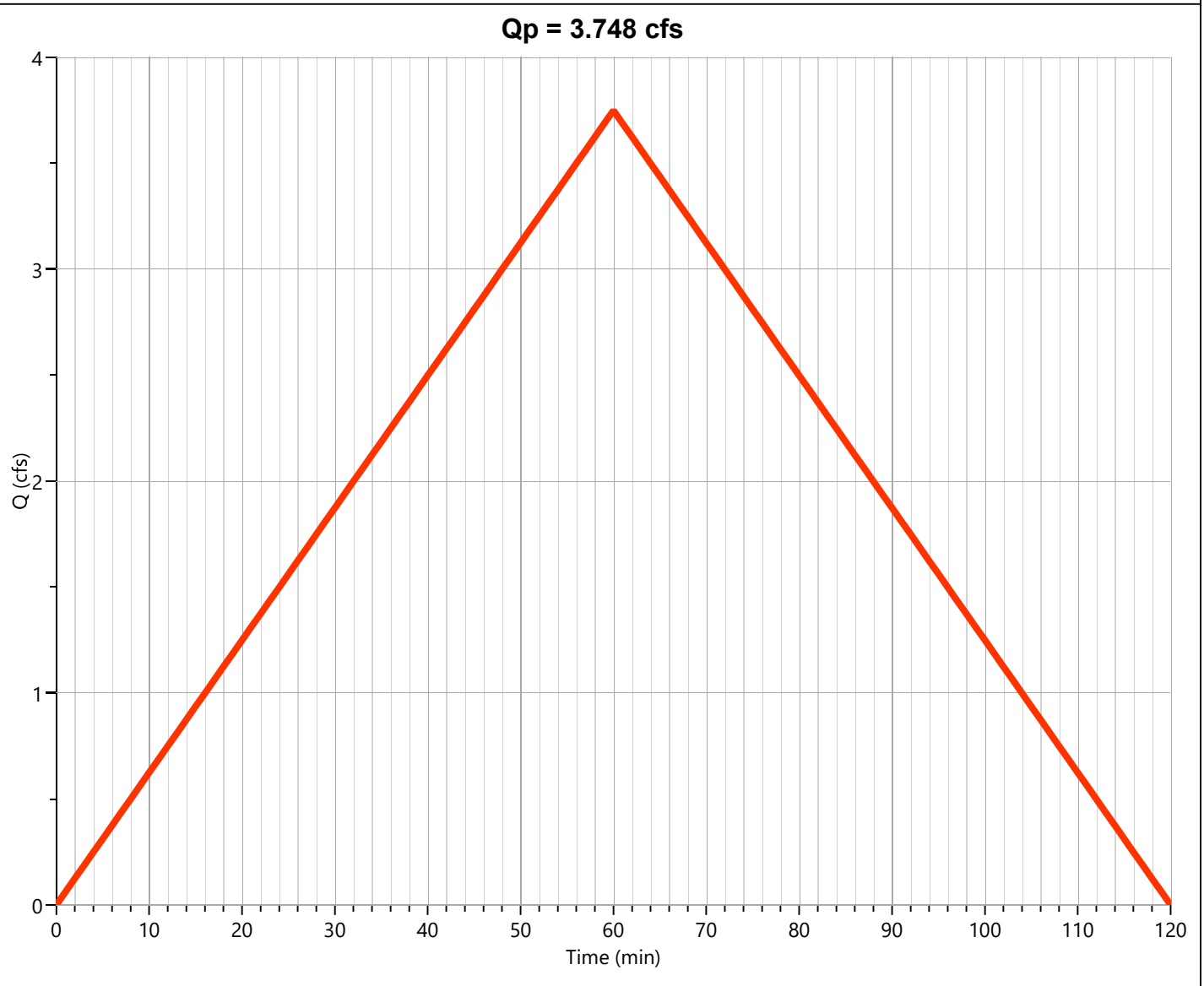
#3b Comm Basin

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 3.748 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.00 hrs
Time Interval	= 1 min	Runoff Volume	= 13,494 cuft
Drainage Area	= 3.525 ac	Runoff Coeff.	= 0.46*
Tc Method	= User	Time of Conc. (Tc)	= 60.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 2.31 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

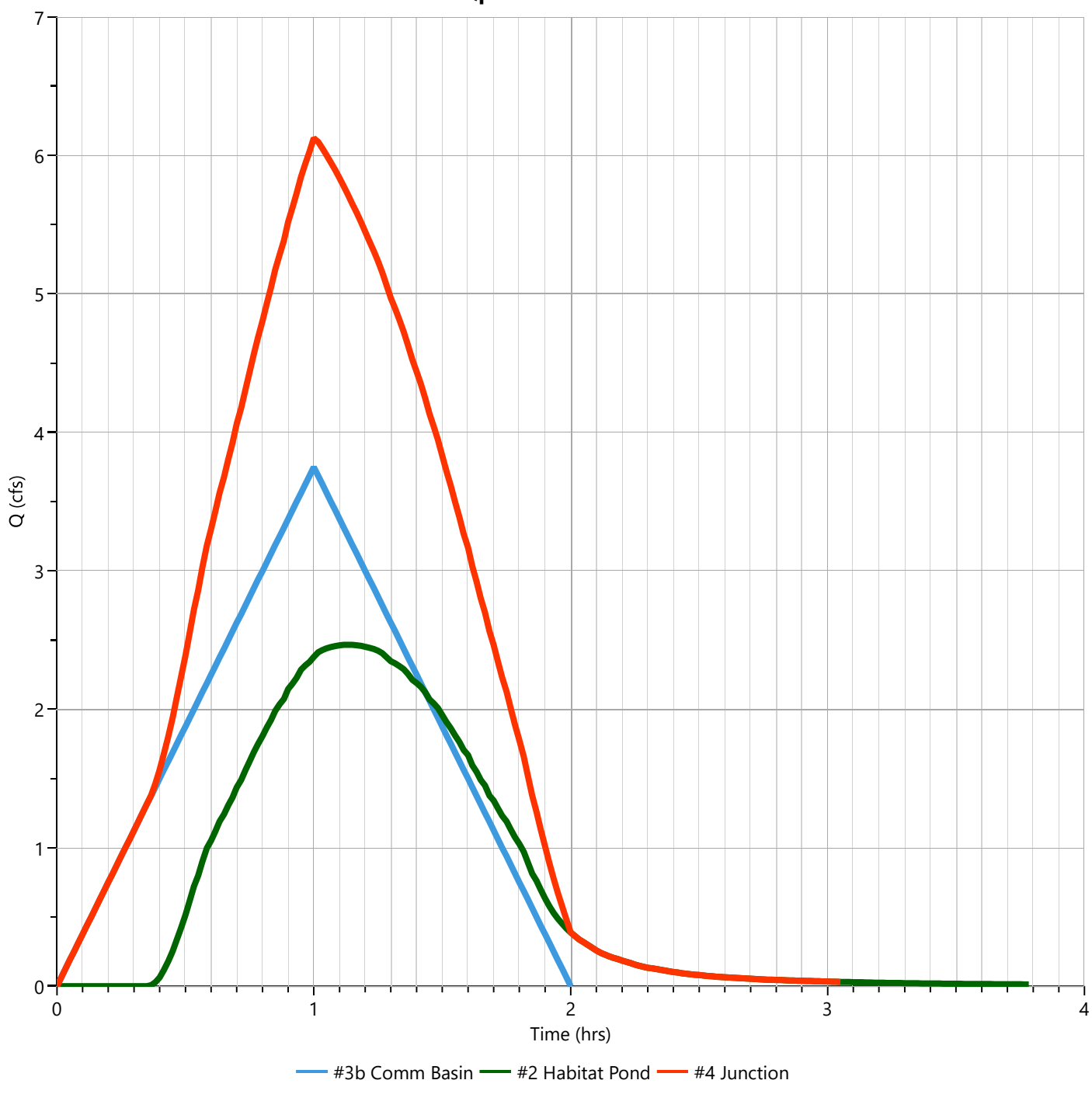
AREA (ac)	C	DESCRIPTION
2.278	0.09	Ag
0.549	0.90	Concrete
0.773	0.73	Roof
3.525	**0.46**	



#4 Junction

Hyd. No. 4

Hydrograph Type	= Junction	Peak Flow	= 6.125 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 23,271 cuft
Inflow Hydrographs	= 2	Total Contrib. Area	= 3.525 ac



#3 West Pond

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 5-yr	Time to Peak	= 0.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 4 - #4 Junction	Max. Elevation	= 7029.66 ft
Pond Name	= Pond #3 West Pond	Max. Storage	= 23,271 cuft

Pond Routing by Storage Indication Method

Qp = 0.000 cfs

There should be some flow into this pond. Please revise

Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

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07-09-2026

See previous comment

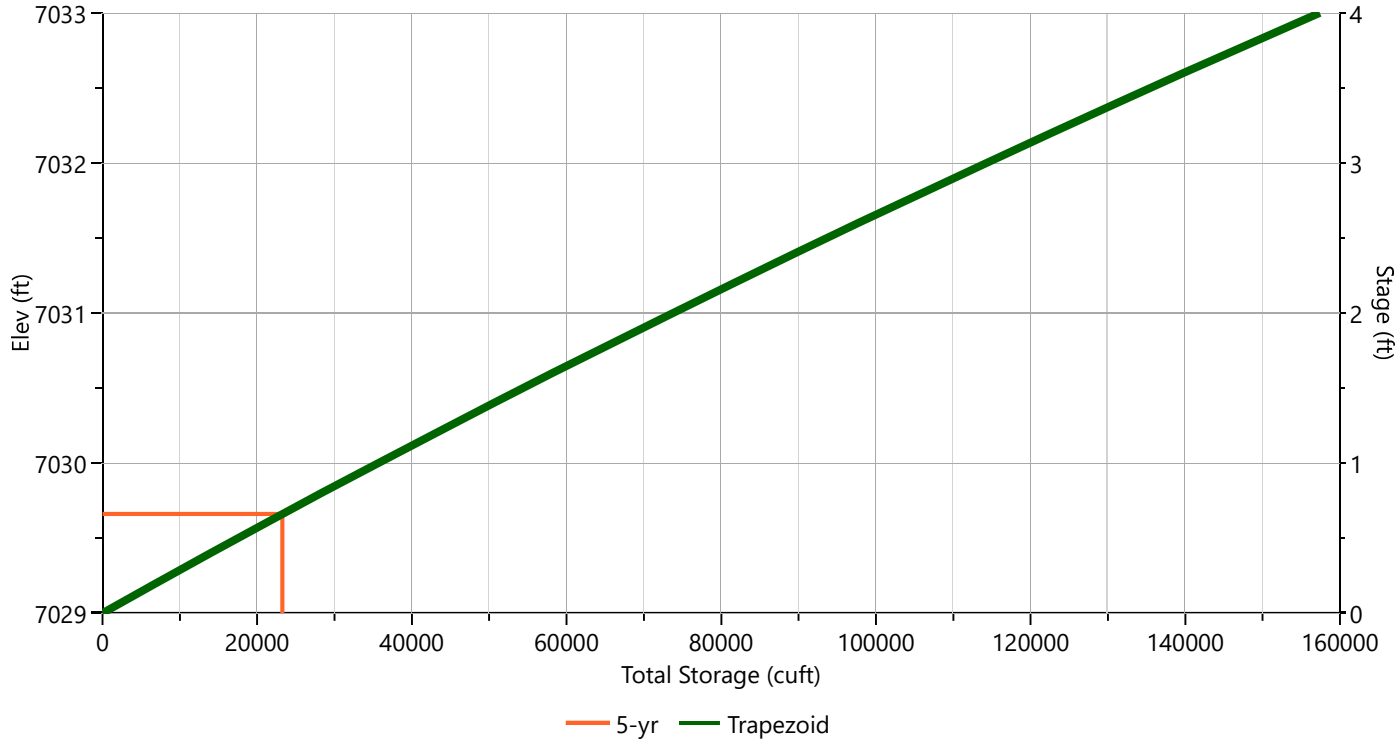
Pond #3 West Pond

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7029.00
Bottom Length, ft	250.00
Bottom Width, ft	138.00
Side Slope, H:1	3.00
Total Depth, ft	4.00
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7029.00	34,500	0.000	0.000
0.20	7029.20	34,967	6,947	6,947
0.40	7029.40	35,437	7,040	13,987
0.60	7029.60	35,910	7,135	21,122
0.80	7029.80	36,385	7,229	28,351
1.00	7030.00	36,864	7,325	35,676
1.20	7030.20	37,345	7,421	43,097
1.40	7030.40	37,830	7,517	50,614
1.60	7030.60	38,317	7,615	58,229
1.80	7030.80	38,807	7,712	65,941
2.00	7031.00	39,300	7,811	73,752
2.20	7031.20	39,796	7,910	81,662
2.40	7031.40	40,295	8,009	89,671
2.60	7031.60	40,796	8,109	97,780
2.80	7031.80	41,301	8,210	105,989
3.00	7032.00	41,808	8,311	114,300
3.20	7032.20	42,318	8,413	122,713
3.40	7032.40	42,831	8,515	131,228
3.60	7032.60	43,347	8,618	139,845
3.80	7032.80	43,866	8,721	148,567
4.00	7033.00	44,388	8,825	157,392



Pond Report

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07-09-2026

Pond #3 West Pond

Stage-Discharge

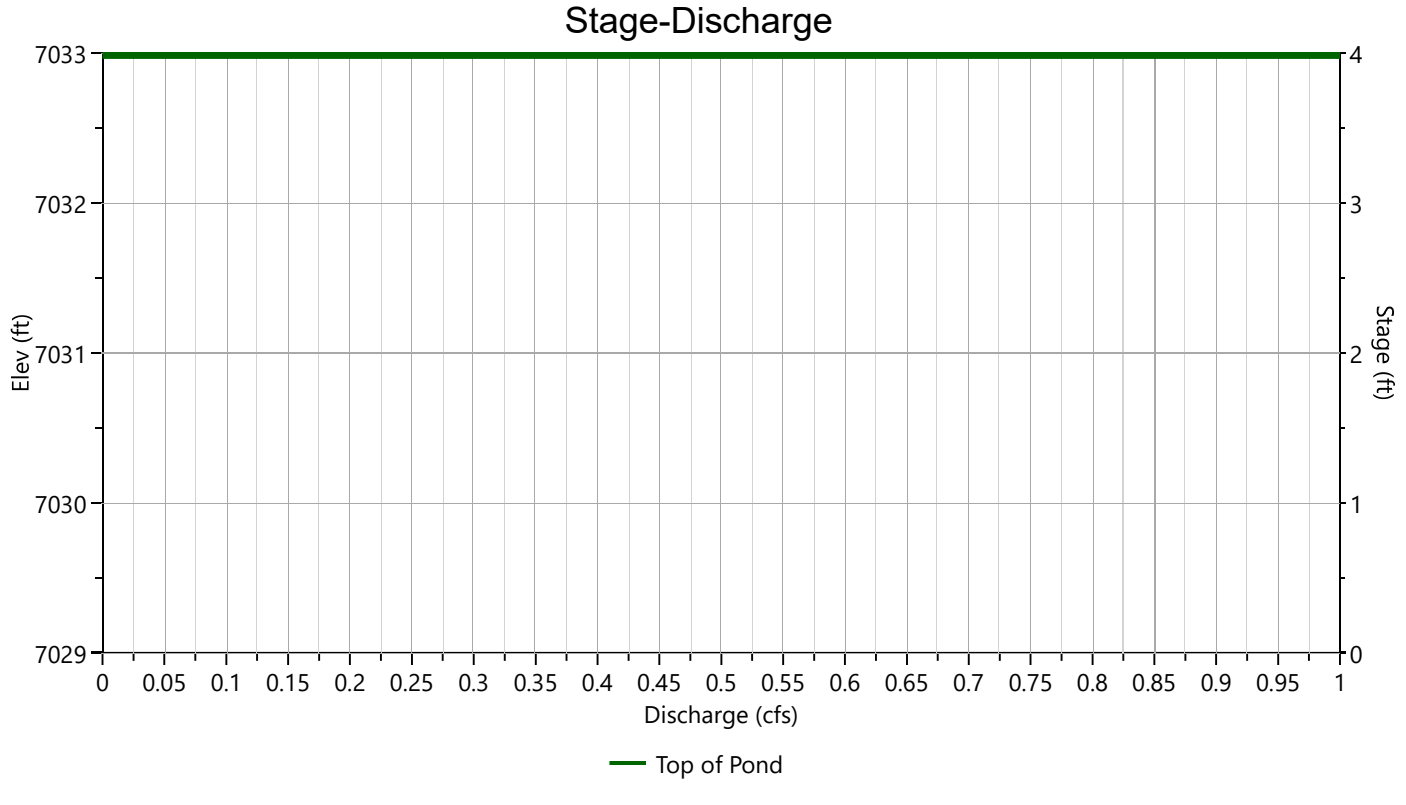
Culvert / Orifices	Cir Culvert	Orifice		
		1	2	3
Rise, in				
Span, in				
No. Barrels				
Invert Elevation, ft				
Orifice Coefficient, Co				
Length, ft				
Barrel Slope, %				
N-Value, n				

Provide some sort of outlet design for the pond

Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Weirs	Riser	Weir		
		1	2	3
Shape / Type				
Crest Elevation, ft				
Crest Length, ft				
Angle, deg				
Weir Coefficient, Cw				

Ancillary	
Exfiltration, in/hr	



Pond #3 West Pond

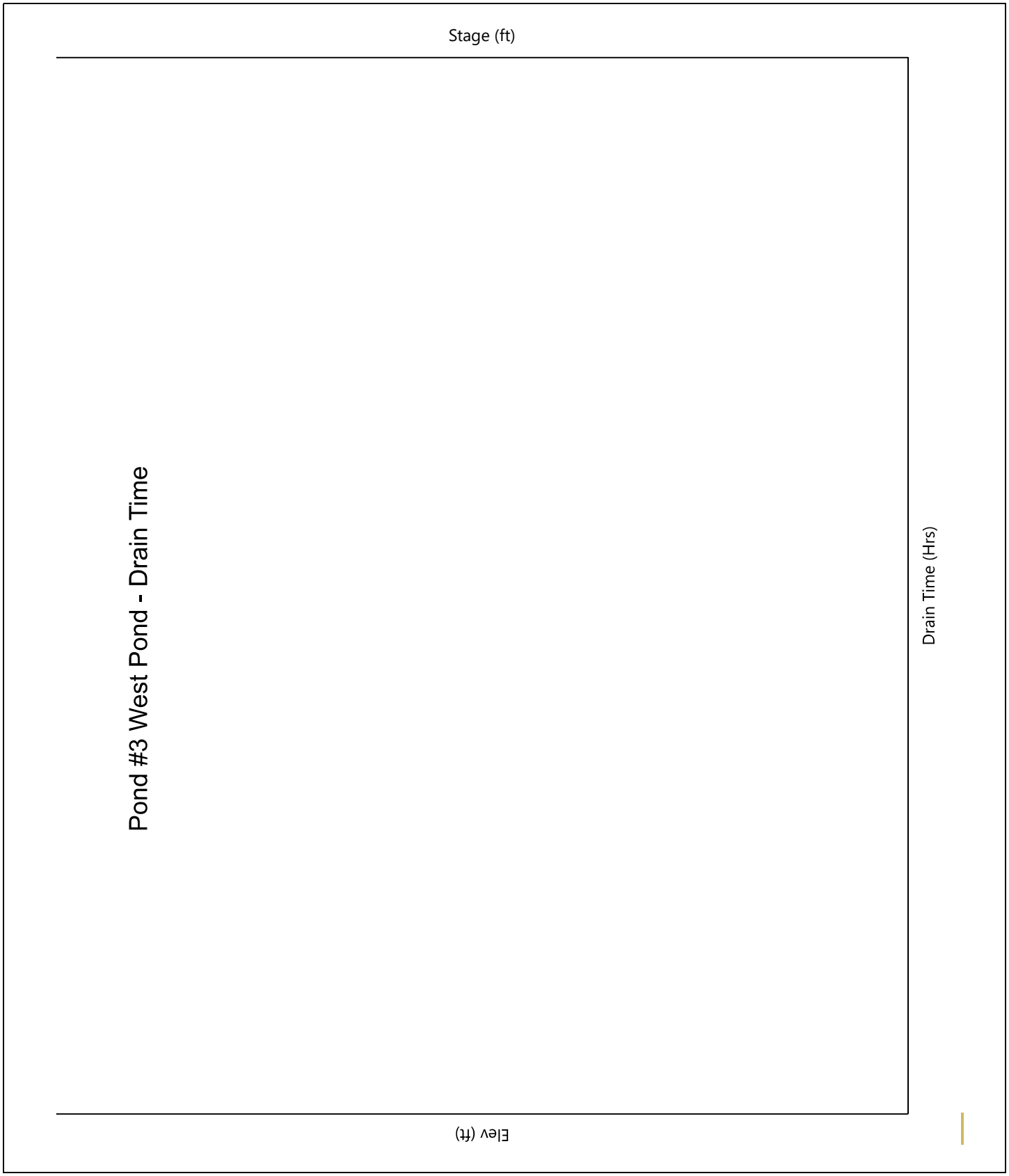
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7029.00	0.000												0.000
0.20	7029.20	6,947												0.000
0.40	7029.40	13,987												0.000
0.60	7029.60	21,122												0.000
0.80	7029.80	28,351												0.000
1.00	7030.00	35,676												0.000
1.20	7030.20	43,097												0.000
1.40	7030.40	50,614												0.000
1.60	7030.60	58,229												0.000
1.80	7030.80	65,941												0.000
2.00	7031.00	73,752												0.000
2.20	7031.20	81,662												0.000
2.40	7031.40	89,671												0.000
2.60	7031.60	97,780												0.000
2.80	7031.80	105,989												0.000
3.00	7032.00	114,300												0.000
3.20	7032.20	122,713												0.000
3.40	7032.40	131,228												0.000
3.60	7032.60	139,845												0.000
3.80	7032.80	148,567												0.000
4.00	7033.00	157,392												0.000

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #3 West Pond

Pond Drawdown



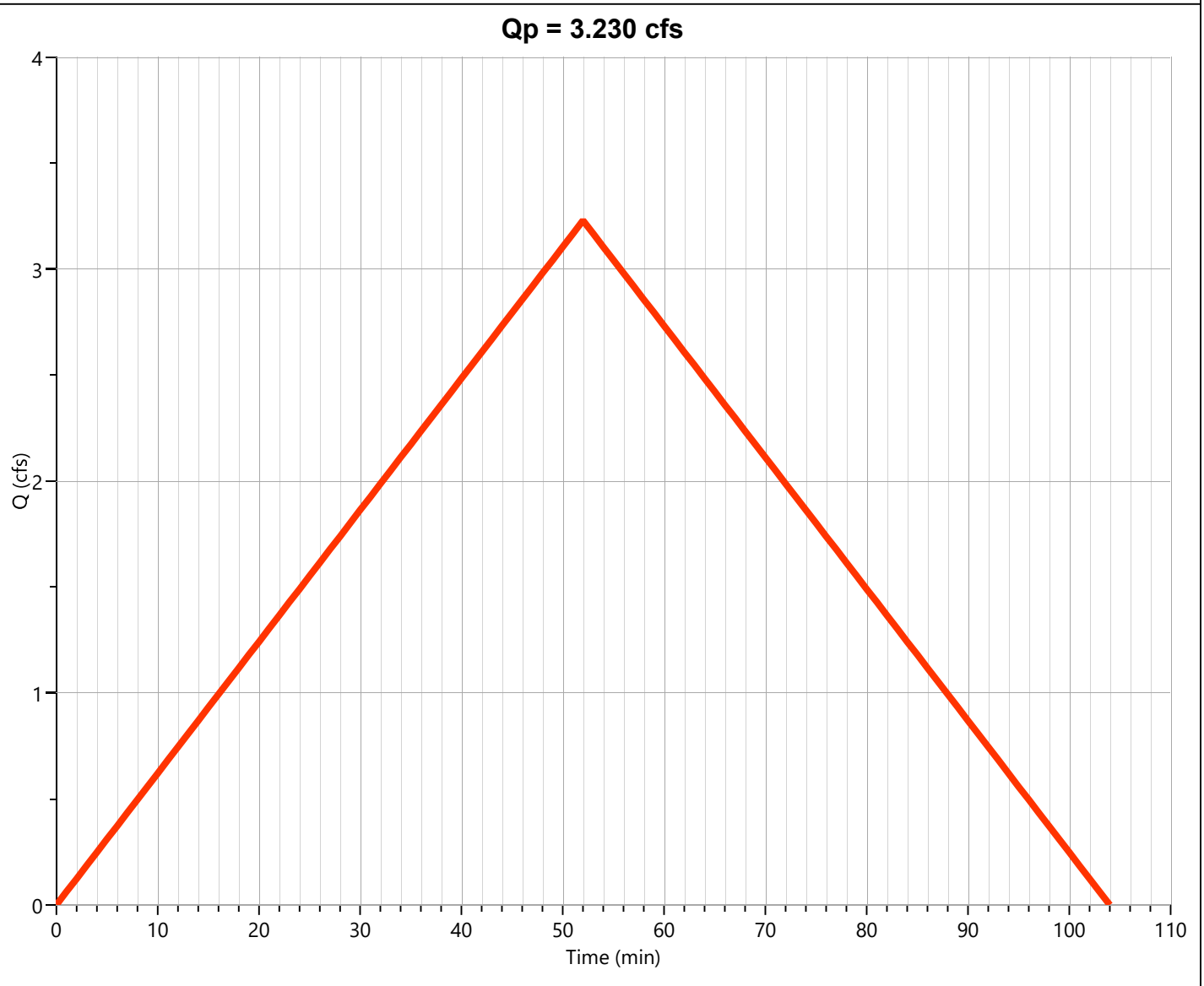
#4 East Basin

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 3.230 cfs
Storm Frequency	= 5-yr	Time to Peak	= 0.87 hrs
Time Interval	= 1 min	Runoff Volume	= 10,076 cuft
Drainage Area	= 1.822 ac	Runoff Coeff.	= 0.70*
Tc Method	= User	Time of Conc. (Tc)	= 52.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 2.53 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.057	0.73	Roof
0.988	0.90	Asphalt
0.78	0.09	Land
1.822	**0.70**	



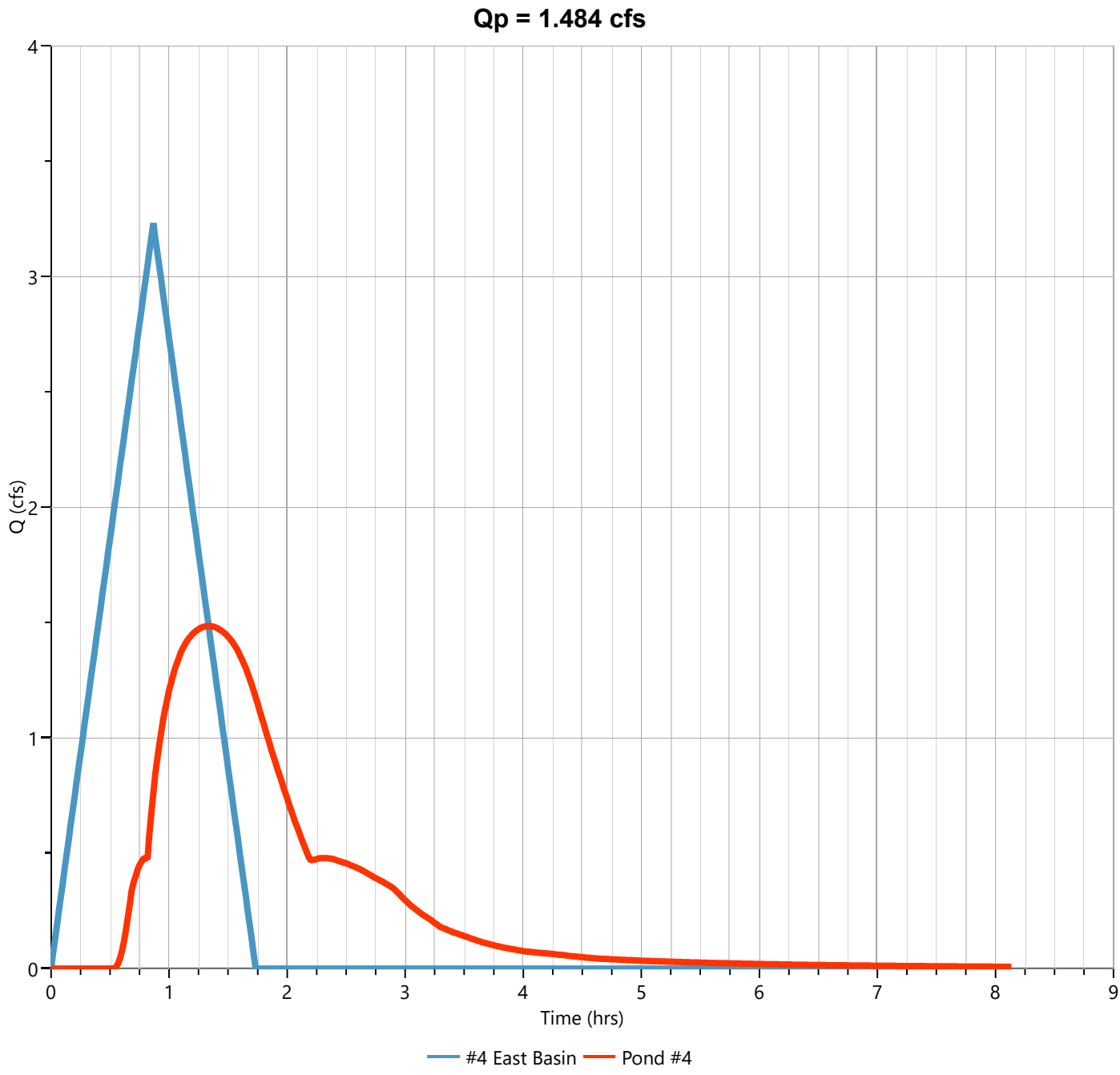
Pond #4

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 1.484 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.33 hrs
Time Interval	= 1 min	Hydrograph Volume	= 8,134 cuft
Inflow Hydrograph	= 9 - #4 East Basin	Max. Elevation	= 7028.54 ft
Pond Name	= Pond #4 South Pond	Max. Storage	= 6,449 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 60 min



Pond Report

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See previous comment

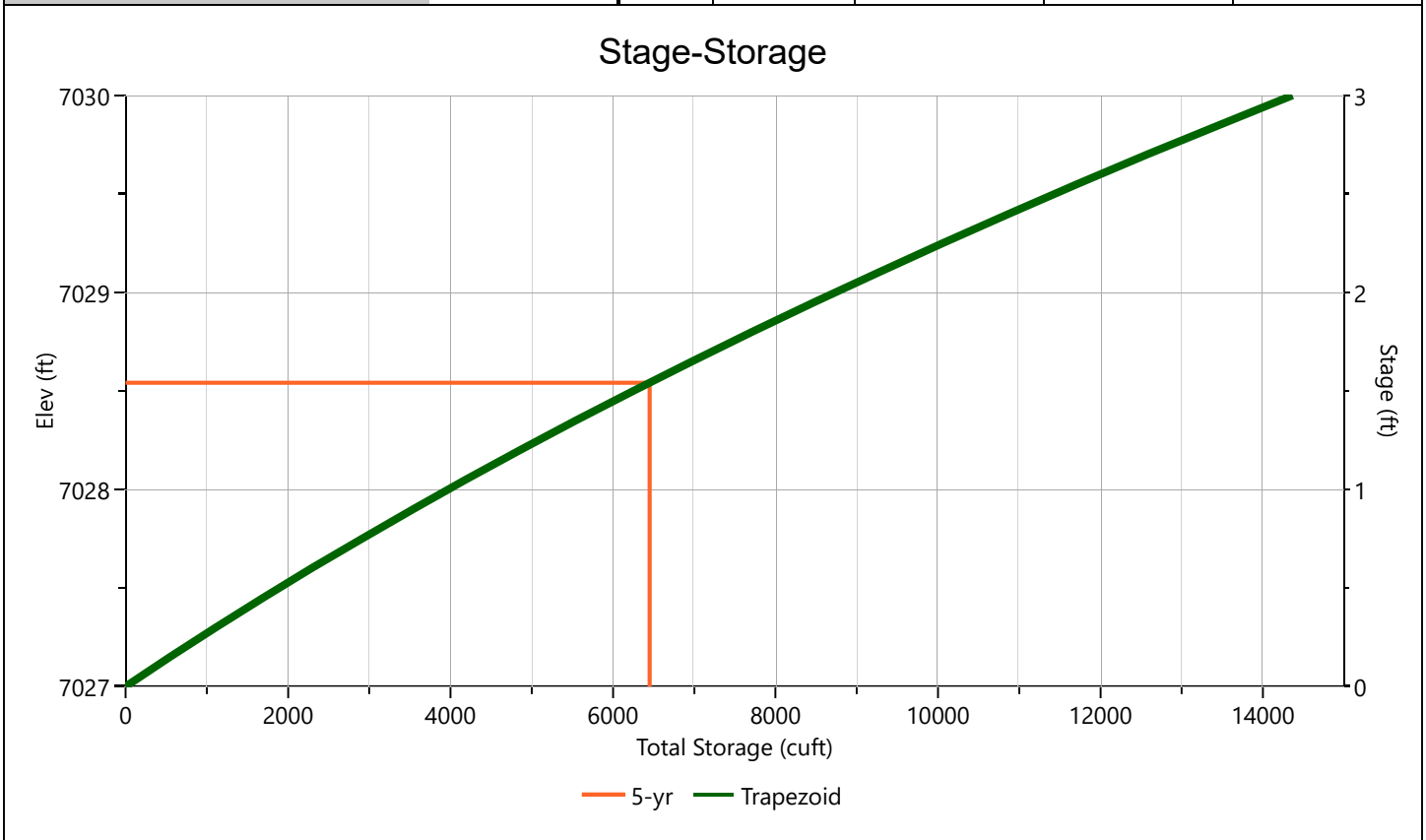
Pond #4 South Pond

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7027.00
Bottom Length, ft	60.00
Bottom Width, ft	60.00
Side Slope, H:1	3.00
Total Depth, ft	3.00
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7027.00	3,600	0.000	0.000
0.15	7027.15	3,709	548	548
0.30	7027.30	3,819	565	1,113
0.45	7027.45	3,931	581	1,694
0.60	7027.60	4,045	598	2,292
0.75	7027.75	4,160	615	2,908
0.90	7027.90	4,277	633	3,540
1.05	7028.05	4,396	650	4,191
1.20	7028.20	4,516	668	4,859
1.35	7028.35	4,638	686	5,546
1.50	7028.50	4,761	705	6,250
1.65	7028.65	4,886	724	6,974
1.80	7028.80	5,013	742	7,716
1.95	7028.95	5,141	761	8,478
2.10	7029.10	5,271	781	9,259
2.25	7029.25	5,402	800	10,059
2.40	7029.40	5,535	820	10,879
2.55	7029.55	5,670	840	11,720
2.70	7029.70	5,806	861	12,581
2.85	7029.85	5,944	881	13,462
3.00	7030.00	6,084	902	14,364



Pond Report

File: 14010 Shire-All Basins -8july2026-5yr.hys

Hydrology Studio v 3.0.0.44

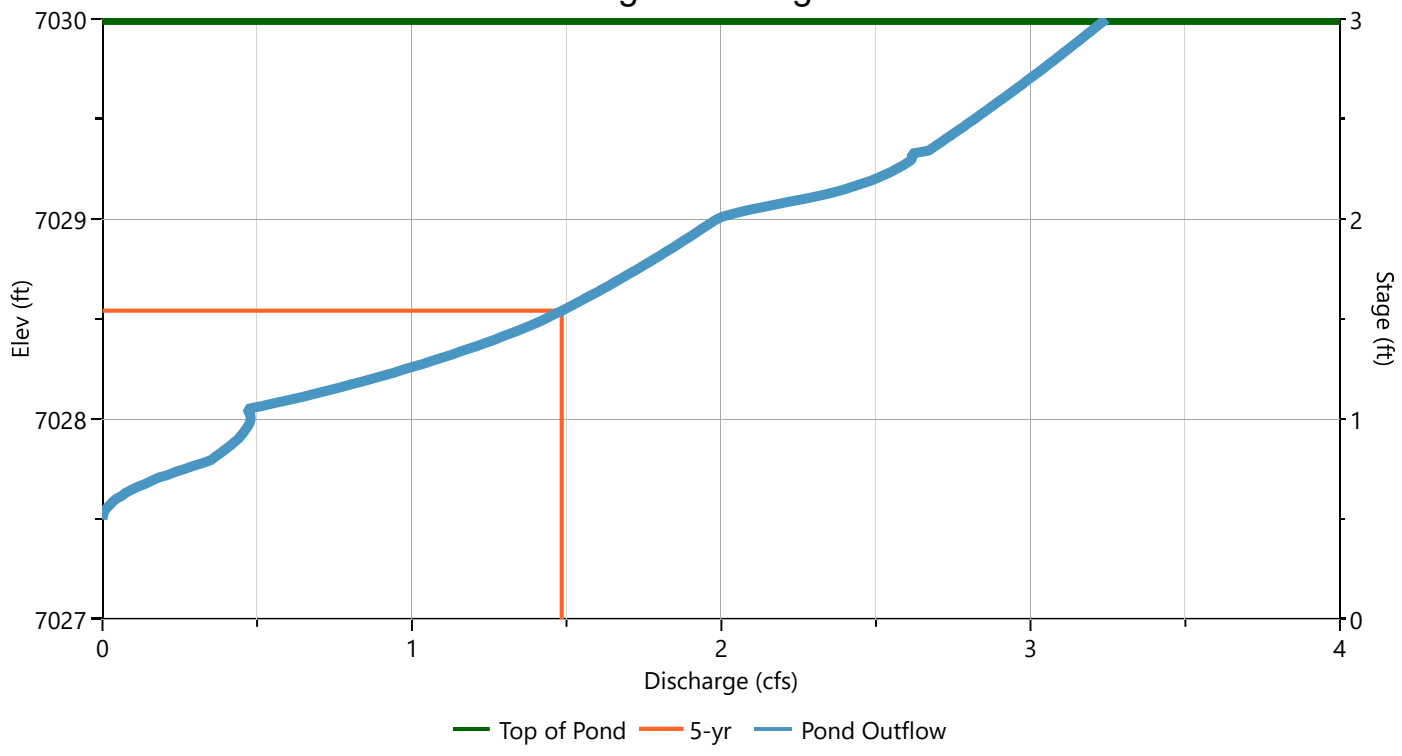
07-09-2026

Pond #4 South Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2	3		
Rise, in	12	12			Orifice Dia, in	
Span, in	12	12			No. Orifices	
No. Barrels	1	1			Invert Elevation, ft	
Invert Elevation, ft	7027.00	7027.50			Height, ft	
Orifice Coefficient, Co	0.60	0.60			Orifice Coefficient, Co	
Length, ft	200					
Barrel Slope, %	.02					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1 (m)	2	3		
Shape / Type	Circular	Rectangular			Exfiltration, in/hr	
Crest Elevation, ft	7029	7029				
Crest Length, ft	4	4				
Angle, deg						
Weir Coefficient, Cw	3.3	3.3				

m = Flows through Culvert, i = Independent



Pond #4 South Pond

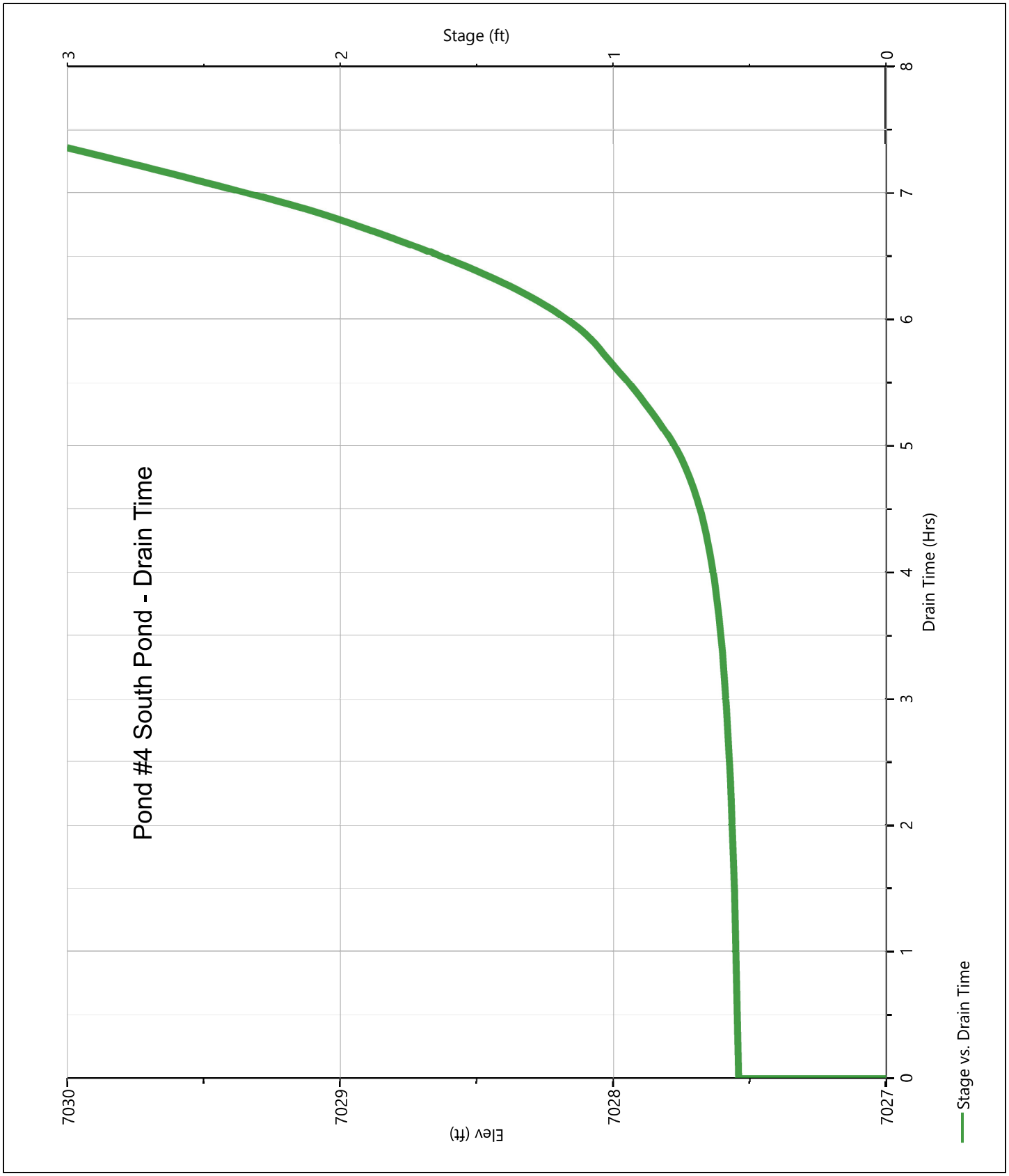
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7027.00	0.000	0.000	0.000			0.000	0.000						0.000
0.15	7027.15	548	0.000	0.000			0.000	0.000						0.000
0.30	7027.30	1,113	0.000	0.000			0.000	0.000						0.000
0.45	7027.45	1,694	0.000	0.000			0.000	0.000						0.000
0.60	7027.60	2,292	0.044 oc	0.044			0.000	0.000						0.044
0.75	7027.75	2,908	0.265 oc	0.265			0.000	0.000						0.265
0.90	7027.90	3,540	0.438 oc	0.438			0.000	0.000						0.438
1.05	7028.05	4,191	0.468 oc	0.468			0.000	0.000						0.468
1.20	7028.20	4,859	0.871 oc	0.871			0.000	0.000						0.871
1.35	7028.35	5,546	1.184 oc	1.184			0.000	0.000						1.184
1.50	7028.50	6,250	1.431 oc	1.431			0.000	0.000						1.431
1.65	7028.65	6,974	1.617 oc	1.617			0.000	0.000						1.617
1.80	7028.80	7,716	1.784 oc	1.784			0.000	0.000						1.784
1.95	7028.95	8,478	1.938 oc	1.938			0.000	0.000						1.938
2.10	7029.10	9,259	2.268 oc	1.432			0.418	0.418						2.268
2.25	7029.25	10,059	2.566 oc	0.370			1.650	0.547 s						2.566
2.40	7029.40	10,879	2.726 oc	0.000			0.000	0.000						2.726
2.55	7029.55	11,720	2.864 oc	0.000			0.000	0.000						2.864
2.70	7029.70	12,581	2.997 oc	0.000			0.000	0.000						2.997
2.85	7029.85	13,462	3.123 oc	0.000			0.000	0.000						3.123
3.00	7030.00	14,364	3.245 oc	0.000			0.000	0.000						3.245

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #4 South Pond

Pond Drawdown



South Basin

Hyd. No. 11

Hydrograph Type	= Rational	Peak Flow	= 1.474 cfs
Storm Frequency	= 5-yr	Time to Peak	= 1.18 hrs
Time Interval	= 1 min	Runoff Volume	= 6,281 cuft
Drainage Area	= 4.448 ac	Runoff Coeff.	= 0.16*
Tc Method	= User	Time of Conc. (Tc)	= 71.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 2.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.151	0.73	Roof
0.126	0.90	Concrete
0.258	0.59	Gravel
3.913	0.09	Land
4.448	**0.16**	

Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.44

File: 14010 Shire-All Basins -8july2026-100yr.hys
07-09-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	#3a Habitat Basin	8.696	0.93	29,218	----		
2	Rational	#3b Comm Basin	9.054	0.73	23,903	----		
3	Pond Route	Pond #2 Habitat Pond	7.949	1.00	28,368	1	7038.35	6,394
4	Junction	Merged	14.41	0.83	52,271	2, 3		
5	Pond Route	West Pond #3	0.000	0.00	0.000	4	7030.44	52,271
6	Rational	#2 NE Basin	2.088	1.28	9,647	----		
7	Pond Route	Pond #1	0.000	15.67	0.000	6	7044.65	8,198
8	Rational	#1 NW Basin	4.879	1.28	22,541	----		
9	Rational	#4 East Basin	6.604	0.58	13,868	----		
10	Pond Route	Pond #4	3.316	0.87	11,929	9	7028.92	8,307
11	Rational	#5 South Basin	8.703	0.93	29,243	----		

Design Storm Report

Custom Storm filename: COS Rainfall SCS Type IIA-SH.cds

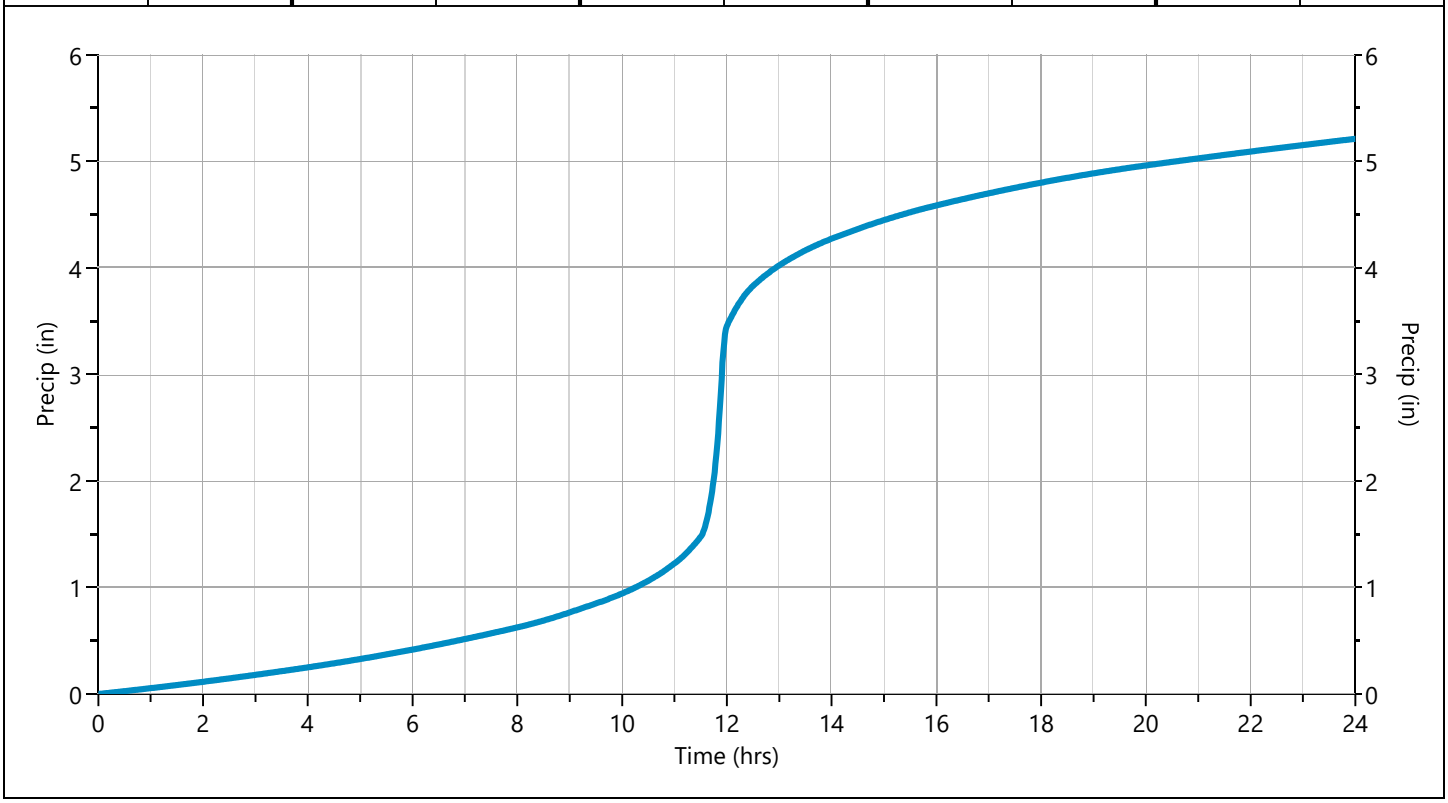
Hydrology Studio v 3.0.0.44

07-09-2026

Storm Distribution: NRCS/SCS - Type II, 24-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	✔ 100-yr	
24 hrs	1.62	1.89	0.00	2.41	2.92	3.72	4.43	5.21	

Incremental Rainfall Distribution, 100-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
11.42	0.009656	11.60	0.029269	11.78	0.076120	11.97	0.071688	12.15	0.014649
11.43	0.009795	11.62	0.032696	11.80	0.085652	11.98	0.049994	12.17	0.014319
11.45	0.009934	11.63	0.036123	11.82	0.095185	12.00	0.028300	12.18	0.013989
11.47	0.010073	11.65	0.039550	11.83	0.104717	12.02	0.017872	12.20	0.013659
11.48	0.010212	11.67	0.042977	11.85	0.114250	12.03	0.016959	12.22	0.013329
11.50	0.010351	11.68	0.046404	11.87	0.123782	12.05	0.016629	12.23	0.012999
11.52	0.012173	11.70	0.049831	11.88	0.133314	12.07	0.016299	12.25	0.012669
11.53	0.015561	11.72	0.053258	11.90	0.142847	12.08	0.015969	12.27	0.012339
11.55	0.018988	11.73	0.056685	**11.92**	**0.152379**	12.10	0.015639	12.28	0.012009
11.57	0.022415	11.75	0.060112	11.93	0.099643	12.12	0.015309	12.30	0.011679
11.58	0.025842	11.77	0.066084	11.95	0.093382	12.13	0.014979	12.32	0.011349



IDF Report

IDF filename: Colorado Springs.idf

Hydrology Studio v 3.0.0.44

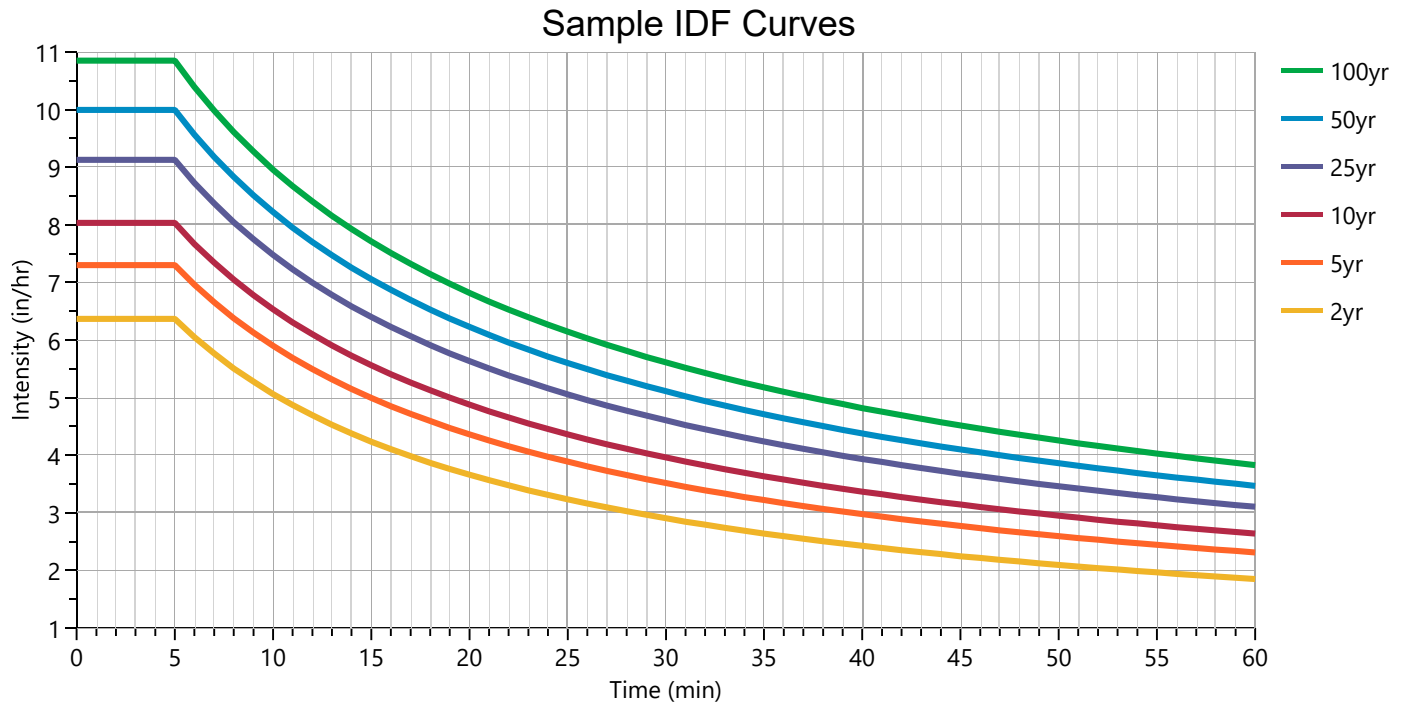
07-09-2026

Equation Coefficients	Intensity = B / (Tc + D)^E (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
B	0.0000	58.1215	0.0000	57.1446	58.8780	63.5498	67.7965	72.2003	
D	0.0000	10.3000	0.0000	10.3000	10.3000	10.4000	10.5000	10.6000	
E	0.0000	0.8106	0.0000	0.7542	0.7303	0.7097	0.6986	0.6898	

Minimum Tc = 5 minutes

Tc (min)	Intensity Values (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
Cf	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
5	0	6.37	0	7.30	8.03	9.13	9.99	10.85	
10	0	5.06	0	5.90	6.53	7.48	8.22	8.96	
15	0	4.24	0	5.00	5.56	6.40	7.06	7.71	
20	0	3.66	0	4.36	4.88	5.63	6.23	6.82	
25	0	3.23	0	3.89	4.36	5.06	5.60	6.14	
30	0	2.90	0	3.52	3.96	4.60	5.11	5.61	
35	0	2.64	0	3.22	3.64	4.24	4.71	5.18	
40	0	2.43	0	2.98	3.37	3.94	4.38	4.82	
45	0	2.25	0	2.77	3.14	3.68	4.10	4.52	
50	0	2.10	0	2.60	2.95	3.46	3.86	4.26	
55	0	1.96	0	2.44	2.78	3.27	3.65	4.03	
60	0	1.85	0	2.31	2.64	3.10	3.47	3.83	

Cf = Correction Factor applied to Rational Method runoff coefficient.



Precipitation Report

Precipitation filename: ColoradoSpringsCO.pcp

Hydrology Studio v 3.0.0.44 (Rainfall totals in Inches)

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active									✔
SCS Storms	**> SCS Dimensionless Storms**								
SCS 6hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
Type I, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type IA, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type II, 24-hr	✔	1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type II FL, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Type III, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Synthetic Storms	**> IDF-Based Synthetic Storms**								
1-hr		0	1.85	0	2.31	2.64	3.10	3.47	3.83
2-hr		0	2.24	0	2.90	3.36	4.01	4.51	5.01
3-hr		0	2.48	0	3.27	3.82	4.60	5.20	5.79
6-hr		0	2.89	0	3.96	4.70	5.73	6.53	7.32
12-hr		0	3.33	0	4.75	5.73	7.08	8.13	9.17
24-hr		0	3.82	0	5.66	6.94	8.70	10.07	11.42
Huff Distribution	**> 1st Quartile (0 to 6 hrs)**								
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
Huff Distribution	**> 2nd Quartile (>6 to 12 hrs)**								
8-hr		0	0	0	0	0	0	0	0
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
Huff Distribution	**> 3rd Quartile (>12 to 24 hrs)**								
18-hr		0	0	0	0	0	0	0	0
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Custom Storms	**> Custom Storm Distributions**								
Colorado Springs		0	0	0	0	0	0	0	0
My Custom Storm 2		0	0	0	0	0	0	0	0
My Custom Storm 3		0	0	0	0	0	0	0	0
My Custom Storm 4		0	0	0	0	0	0	0	0
My Custom Storm 5		0	0	0	0	0	0	0	0
My Custom Storm 6		0	0	0	0	0	0	0	0
My Custom Storm 7		0	0	0	0	0	0	0	0
My Custom Storm 8		0	0	0	0	0	0	0	0
My Custom Storm 9		0	0	0	0	0	0	0	0
My Custom Storm 10		0	0	0	0	0	0	0	0

Precipitation Report Cont'd

Precipitation filename: ColoradoSpringsCO.pcp

Rainfall totals in Inches

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active									✔
Huff Indiana	**> Indianapolis**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> Evansville**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> Fort Wayne**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
Huff Indiana	**> South Bend**								
30-min		0.61	0.73	0	0.95	1.15	1.44	1.68	1.93
1-hr		0.79	0.93	0	1.20	1.45	1.83	2.16	2.53
2-hr		0.97	1.13	0	1.44	1.74	2.23	2.65	3.12
3-hr		1.07	1.23	0	1.55	1.88	2.42	2.91	3.46
6-hr		1.25	1.41	0	1.77	2.15	2.79	3.38	4.05
12-hr		1.42	1.64	0	2.07	2.51	3.24	3.90	4.64
24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21

Precipitation Report Cont'd

Precipitation filename: ColoradoSpringsCO.pcp

Rainfall totals in Inches

07-09-2026

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active									✔
NRCS Storms	**> NRCS Dimensionless Storms**								
NRCS MSE1, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE2, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE3, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE4, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE5, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCS MSE6, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-A, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-B, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-C, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NOAA-D, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-A, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-B, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-C, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
NRCC-D, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-1, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-2, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-3, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-4, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-5, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
CA-6, 24-hr		1.62	1.89	0	2.41	2.92	3.72	4.43	5.21
FDOT Storms	**> Florida DOT Storms**								
FDOT, 1-hr		0	0	0	0	0	0	0	0
FDOT, 2-hr		0	0	0	0	0	0	0	0
FDOT, 4-hr		0	0	0	0	0	0	0	0
FDOT, 8-hr		0	0	0	0	0	0	0	0
FDOT, 24-hr		0	0	0	0	0	0	0	0
FDOT, 72-hr		0	0	0	0	0	0	0	0
SFWMD, 72-hr		0	0	0	0	0	0	0	0
Austin Storms	**> Austin Frequency Storms**								
Austin Zone 1, 24-hr		0	0	0	0	0	0	0	0
Austin Zone 2, 24-hr		0	0	0	0	0	0	0	0

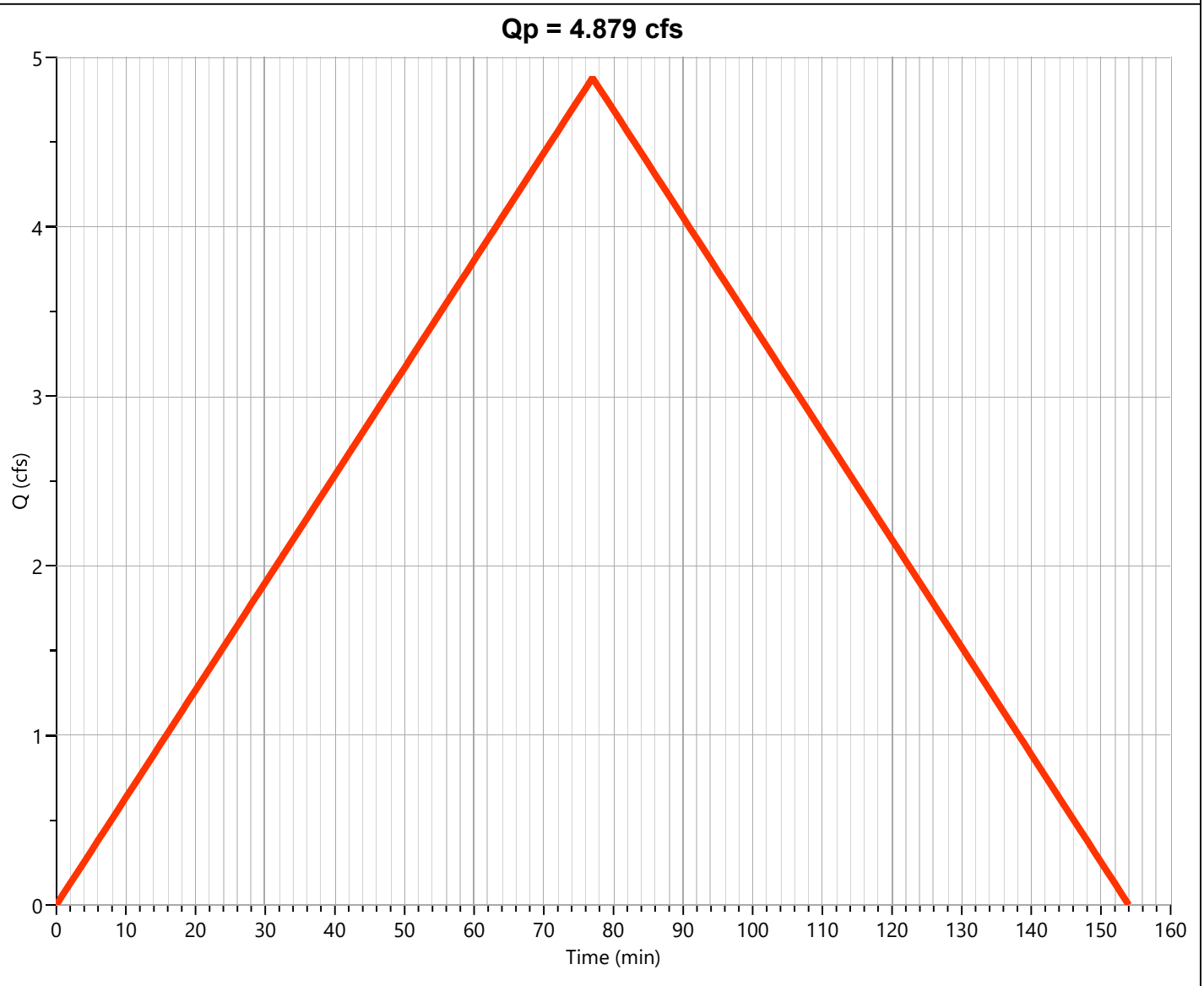
#1 NW Basin

Hyd. No. 8

Hydrograph Type	= Rational	Peak Flow	= 4.879 cfs
Storm Frequency	= 100-yr	Time to Peak	= 1.28 hrs
Time Interval	= 1 min	Runoff Volume	= 22,541 cuft
Drainage Area	= 3.438 ac	Runoff Coeff.	= 0.43*
Tc Method	= User	Time of Conc. (Tc)	= 77.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 3.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.107	0.81	Roof
0.223	0.70	Gravel
3.943	0.39	Land
3.438	**0.43**	



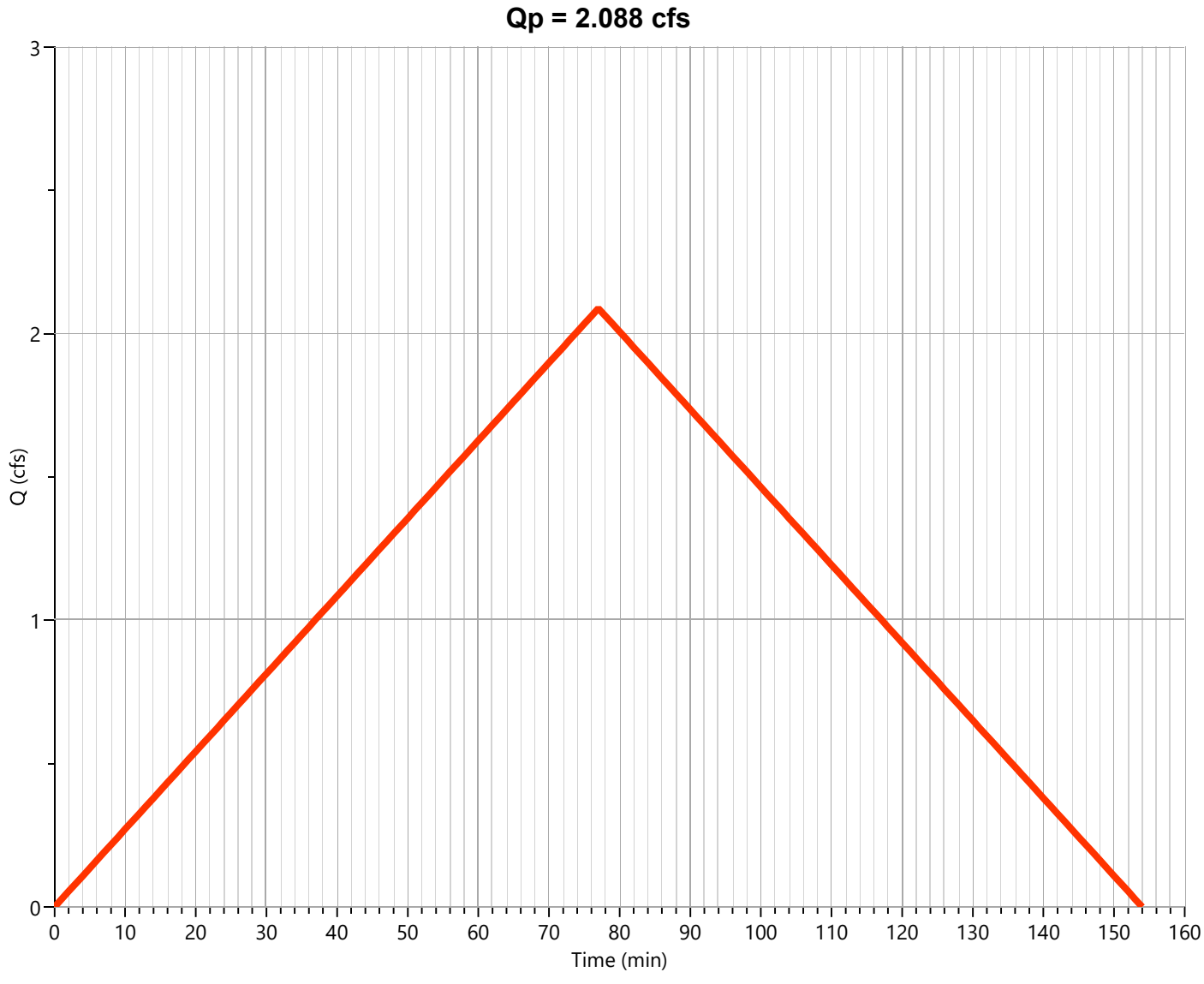
#2 NE Basin

Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 2.088 cfs
Storm Frequency	= 100-yr	Time to Peak	= 1.28 hrs
Time Interval	= 1 min	Runoff Volume	= 9,647 cuft
Drainage Area	= 1.71 ac	Runoff Coeff.	= 0.37*
Tc Method	= User	Time of Conc. (Tc)	= 77.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 3.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.048	0.81	Roof
1.662	0.36	Land
1.71	**0.37**	

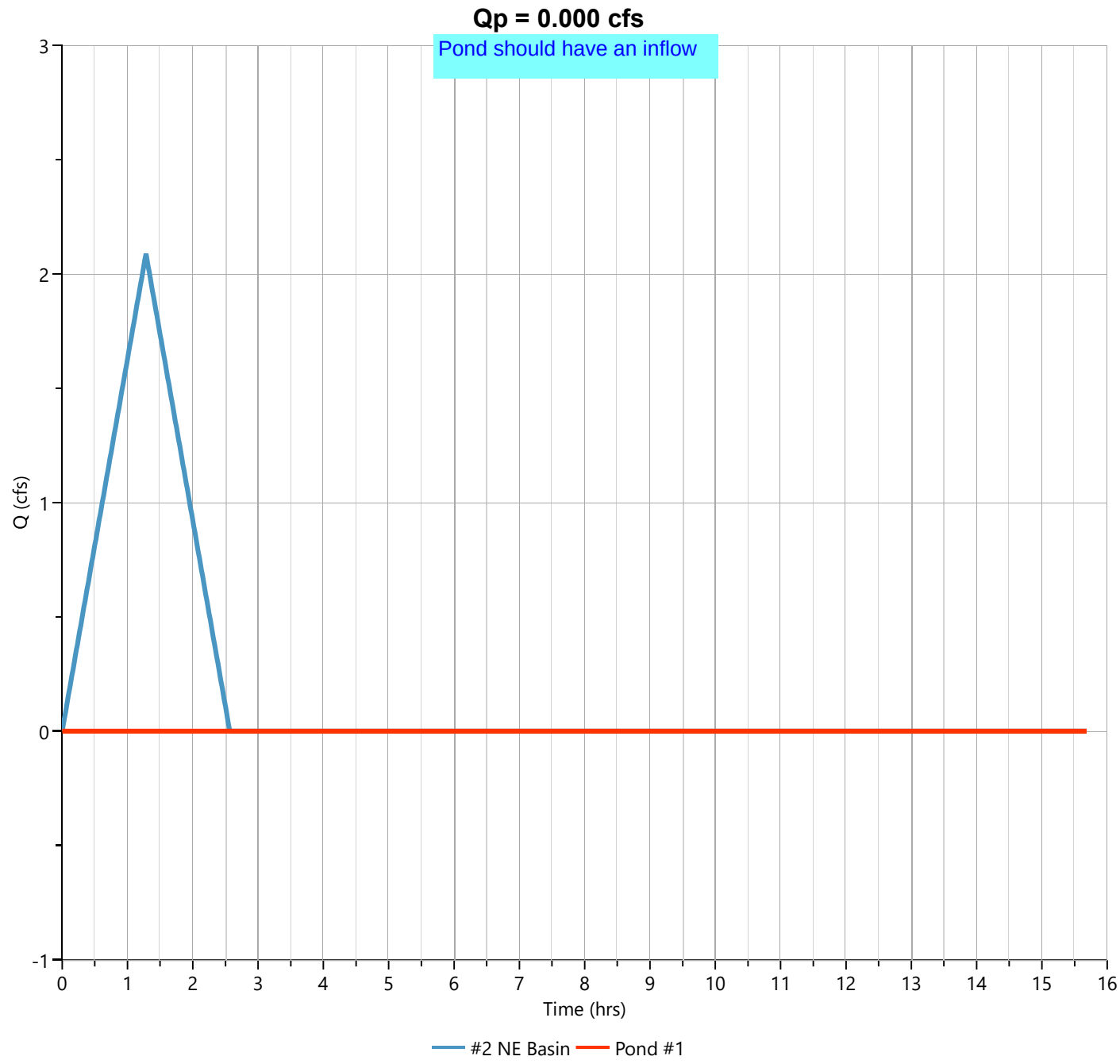


Pond #1

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 100-yr	Time to Peak	= 15.67 hrs
Time Interval	= 1 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 6 - #2 NE Basin	Max. Elevation	= 7044.65 ft
Pond Name	= Pond #1 NE	Max. Storage	= 8,198 cuft

Pond Routing by Storage Indication Method



Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

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07-09-2026

See previous comment

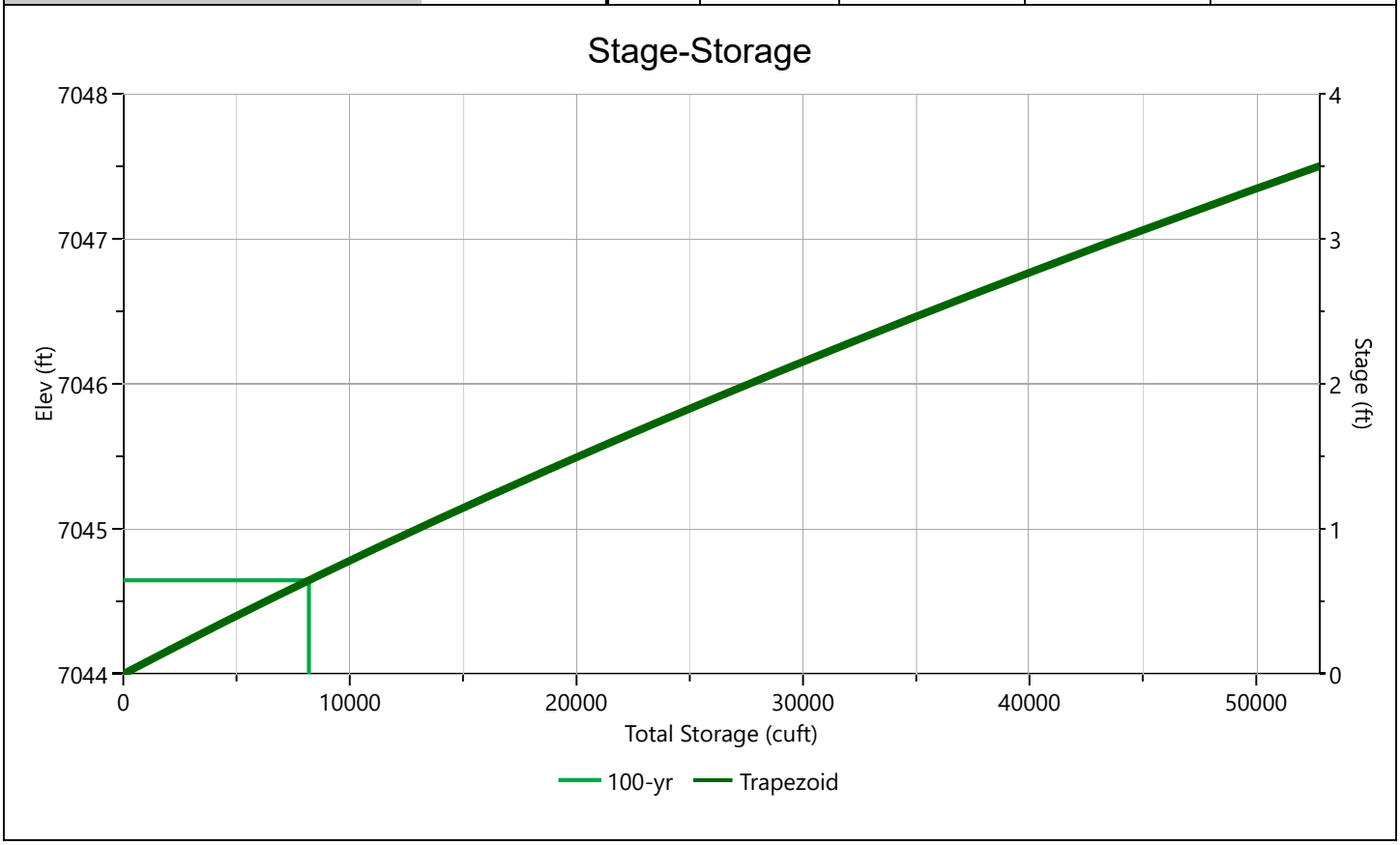
Pond #1 NE

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7044.00
Bottom Length, ft	200.00
Bottom Width, ft	61.00
Side Slope, H:1	3.00
Total Depth, ft	3.50
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7044.00	12,200	0.000	0.000
0.18	7044.18	12,475	2,159	2,159
0.35	7044.35	12,753	2,207	4,366
0.53	7044.53	13,032	2,256	6,623
0.70	7044.70	13,314	2,305	8,928
0.88	7044.88	13,598	2,355	11,283
1.05	7045.05	13,884	2,405	13,687
1.23	7045.23	14,172	2,455	16,142
1.40	7045.40	14,463	2,506	18,648
1.58	7045.58	14,756	2,557	21,204
1.75	7045.75	15,051	2,608	23,812
1.93	7045.93	15,348	2,660	26,472
2.10	7046.10	15,647	2,712	29,184
2.28	7046.28	15,949	2,765	31,949
2.45	7046.45	16,253	2,818	34,766
2.63	7046.63	16,559	2,871	37,637
2.80	7046.80	16,867	2,925	40,562
2.97	7046.98	17,177	2,979	43,541
3.15	7047.15	17,490	3,033	46,574
3.32	7047.33	17,805	3,088	49,663
3.50	7047.50	18,122	3,144	52,806



Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

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07-09-2026

Pond #1 NE

Stage-Discharge

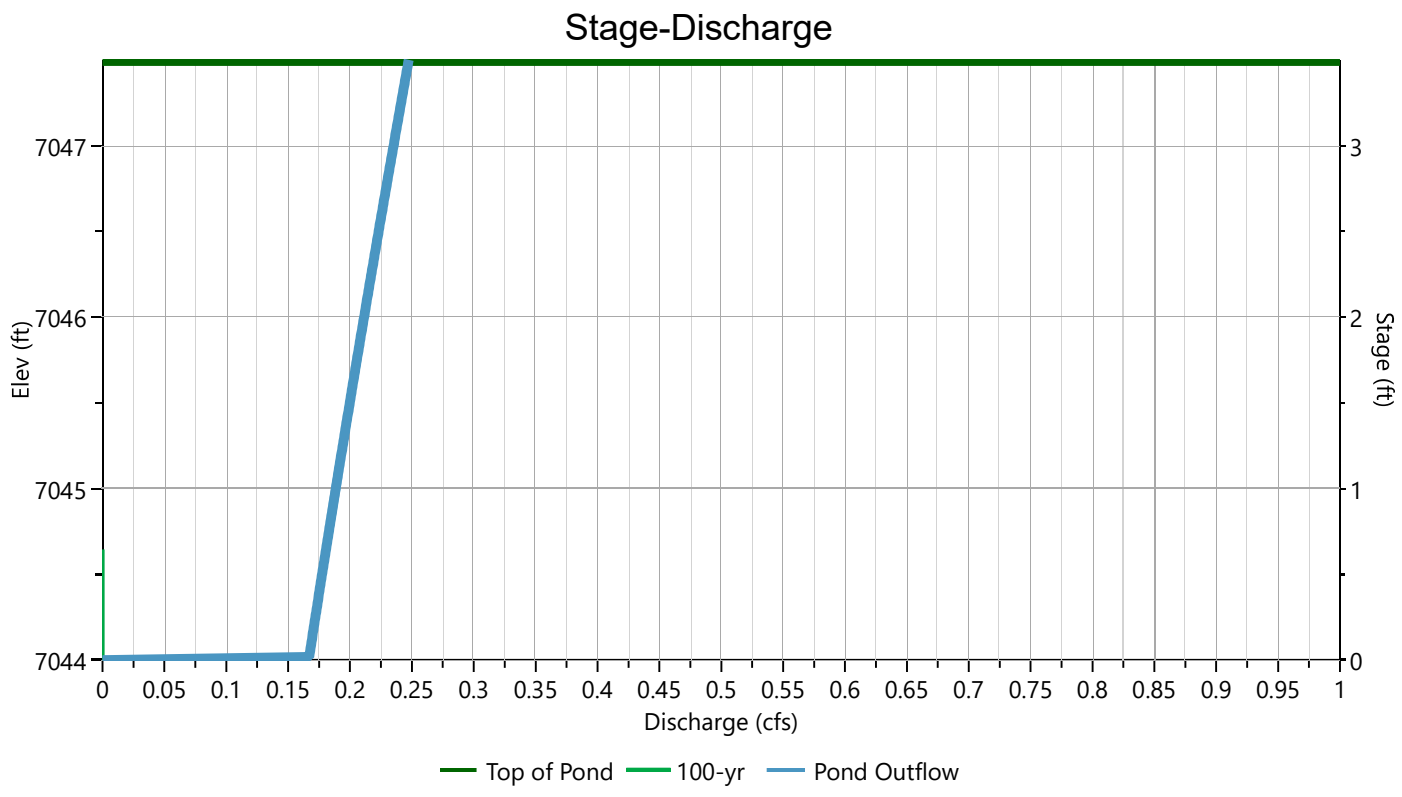
Culvert / Orifices	Cir Culvert	Orifice		
		1	2	3
Rise, in				
Span, in				
No. Barrels				
Invert Elevation, ft				
Orifice Coefficient, Co				
Length, ft				
Barrel Slope, %				
N-Value, n				

Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Weirs	Riser	Weir		
		1	2	3
Shape / Type				
Crest Elevation, ft				
Crest Length, ft				
Angle, deg				
Weir Coefficient, Cw				

Ancillary	
Exfiltration, in/hr	0.59**

***Exfiltration extracted from outflow hydrograph. Rate applied to contours.*



Pond #1 NE

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7044.00	0.000										0.000		0.000
0.18	7044.18	2,159										0.170		0.170
0.35	7044.35	4,366										0.174		0.174
0.53	7044.53	6,623										0.178		0.178
0.70	7044.70	8,928										0.182		0.182
0.88	7044.88	11,283										0.186		0.186
1.05	7045.05	13,687										0.190		0.190
1.23	7045.23	16,142										0.194		0.194
1.40	7045.40	18,648										0.198		0.198
1.58	7045.58	21,204										0.202		0.202
1.75	7045.75	23,812										0.206		0.206
1.93	7045.93	26,472										0.210		0.210
2.10	7046.10	29,184										0.214		0.214
2.28	7046.28	31,949										0.218		0.218
2.45	7046.45	34,766										0.222		0.222
2.63	7046.63	37,637										0.226		0.226
2.80	7046.80	40,562										0.230		0.230
2.97	7046.98	43,541										0.235		0.235
3.15	7047.15	46,574										0.239		0.239
3.32	7047.33	49,663										0.243		0.243
3.50	7047.50	52,806										0.247		0.247

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

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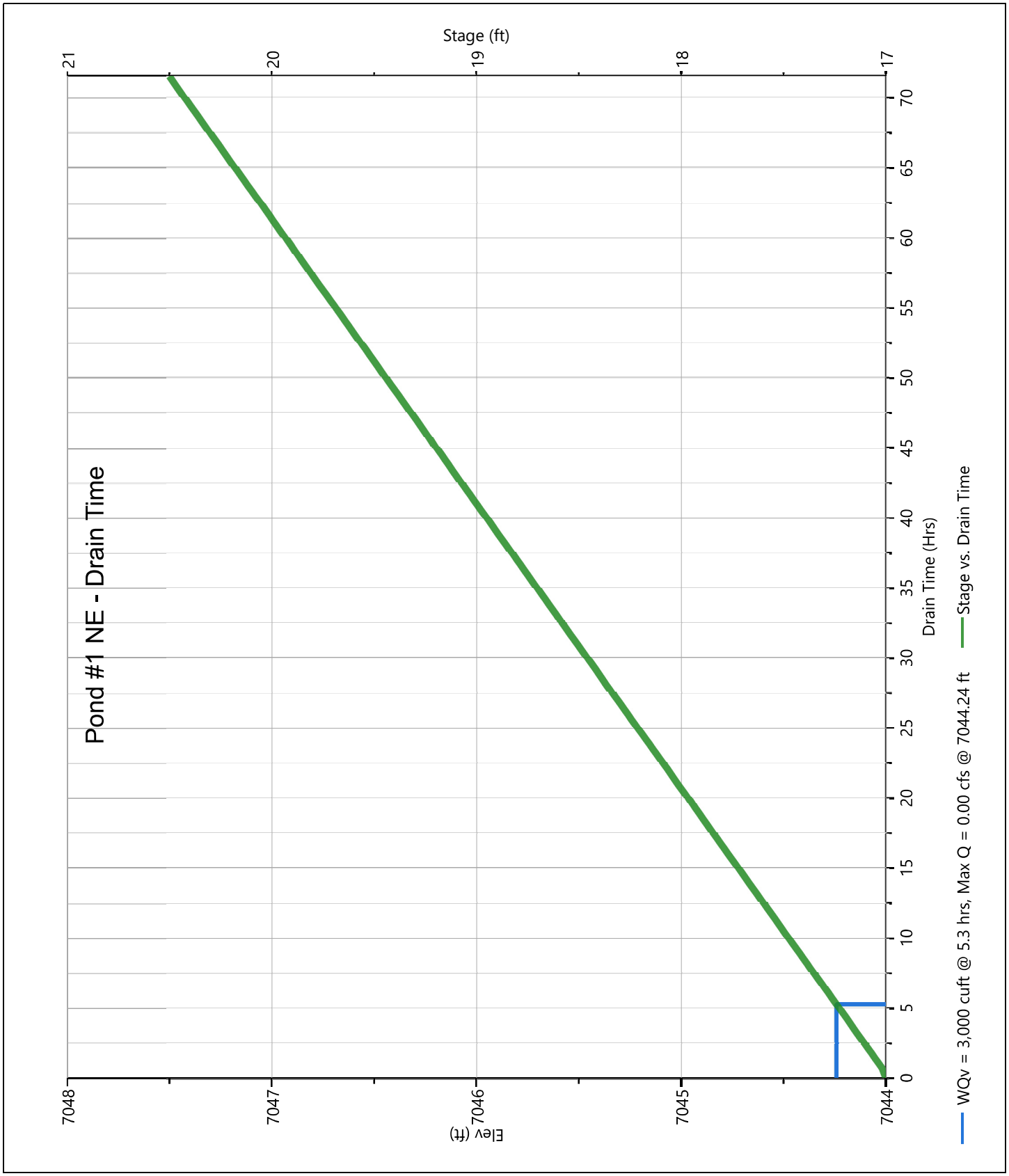
07-09-2026

Pond #1 NE

Extended Detention



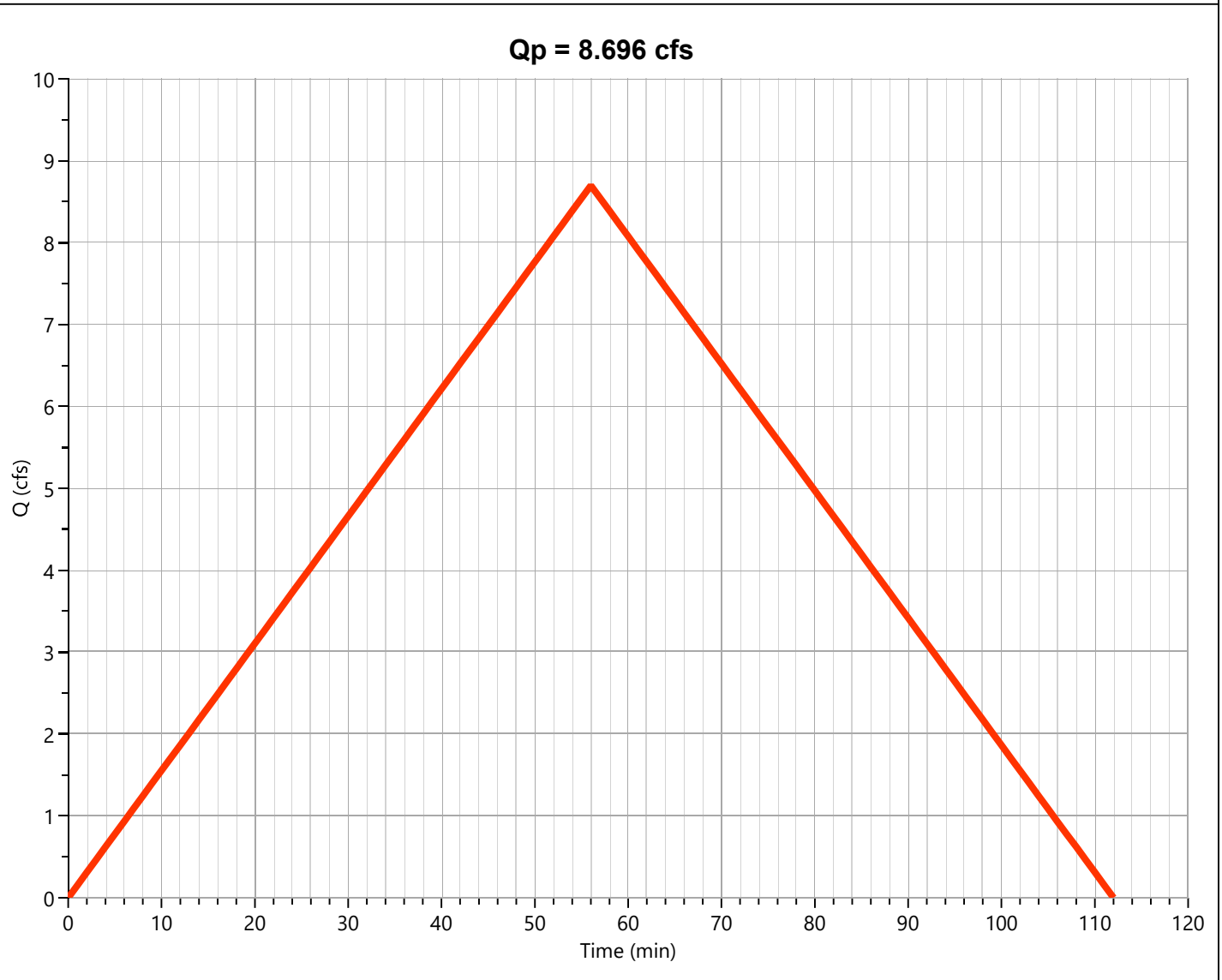
#3a Habitat Basin

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 8.696 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.93 hrs
Time Interval	= 1 min	Runoff Volume	= 29,218 cuft
Drainage Area	= 4.194 ac	Runoff Coeff.	= 0.52*
Tc Method	= User	Time of Conc. (Tc)	= 56.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
2.792	0.36	Ag
0.568	0.96	Concrete
0.558	0.70	Gravel
0.276	0.81	Roof
4.194	**0.52**	



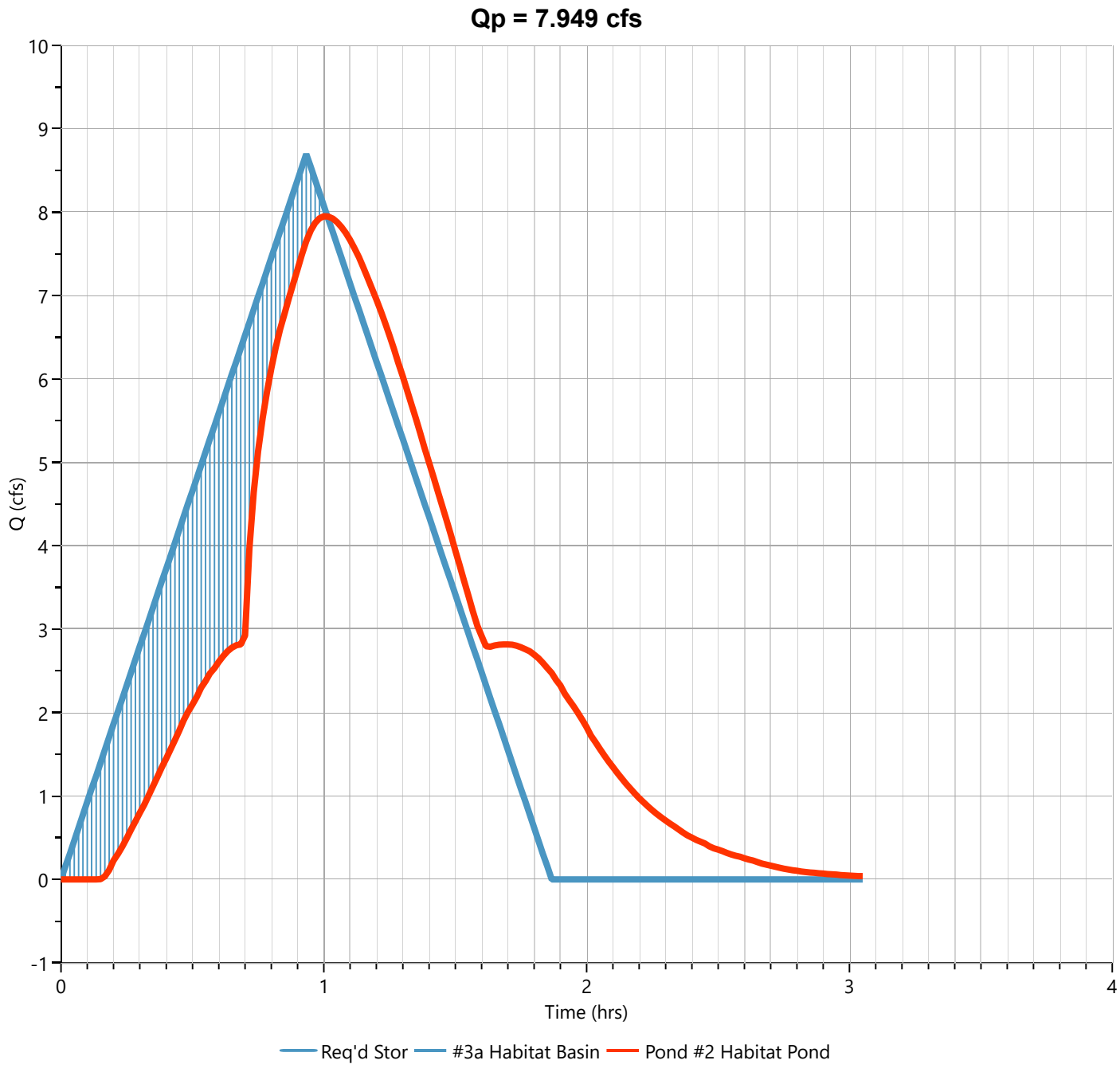
Pond #2 Habitat Pond

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 7.949 cfs
Storm Frequency	= 100-yr	Time to Peak	= 1.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 28,368 cuft
Inflow Hydrograph	= 1 - #3a Habitat Basin	Max. Elevation	= 7038.35 ft
Pond Name	= Pond #2 Habitat	Max. Storage	= 6,394 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 17 min



Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

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07-09-2026

See previous comment

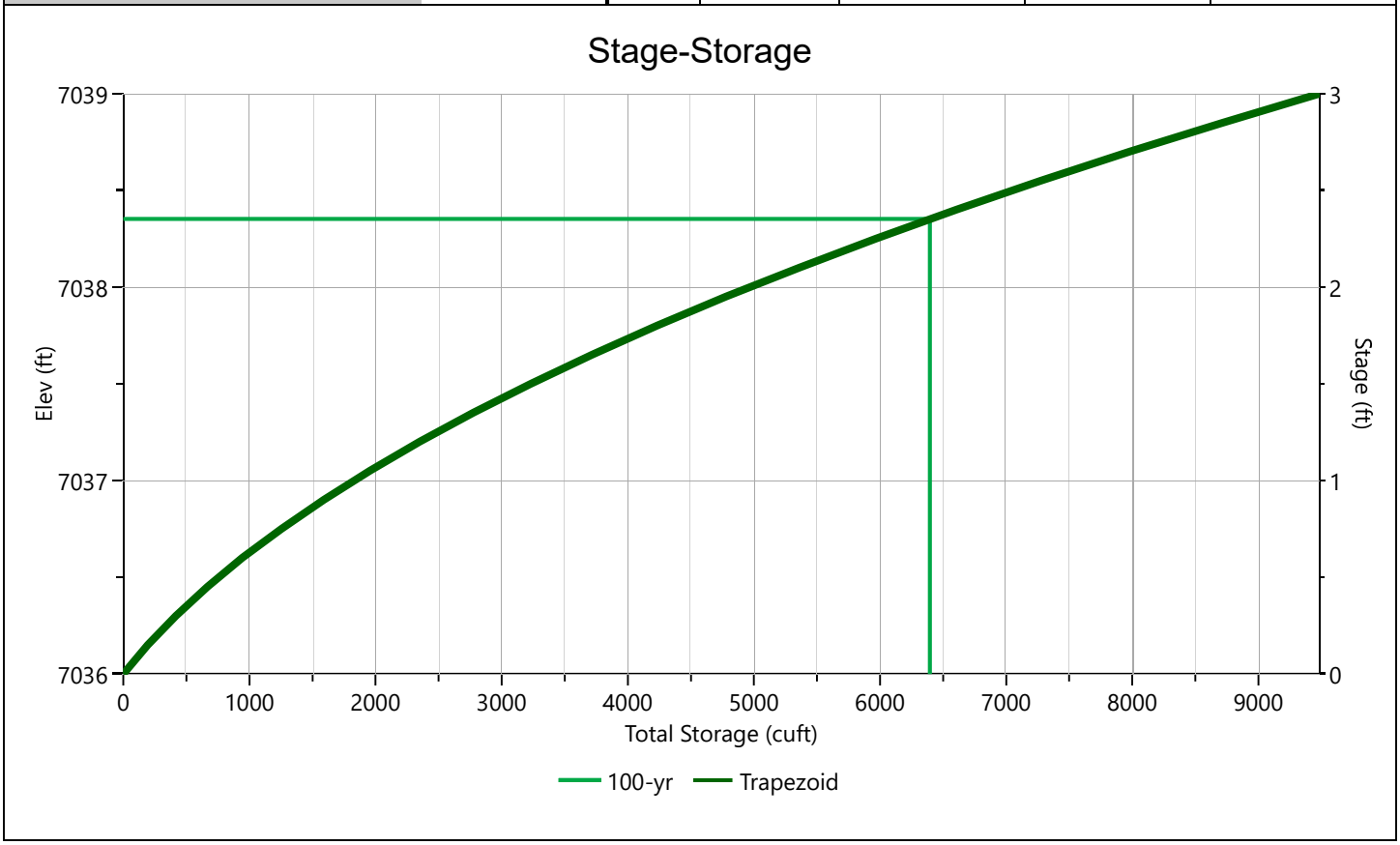
Pond #2 Habitat

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7036.00
Bottom Length, ft	200.00
Bottom Width, ft	6.00
Side Slope, H:1	3.00
Total Depth, ft	3.00
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7036.00	1,200	0.000	0.000
0.15	7036.15	1,386	194	194
0.30	7036.30	1,574	222	416
0.45	7036.45	1,763	250	666
0.60	7036.60	1,955	279	945
0.75	7036.75	2,147	308	1,253
0.90	7036.90	2,342	337	1,589
1.05	7037.05	2,537	366	1,955
1.20	7037.20	2,735	395	2,351
1.35	7037.35	2,934	425	2,776
1.50	7037.50	3,135	455	3,231
1.65	7037.65	3,337	485	3,716
1.80	7037.80	3,541	516	4,232
1.95	7037.95	3,747	547	4,779
2.10	7038.10	3,954	578	5,357
2.25	7038.25	4,163	609	5,965
2.40	7038.40	4,374	640	6,606
2.55	7038.55	4,586	672	7,278
2.70	7038.70	4,800	704	7,981
2.85	7038.85	5,015	736	8,717
3.00	7039.00	5,232	769	9,486



Pond Report

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07-09-2026

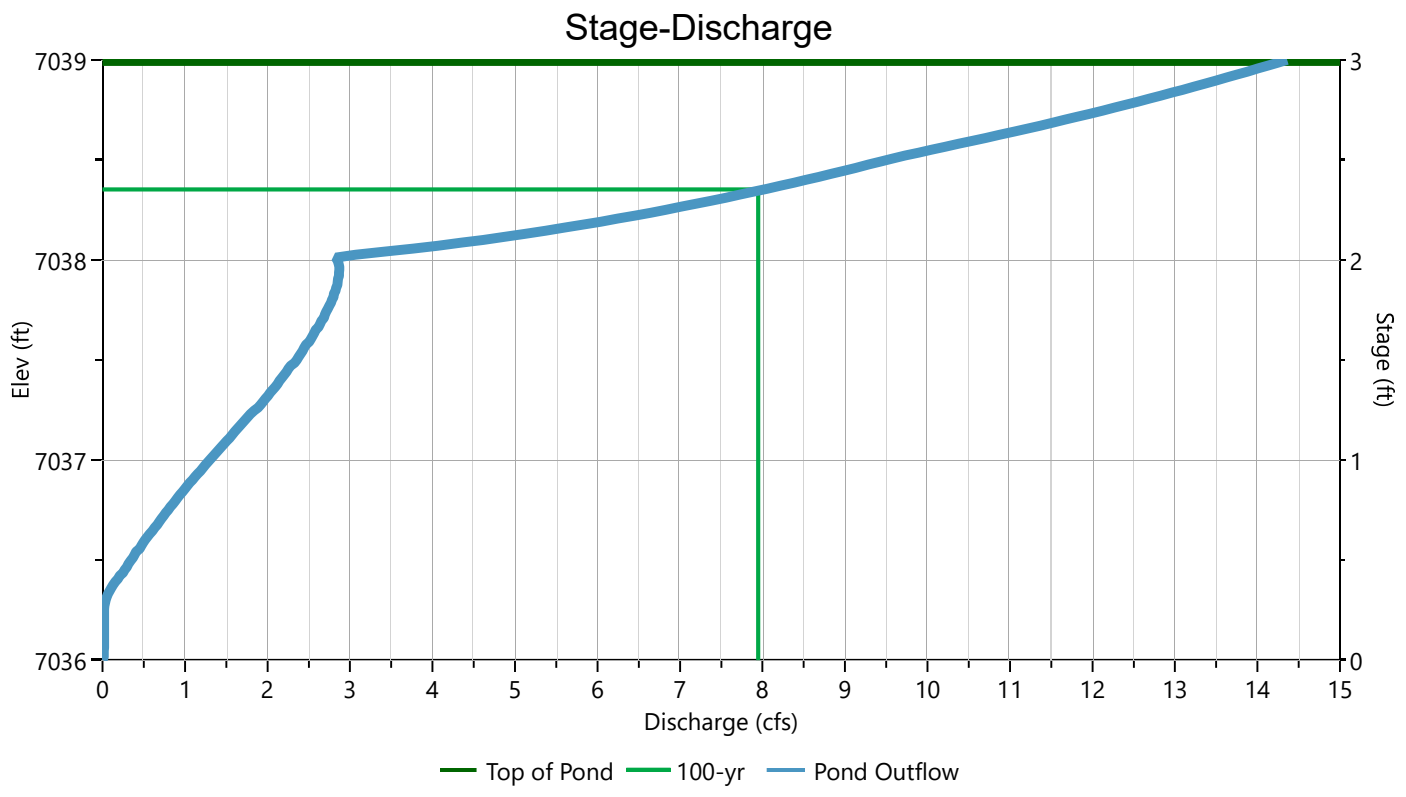
Pond #2 Habitat

5 year design has different orifices. Design of hole sizes and elevations should be same.

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2 (m)	3		
Rise, in	24	24	24		Orifice Dia, in	
Span, in	24	24	24		No. Orifices	
No. Barrels	1	1	1		Invert Elevation, ft	
Invert Elevation, ft	7036.00	7036.25	7037.00		Height, ft	
Orifice Coefficient, Co	0.60	0.60	0.60		Orifice Coefficient, Co	
Length, ft	118					
Barrel Slope, %	.03					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1 (m)	2	3		
Shape / Type	Box	Rectangular			Exfiltration, in/hr	0.59**
Crest Elevation, ft	7039	7038.5				
Crest Length, ft	3	8				
Angle, deg						
Weir Coefficient, Cw	3.3	3.3				

*m = Flows through Culvert, i = Independent **Exfiltration extracted from outflow hydrograph. Rate applied to contours.*



Pond #2 Habitat

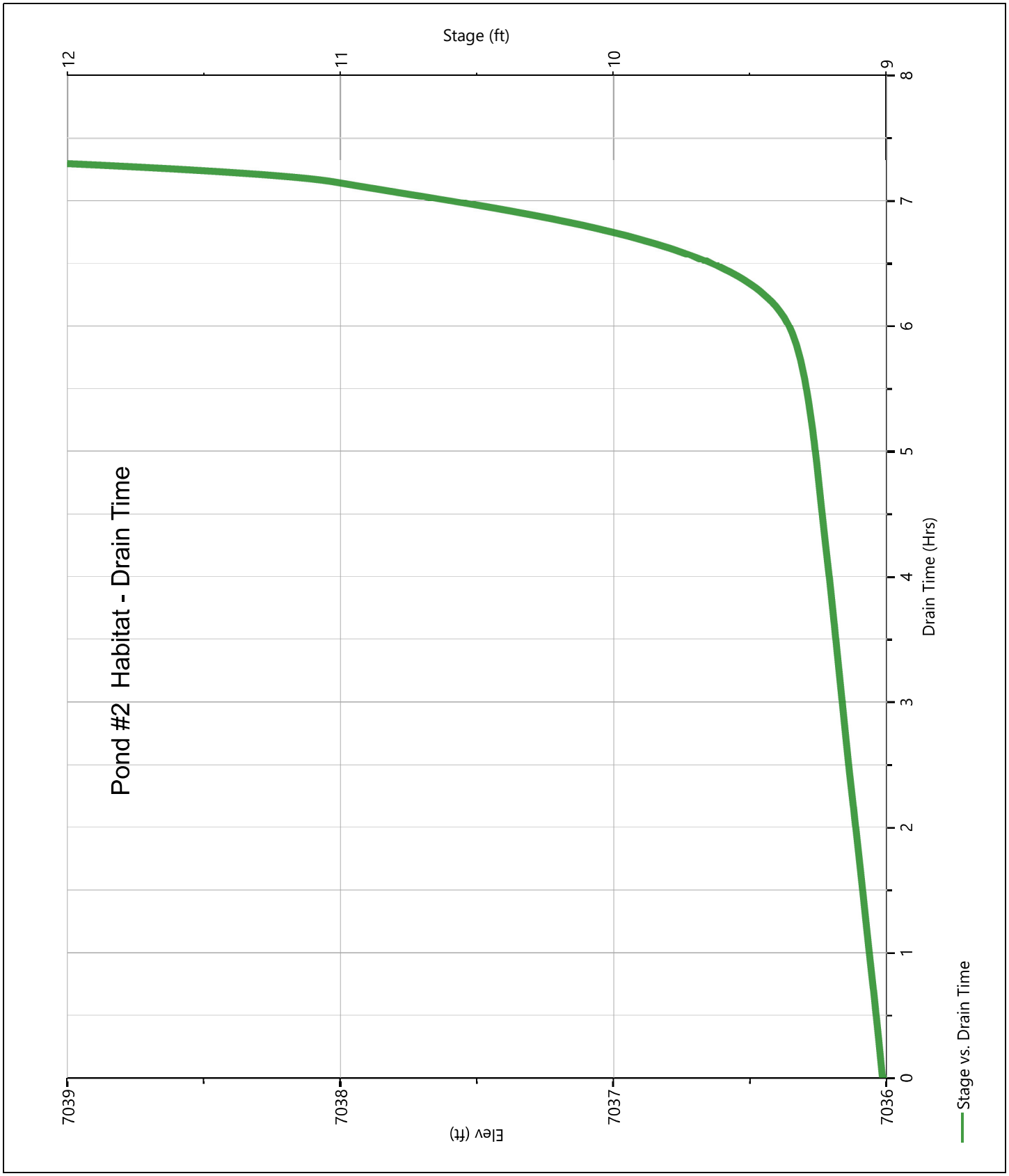
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7036.00	0.000	0.000	0.000	0.000		0.000	0.000				0.000		0.000
0.15	7036.15	194	0.000	0.000	0.000		0.000	0.000				0.019		0.019
0.30	7036.30	416	0.018 oc	0.018	0.000		0.000	0.000				0.021		0.039
0.45	7036.45	666	0.242 oc	0.242	0.000		0.000	0.000				0.024		0.267
0.60	7036.60	945	0.489 oc	0.489	0.000		0.000	0.000				0.027		0.516
0.75	7036.75	1,253	0.766 oc	0.766	0.000		0.000	0.000				0.029		0.795
0.90	7036.90	1,589	1.059 oc	1.059	0.000		0.000	0.000				0.032		1.091
1.05	7037.05	1,955	1.375 oc	1.357	0.018		0.000	0.000				0.035		1.410
1.20	7037.20	2,351	1.692 oc	1.523	0.169		0.000	0.000				0.037		1.729
1.35	7037.35	2,776	2.022 oc	1.675	0.346		0.000	0.000				0.040		2.062
1.50	7037.50	3,231	2.310 oc	1.781	0.529		0.000	0.000				0.043		2.353
1.65	7037.65	3,716	2.537 oc	1.835	0.702		0.000	0.000				0.046		2.583
1.80	7037.80	4,232	2.733 oc	1.878	0.855		0.000	0.000				0.048		2.781
1.95	7037.95	4,779	2.818 oc	1.858	0.960		0.000	0.000				0.051		2.869
2.10	7038.10	5,357	4.558 oc	2.868	1.690		0.000	0.000				0.054		4.612
2.25	7038.25	5,965	6.764 oc	4.060	2.704		0.000	0.000				0.057		6.821
2.40	7038.40	6,606	8.464 oc	4.824	3.640		0.000	0.000				0.060		8.524
2.55	7038.55	7,278	9.982 oc	5.271	4.418		0.000	0.293				0.063		10.04
2.70	7038.70	7,981	11.60 oc	5.000	4.546		0.000	2.054 s				0.066		11.67
2.85	7038.85	8,717	13.02 oc	4.698	4.543		0.000	3.781 s				0.068		13.09
3.00	7039.00	9,486	14.29 oc	4.426	4.426		0.000	5.436 s				0.071		14.36

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #2 Habitat

Pond Drawdown



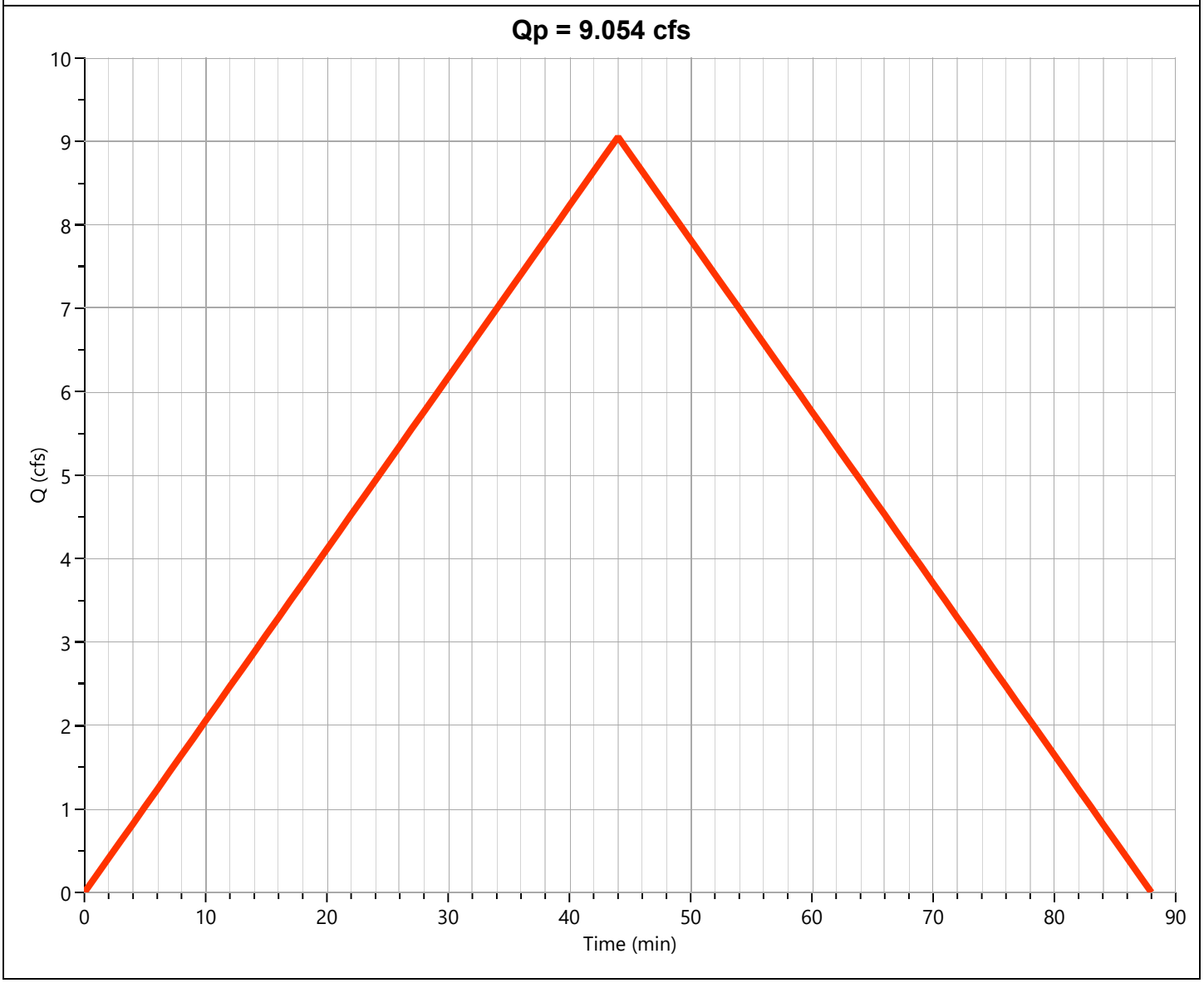
#3b Comm Basin

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 9.054 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.73 hrs
Time Interval	= 1 min	Runoff Volume	= 23,903 cuft
Drainage Area	= 3.6 ac	Runoff Coeff.	= 0.55*
Tc Method	= User	Time of Conc. (Tc)	= 44.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 4.57 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

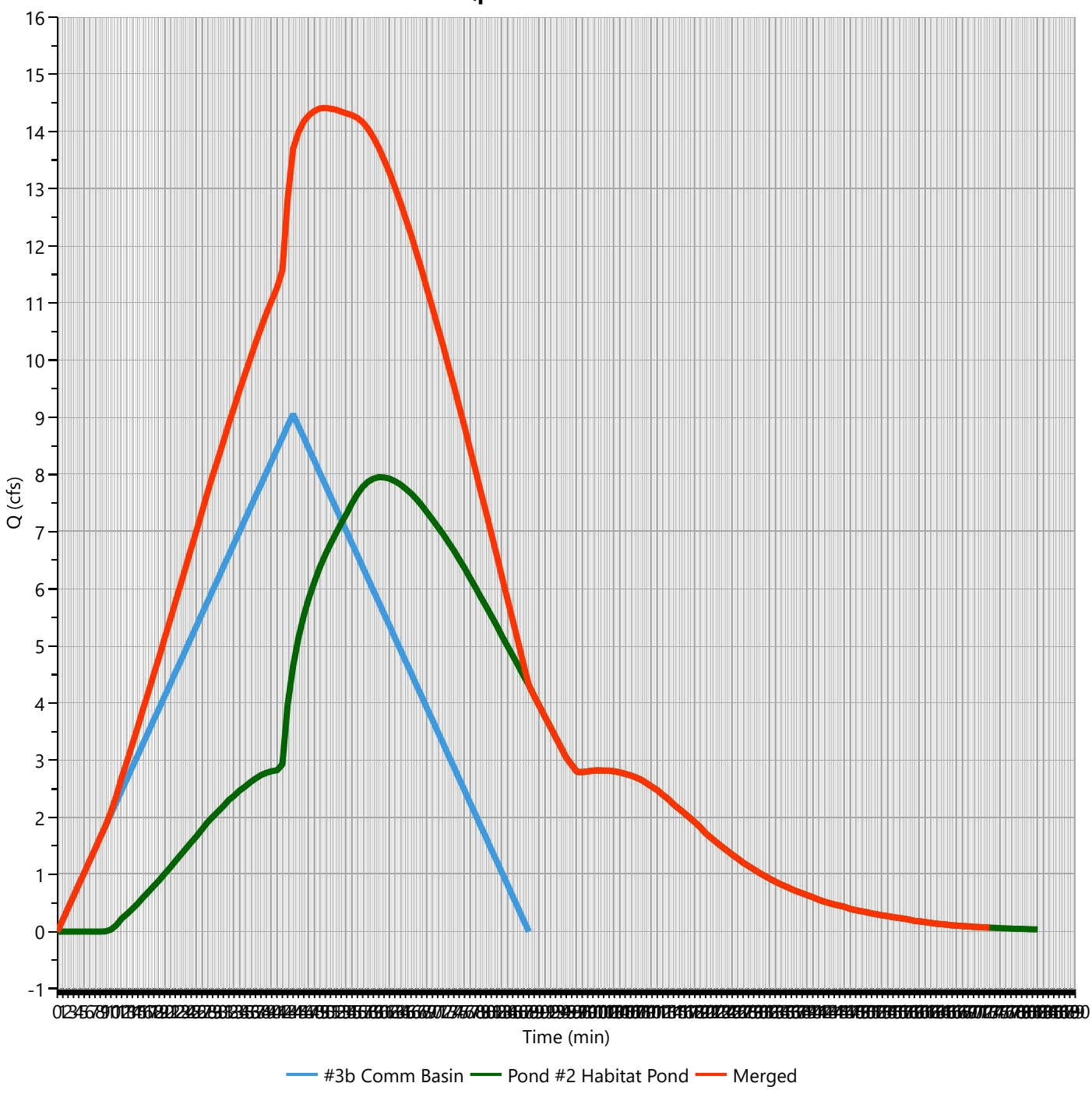
AREA (ac)	C	DESCRIPTION
2.278	0.36	Ag
0.549	0.96	Concrete
0.773	0.81	Roof
3.6	**0.55**	



Merged

Hyd. No. 4

Hydrograph Type	= Junction	Peak Flow	= 14.41 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.83 hrs
Time Interval	= 1 min	Hydrograph Volume	= 52,271 cuft
Inflow Hydrographs	= 2	Total Contrib. Area	= 3.6 ac



West Pond #3

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 4 - Merged	Max. Elevation	= 7030.44 ft
Pond Name	= Pond #3 West Pond	Max. Storage	= 52,271 cuft

Pond Routing by Storage Indication Method

Qp = 0.000 cfs

Pond should have an inflow

Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

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07-09-2026

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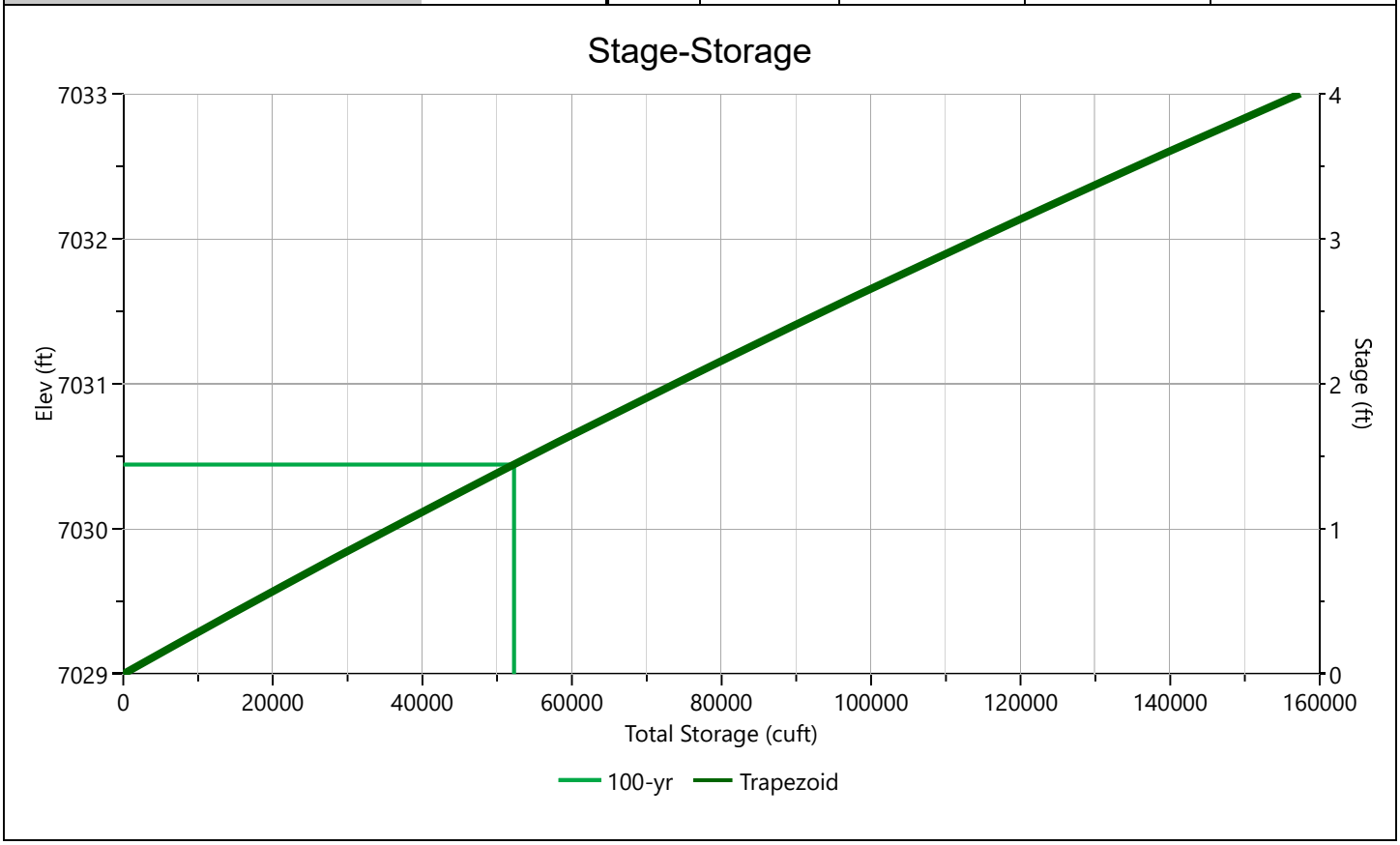
Pond #3 West Pond

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7029.00
Bottom Length, ft	250.00
Bottom Width, ft	138.00
Side Slope, H:1	3.00
Total Depth, ft	4.00
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7029.00	34,500	0.000	0.000
0.20	7029.20	34,967	6,947	6,947
0.40	7029.40	35,437	7,040	13,987
0.60	7029.60	35,910	7,135	21,122
0.80	7029.80	36,385	7,229	28,351
1.00	7030.00	36,864	7,325	35,676
1.20	7030.20	37,345	7,421	43,097
1.40	7030.40	37,830	7,517	50,614
1.60	7030.60	38,317	7,615	58,229
1.80	7030.80	38,807	7,712	65,941
2.00	7031.00	39,300	7,811	73,752
2.20	7031.20	39,796	7,910	81,662
2.40	7031.40	40,295	8,009	89,671
2.60	7031.60	40,796	8,109	97,780
2.80	7031.80	41,301	8,210	105,989
3.00	7032.00	41,808	8,311	114,300
3.20	7032.20	42,318	8,413	122,713
3.40	7032.40	42,831	8,515	131,228
3.60	7032.60	43,347	8,618	139,845
3.80	7032.80	43,866	8,721	148,567
4.00	7033.00	44,388	8,825	157,392



Pond Report

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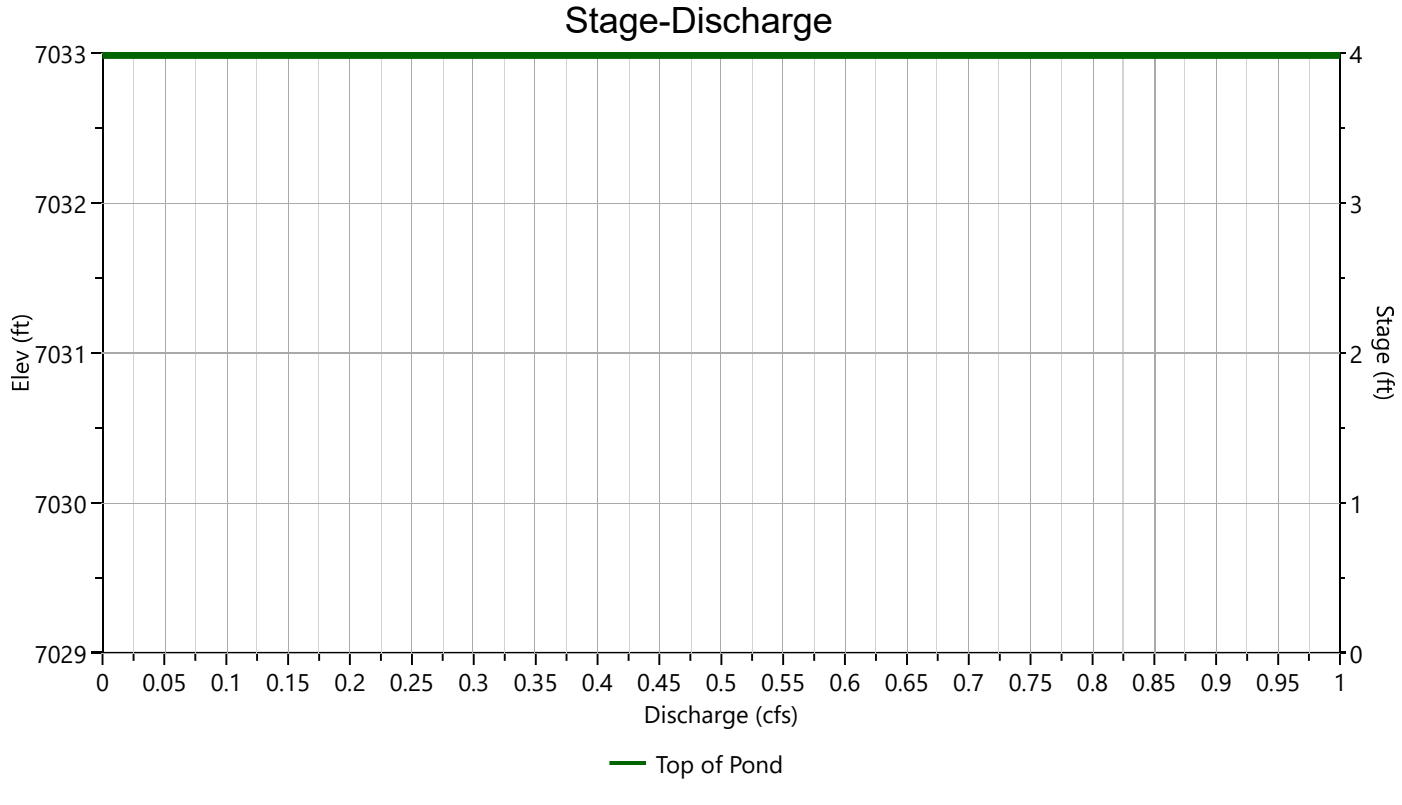
07-09-2026

Pond #3 West Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Perforated Riser	
		1	2	3		
Rise, in					Hole Diameter, in	
Span, in					No. holes	
No. Barrels					Invert Elevation, ft	
Invert Elevation, ft					Height, ft	
Orifice Coefficient, Co					Orifice Coefficient, Co	
Length, ft						
Barrel Slope, %						
N-Value, n						
Weirs	**Riser**	**Weir**			**Ancillary**	
		1	2	3		
Shape / Type					Exfiltration, in/hr	
Crest Elevation, ft						
Crest Length, ft						
Angle, deg						
Weir Coefficient, Cw						

Provide outlet design



Pond #3 West Pond

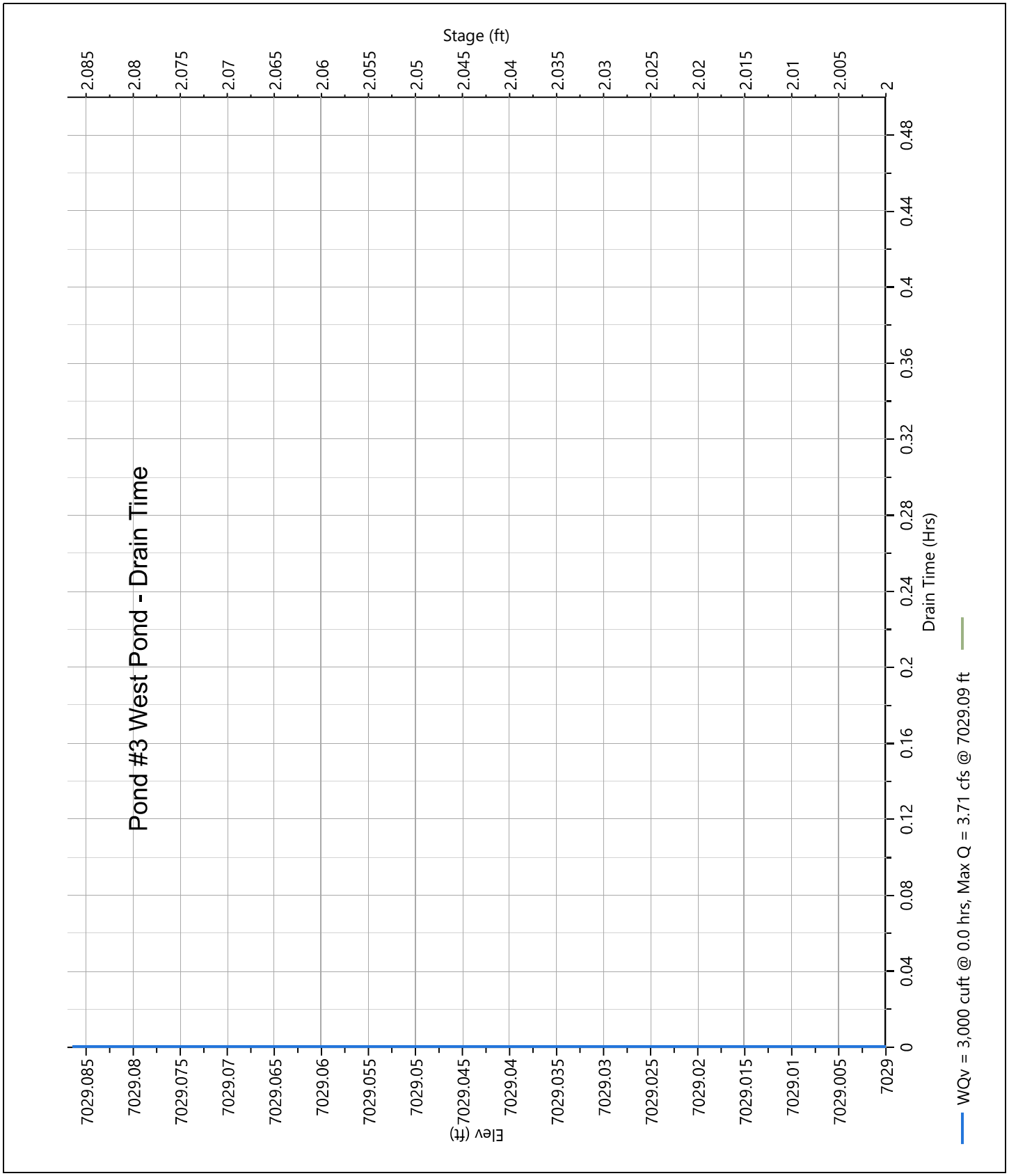
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7029.00	0.000												0.000
0.20	7029.20	6,947												0.000
0.40	7029.40	13,987												0.000
0.60	7029.60	21,122												0.000
0.80	7029.80	28,351												0.000
1.00	7030.00	35,676												0.000
1.20	7030.20	43,097												0.000
1.40	7030.40	50,614												0.000
1.60	7030.60	58,229												0.000
1.80	7030.80	65,941												0.000
2.00	7031.00	73,752												0.000
2.20	7031.20	81,662												0.000
2.40	7031.40	89,671												0.000
2.60	7031.60	97,780												0.000
2.80	7031.80	105,989												0.000
3.00	7032.00	114,300												0.000
3.20	7032.20	122,713												0.000
3.40	7032.40	131,228												0.000
3.60	7032.60	139,845												0.000
3.80	7032.80	148,567												0.000
4.00	7033.00	157,392												0.000

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #3 West Pond

Extended Detention



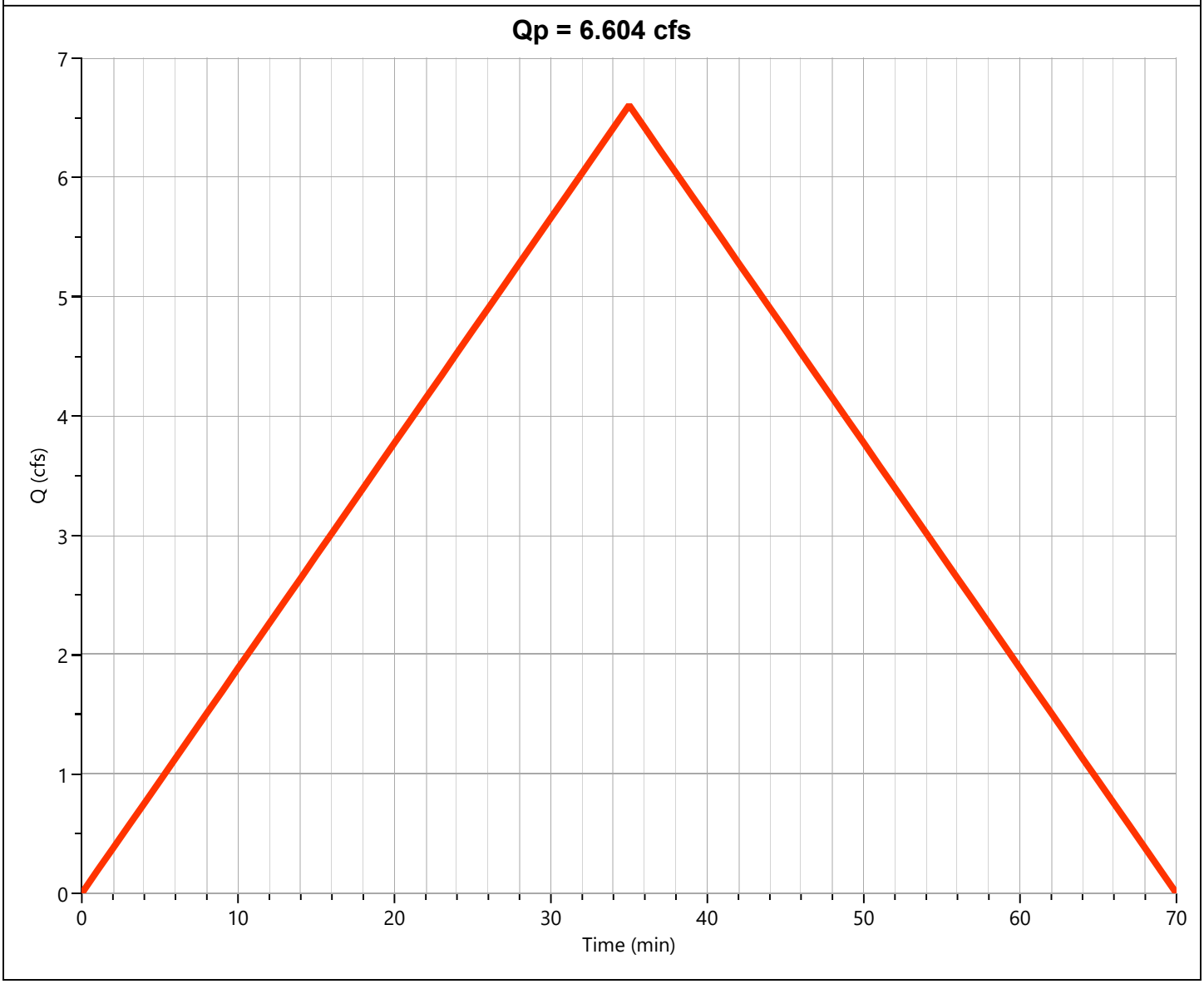
#4 East Basin

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 6.604 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.58 hrs
Time Interval	= 1 min	Runoff Volume	= 13,868 cuft
Drainage Area	= 1.822 ac	Runoff Coeff.	= 0.70*
Tc Method	= User	Time of Conc. (Tc)	= 35.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 5.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.057	0.81	Roof
0.988	0.96	Asphalt
0.78	0.36	Land
1.822	**0.70**	



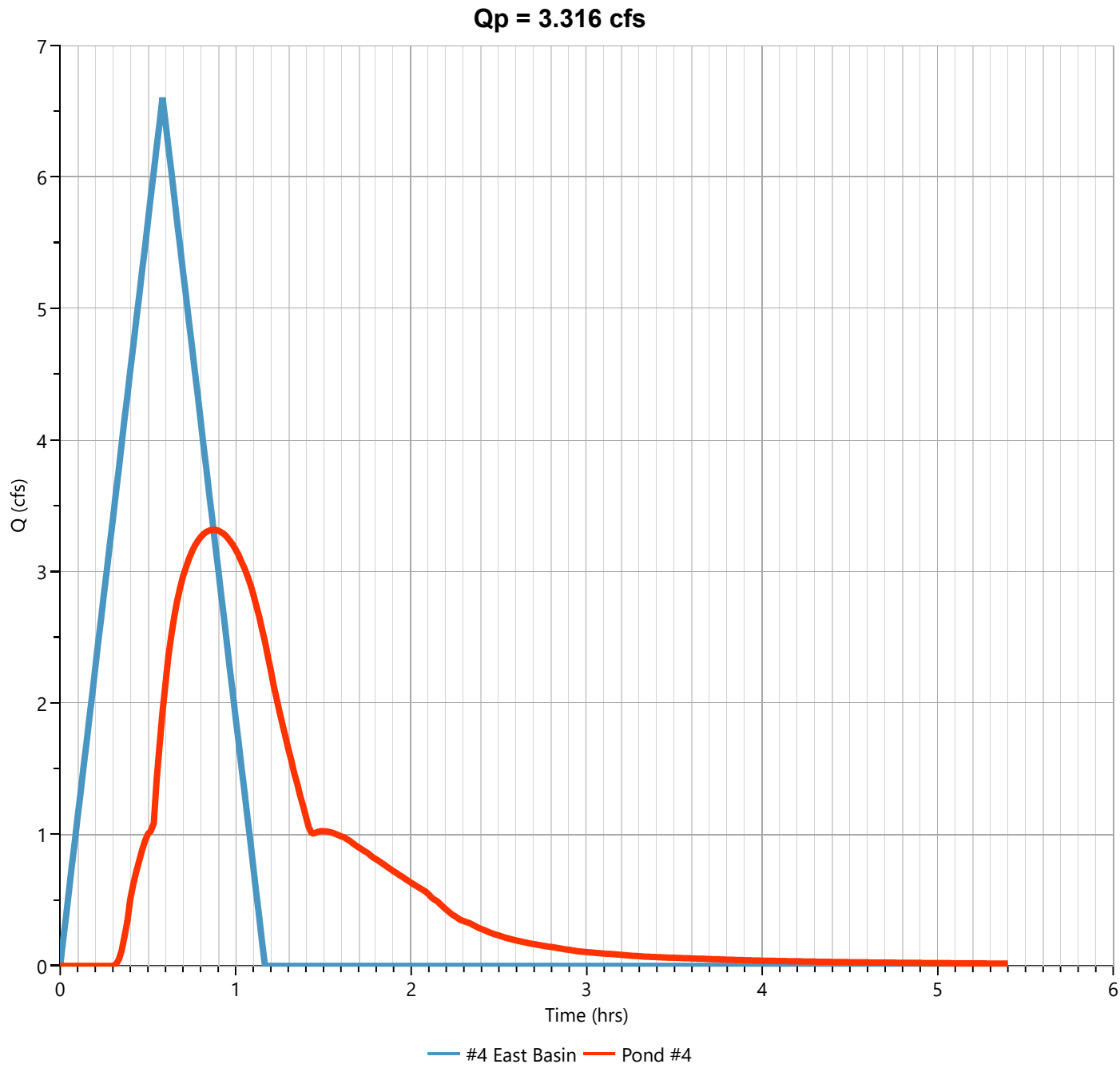
Pond #4

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 3.316 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.87 hrs
Time Interval	= 1 min	Hydrograph Volume	= 11,929 cuft
Inflow Hydrograph	= 9 - #4 East Basin	Max. Elevation	= 7028.92 ft
Pond Name	= Pond #4 South Pond	Max. Storage	= 8,307 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 38 min



Pond Report

File: 14010 Shire-All Basins -8july2026-100yr.hys

Hydrology Studio v 3.0.0.44

07-09-2026

See previous comment

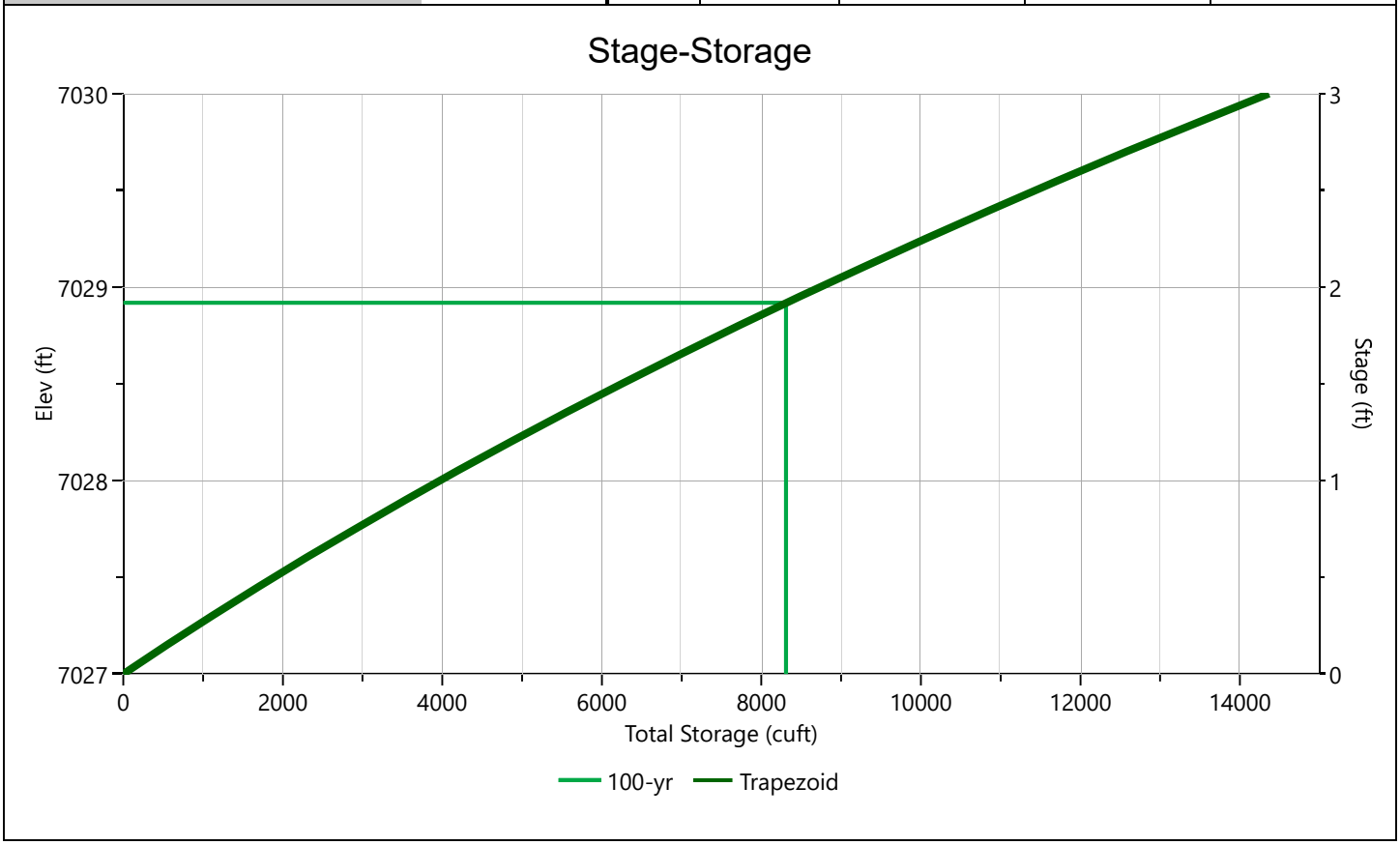
Pond #4 South Pond

Stage-Storage

Trapezoid	
Description	**Input**
Bottom Elevation, ft	7027.00
Bottom Length, ft	60.00
Bottom Width, ft	60.00
Side Slope, H:1	3.00
Total Depth, ft	3.00
Voids (%)	100.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	7027.00	3,600	0.000	0.000
0.15	7027.15	3,709	548	548
0.30	7027.30	3,819	565	1,113
0.45	7027.45	3,931	581	1,694
0.60	7027.60	4,045	598	2,292
0.75	7027.75	4,160	615	2,908
0.90	7027.90	4,277	633	3,540
1.05	7028.05	4,396	650	4,191
1.20	7028.20	4,516	668	4,859
1.35	7028.35	4,638	686	5,546
1.50	7028.50	4,761	705	6,250
1.65	7028.65	4,886	724	6,974
1.80	7028.80	5,013	742	7,716
1.95	7028.95	5,141	761	8,478
2.10	7029.10	5,271	781	9,259
2.25	7029.25	5,402	800	10,059
2.40	7029.40	5,535	820	10,879
2.55	7029.55	5,670	840	11,720
2.70	7029.70	5,806	861	12,581
2.85	7029.85	5,944	881	13,462
3.00	7030.00	6,084	902	14,364



Pond Report

Hydrology Studio v 3.0.0.44

5 year design has different culvert & orifices. Design of hole sizes and elevations should be same.

2026-100yr.hys

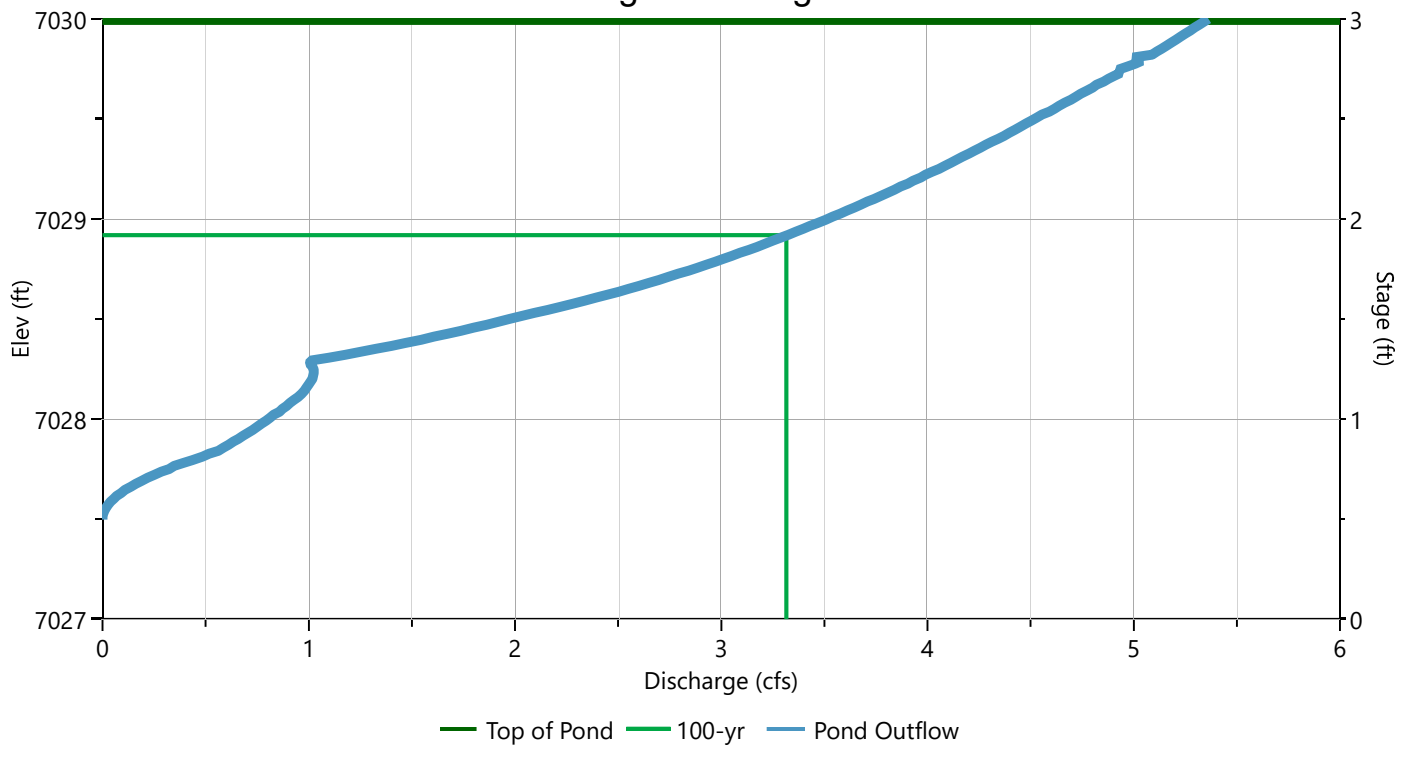
07-09-2026

Pond #4 South Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2 (m)	3		
Rise, in	15	16	16		Orifice Dia, in	
Span, in	15	16	16		No. Orifices	
No. Barrels	1	1	1		Invert Elevation, ft	
Invert Elevation, ft	7027.00	7027.50	7028.00		Height, ft	
Orifice Coefficient, Co	0.60	0.60	0.60		Orifice Coefficient, Co	
Length, ft	200					
Barrel Slope, %	.03					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1 (m)	2	3		
Shape / Type	Circular	Rectangular			Exfiltration, in/hr	
Crest Elevation, ft	7029.5	7028.5				
Crest Length, ft	8	3				
Angle, deg						
Weir Coefficient, Cw	3.3	3.3				

m = Flows through Culvert, i = Independent



Pond #4 South Pond

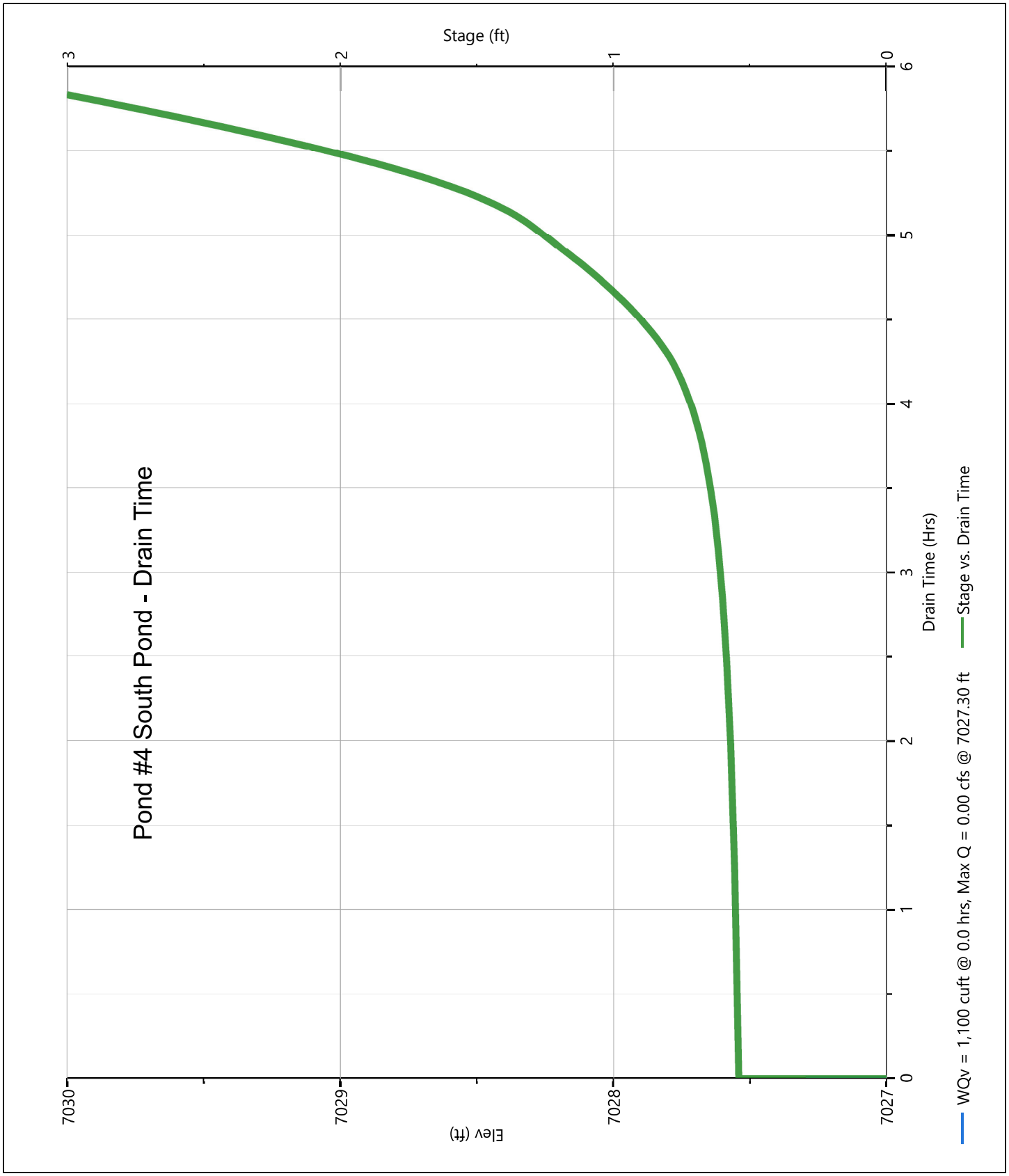
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	7027.00	0.000	0.000	0.000	0.000		0.000	0.000						0.000
0.15	7027.15	548	0.000	0.000	0.000		0.000	0.000						0.000
0.30	7027.30	1,113	0.000	0.000	0.000		0.000	0.000						0.000
0.45	7027.45	1,694	0.000	0.000	0.000		0.000	0.000						0.000
0.60	7027.60	2,292	0.054 oc	0.054	0.000		0.000	0.000						0.054
0.75	7027.75	2,908	0.323 oc	0.323	0.000		0.000	0.000						0.323
0.90	7027.90	3,540	0.657 oc	0.657	0.000		0.000	0.000						0.657
1.05	7028.05	4,191	0.872 oc	0.859	0.013		0.000	0.000						0.872
1.20	7028.20	4,859	1.017 oc	0.864	0.153		0.000	0.000						1.017
1.35	7028.35	5,546	1.327 oc	1.008	0.319		0.000	0.000						1.327
1.50	7028.50	6,250	1.972 oc	1.385	0.587		0.000	0.000						1.972
1.65	7028.65	6,974	2.549 oc	1.385	0.739		0.000	0.425 s						2.549
1.80	7028.80	7,716	3.010 oc	1.320	0.835		0.000	0.855 s						3.010
1.95	7028.95	8,478	3.399 oc	1.212	0.925		0.000	1.262 s						3.399
2.10	7029.10	9,259	3.740 oc	1.115	0.990		0.000	1.635 s						3.740
2.25	7029.25	10,059	4.055 oc	1.044	1.017		0.000	1.995 s						4.055
2.40	7029.40	10,879	4.343 oc	0.994	0.994		0.000	2.356 s						4.343
2.55	7029.55	11,720	4.616 oc	0.883	0.883		0.293	2.556 s						4.616
2.70	7029.70	12,581	4.879 oc	0.420	0.420		2.365	1.675 s						4.879
2.85	7029.85	13,462	5.135 oc	0.000	0.000		0.000	0.000						5.135
3.00	7030.00	14,364	5.362 oc	0.000	0.000		0.000	0.000						5.362

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond #4 South Pond

Extended Detention



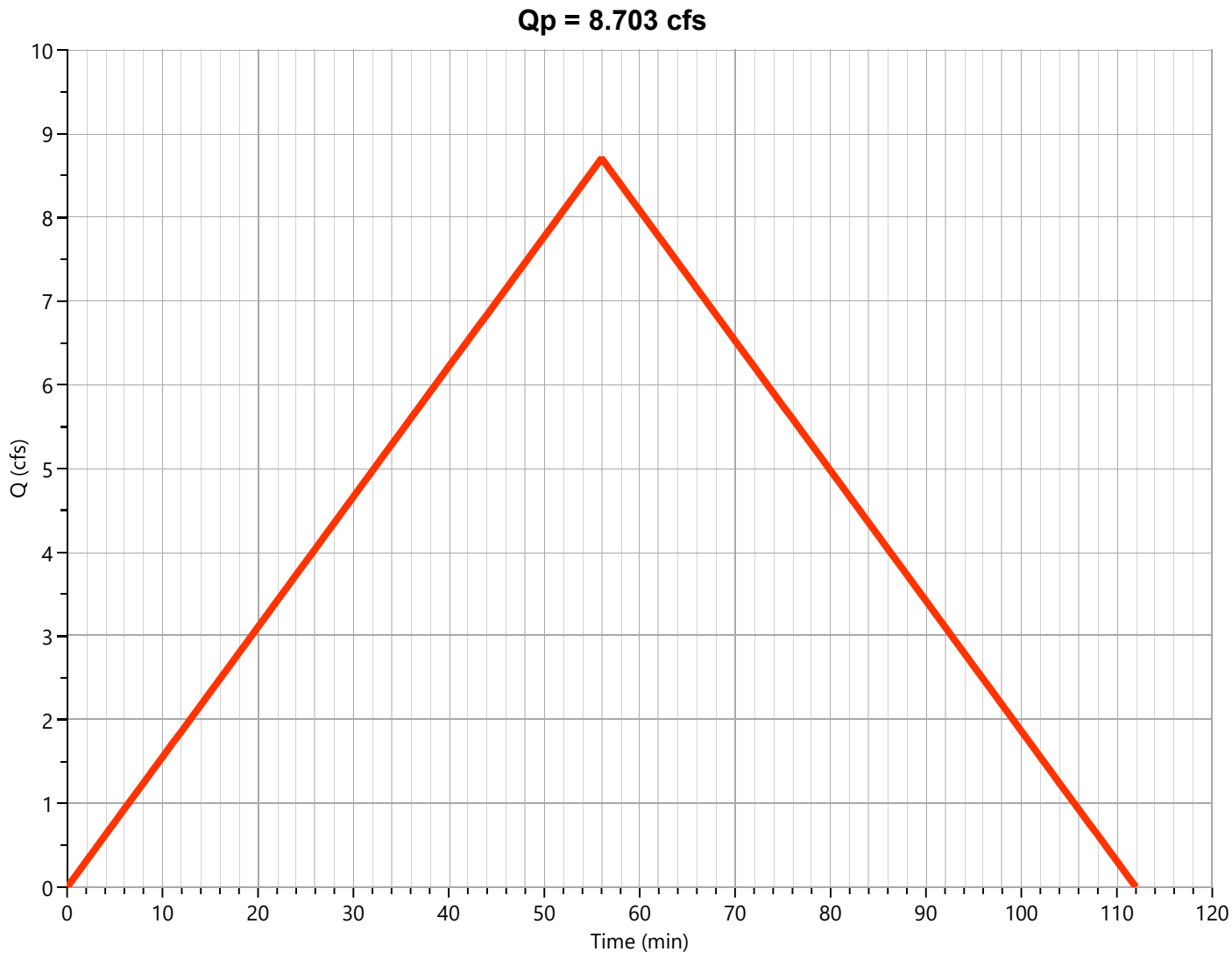
#5 South Basin

Hyd. No. 11

Hydrograph Type	= Rational	Peak Flow	= 8.703 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.93 hrs
Time Interval	= 1 min	Runoff Volume	= 29,243 cuft
Drainage Area	= 5.457 ac	Runoff Coeff.	= 0.40*
Tc Method	= User	Time of Conc. (Tc)	= 56.0 min
IDF Curve	= Colorado Springs.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

*** Composite C Worksheet**

AREA (ac)	C	DESCRIPTION
0.151	0.81	Roof
0.127	0.96	Concrete
0.258	0.70	Gravel
3.913	0.36	Land
5.457	**0.40**	



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

November 24, 2021

Kess Properties
49955 Austin Bluffs Parkway
Colorado Springs, CO 80918

Attn: Mark Phelan

Re: Infiltration Rates (Percolation Test Method)
The Shire at Old Ranch
10755 Howells Road
Colorado Springs, Colorado

Dear Mr. Phelan:

As requested, personnel of Entech Engineering, Inc. have performed percolation testing at the above referenced site to evaluate the site soils to determine the infiltration rate for the proposed detention pond.

The testing was performed on October 19 and November 3, 2021. The test locations are shown in Figure 1. The Test Boring Logs, Percolation Test results, Infiltration Rates, and Laboratory Test results are shown in Figures 2 through 6. Soils encountered in the profile and percolation holes consisted of silty sand.

The average percolation rates were 3 to 5 minutes/inch. The percolation rates correspond to adjusted average Infiltration Rate of 1.18 inches/hour for PH-1, and 1.67 inches/hour for PH-2.

We trust that this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

Reviewed by:

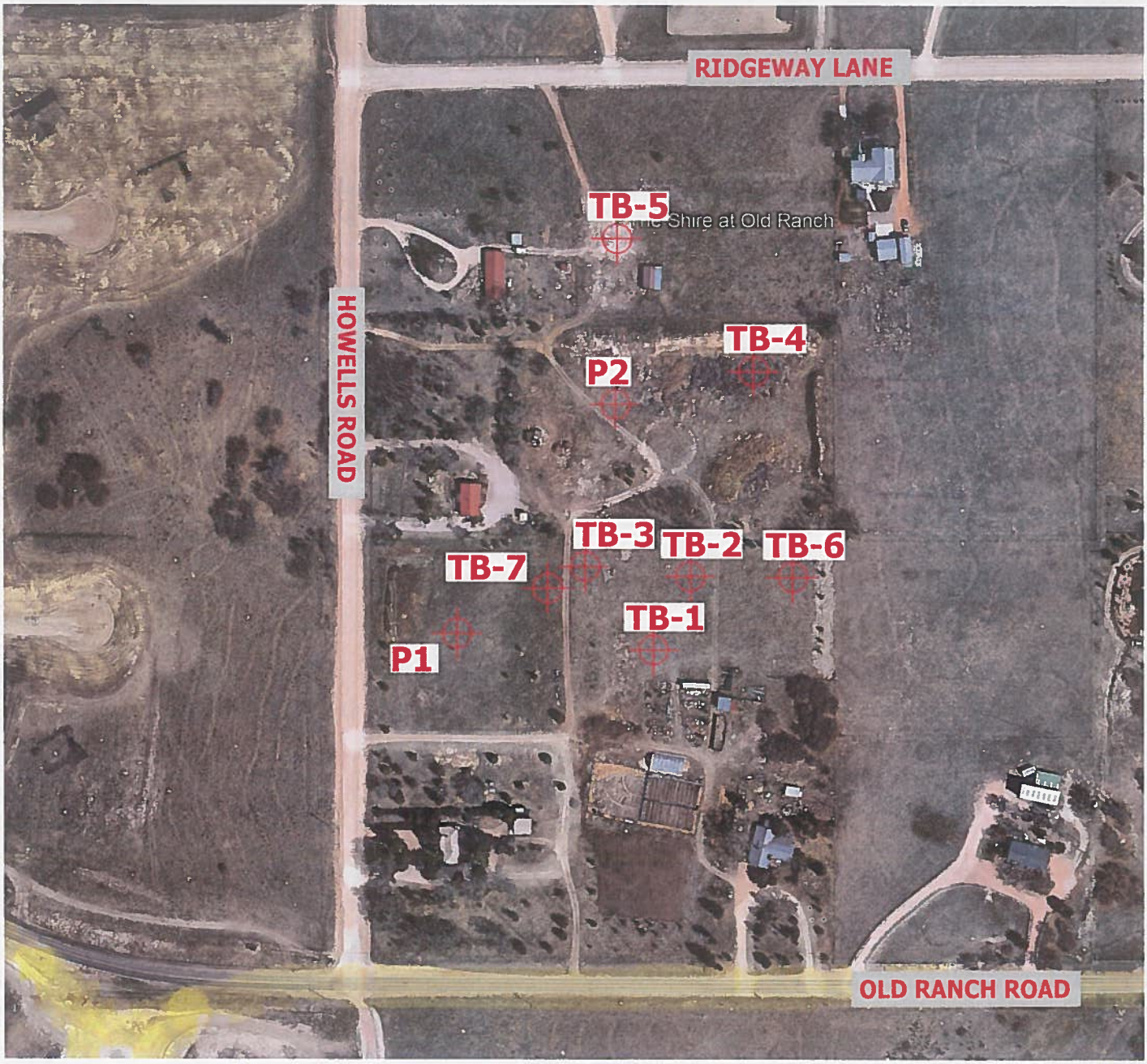
COLORADO LICENSED
AUSTIN M NOSSOKOFF
53477
12-6-21
PROFESSIONAL ENGINEER

Austin M. Nossokoff, P.E.
Project Engineer

LLL/jr

Encl.

Entech Job No. 212362
AAprojects/2021/212362 Infiltration Rate



TB- APPROXIMATE TEST BORING LOCATIONS AND NUMBERS

P- APPROXIMATE PERCOLATION BORING LOCATIONS AND NUMBERS

N

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

TEST BORING LOCATION MAP
THE SHIRE AT OLD RANCH
10755 HOWELLS RD
COLORADO SPRINGS, CO
FOR: KESS PROPERTIES

DRAWN:	DATE:	CHECKED:	DATE:
JHR	12/1/21	AMN	

JOB NO.: 212362

FIG NO.: 1

PROFILE HOLE NO. 1
DATE DRILLED 10/20/2021
Job # 212362

REMARKS

DRY TO 10', 10/20/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO DENSE, DRY TO MOIST
			26	2.7	1	
5			28	1.2	1	
10			34	3.4	1	
15						
20						

PROFILE HOLE NO. 2
DATE DRILLED 10/19/2021
CLIENT KESS PROPERTIES
LOCATION THE SHIRE AT OLD RANCH

REMARKS

DRY TO 19', 10/20/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO VERY DENSE, MOIST
			28	3.2	1	
5			50 | 11"	4.9	1	
10			41	5.1	1	
15						
20						

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ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

PROFILE HOLE LOG

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	11/19/21

JOB NO.: 212362
FIG NO.: 2

Client: Kess Properties
Test Location: The Shire at Old Ranch

Job Number: 212362

PERCOLATION HOLES

Date Holes Prepared: 10/20/2021

Date Hole Completed: 11/3/2021

Hole No. 1A
Depth: 46"

Trial	Time (min.)	Water Level Change (in.)
1	10	4
2	10	7
3	10	2

Perc Rate (min./in.): 5

Hole No. 1B
Depth: 34"

Trial	Time (min.)	Water Level Change (in.)
1	10	4
2	10	2
3	10	2

Perc Rate (min./in.): 5

Average Perc Rate (min./in.) 5

Hole No. 2A
Depth: 48"

Trial	Time (min.)	Water Level Change (in.)
1	10	5
2	10	2
3	10	3

Perc Rate (min./in.): 3

Hole No. 2B
Depth: 38"

Trial	Time (min.)	Water Level Change (in.)
1	10	3
2	10	5
3	10	2

Perc Rate (min./in.): 5

Observer: Nicholas S.

By:

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

PERCOLATION TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	11/19/21

JOB NO.: 212362
FIG NO.: 3

Infiltration Rate (I) = Percolation Rate (P)/ Reduction Factor(R_F)
$I=P/R_F$

$R_f = [(2d_1 - \Delta d) / dia] + 1$

d_1 = initial water depth (in.)

Δd = final water level drop (in.)

dia = diameter of the percolation hole (in.)

Test No. P1 (PH-1)
Perc Rate= 12 in/hr
dia = 8

P1
d_1 = 41.0
Δd = 5.0
R_f = 10.6

I = 1.13 in/hr

Test No. P2 (PH-1)
Perc Rate= 12 in/hr
dia = 8

P2
d_1 = 36.0
Δd = 3.0
R_f = 9.6

I = 1.25 in/hr

(PH-1) I_{AVG}= 1.19 in/hr

Test No. P1 (PH-2)
Perc Rate= 20 in/hr
dia = 8

P1
d_1 = 39.0
Δd = 4.0
R_f = 10.3

I = 1.95 in/hr

Test No. P2 (PH-2)
Perc Rate= 12 in/hr
dia = 8

P2
d_1 = 33.0
Δd = 5.0
R_f = 8.6

I = 1.39 in/hr

(PH-2) I_{AVG}= 1.67 in/hr

CLIENT KESS PROPERTIES
PROJECT THE SHIRE AT OLD RANCH
JOB NO. 212362

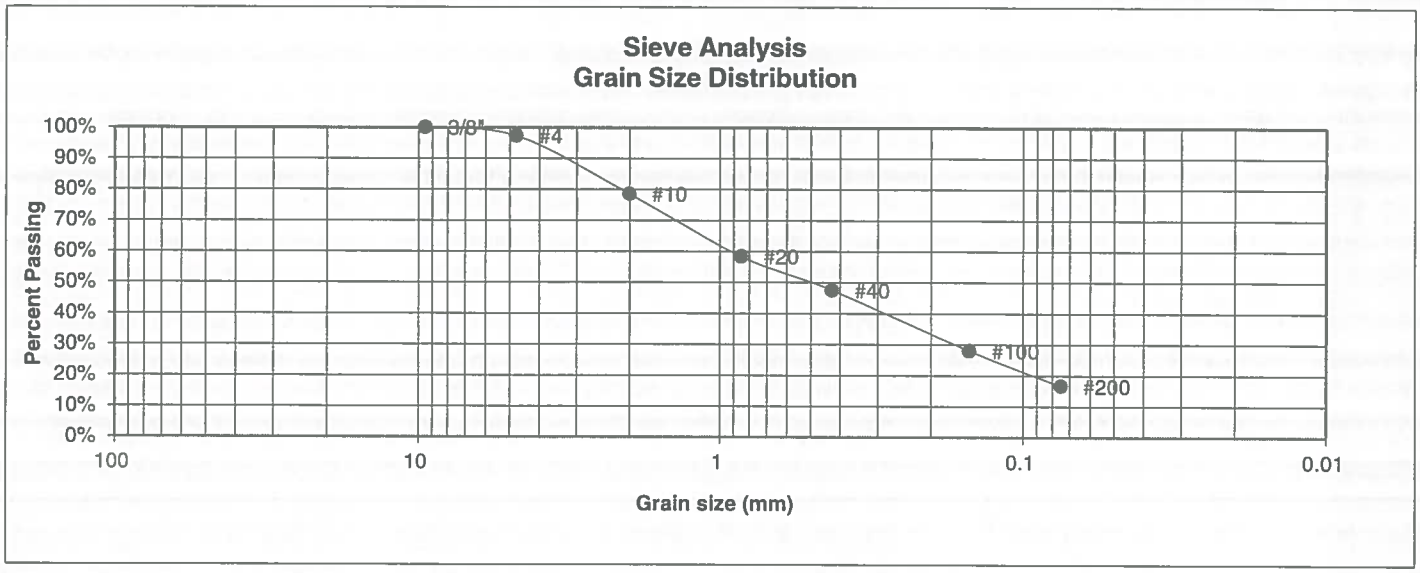
ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

INFILTRATION TEST RESULTS

DRAWN:	DATE:	CHECKED: LLL	DATE: 11/24/14

JOB NO.: 212362
FIG NO.: 4

UNIFIED CLASSIFICATION	SM	CLIENT	KESS PROPERTIES
SOIL TYPE #	1	PROJECT	THE SHIRE AT OLD RANCH
TEST BORING #	P1	JOB NO.	212362
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.3%
10	78.5%
20	58.4%
40	47.5%
100	28.0%
200	16.6%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

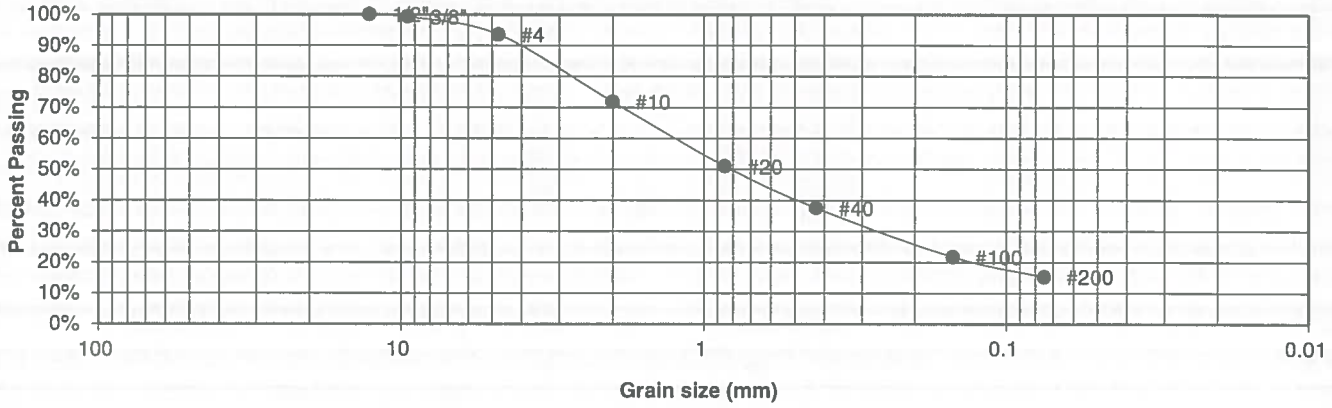
DRAWN:	DATE:	CHECKED:	DATE:
		LLL	11/19/21

JOB NO.: 212362

FIG NO.: 5

UNIFIED CLASSIFICATION	SM	CLIENT	KESS PROPERTIES
SOIL TYPE #	1	PROJECT	THE SHIRE AT OLD RANCH
TEST BORING #	P2	JOB NO.	212362
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.2%
4	93.5%
10	71.8%
20	51.0%
40	37.5%
100	21.7%
200	15.3%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	11/19/21

JOB NO.: 212362

FIG NO.: 6

MONSON, CUMMINS, SHOHET & FARR, LLC

ATTORNEYS AT LAW

CHRIS D. CUMMINS*
DAVID M. SHOHET
RYAN W. FARR
W. JAMES TILTON
SEDONA E. CHAVEZ

STEVEN T. MONSON ~ *Retired*

TELEPHONE: (719) 471-1212
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www.cowaterlaw.com
cdc@cowaterlaw.com

* *Also licensed in Wyoming*

August 24, 2026

Scott Harvey, P.E.
Art of Engineering
515 Manitou Ave, #260
Manitou Springs, CO 80829

via email only: sharvey@artofengineering.com

Re: The Shire at Old Ranch – Stormwater Requirements

Dear Scott:

Our mutual client at the Shire at Old Ranch has asked that I provide you with my opinions concerning stormwater management on the Shire at Old Ranch project, specifically concerning the Shire at Old Ranch's intent to largely retain all stormwater onsite for infiltration, rather than making detention pond releases. It is my opinion that this anticipated stormwater management practice is entirely appropriate in these unique circumstances, provided statutory provisions (as summarized below) and applicable El Paso County regulations, are complied with, and further provided that such retention and infiltration stormwater management practices are conducted consistent with applicable Colorado water law principles, as described herein.

As described in your own engineering analysis, the Shire at Old Ranch property is a relatively flat parcel of land totaling approximately 20 acres, located at the intersection of Old Ranch Road and Howells Road on the southeastern edge of the Black Forest. As such, historically there has been very little stormwater runoff from this property, with stormwater largely infiltrating into the largely undeveloped parcel rather than being discharged to neighboring properties, aside from minor typical sheet flows. In such circumstances, maintaining this historical infiltration is an appropriate means of managing stormwater following the limited development of impervious surfaces within the quite unique Shire at Old Ranch project, both approximating the historical water infiltration and flow patterns, and protecting neighboring properties from new stormwater runoff flows.

As you know, compliance with applicable stormwater laws and regulations requires calculation of any changes in stormwater flows which may result from the creation of impermeable surfaces, and either (a) identifying a suitable off-site discharge location for such increased flows, or

(b) creating onsite detention facilities to timely infiltrate such water without flowing off of the property (or both). This concept, however, must also be applied consistent with Colorado water law, which requires that water, including stormwater, (c) not be impounded for greater than 72 hours (*i.e.* it must infiltrate or be discharged within that time)[1] without first obtaining a water right, and then only when in priority (*see*, C.R.S. §37-92-602(8)(b)(1)(B)), and (d) that stormwater so impounded not be placed to a beneficial use without first acquiring a water right (and again, only when in priority) (*see*, C.R.S. §37-92-602(8)(e)(I).

The doctrine of prior appropriation is the central premise of Colorado water rights, and generally prohibits the diversion or storage of water, including that resulting from natural precipitation events, out-of-priority, so as to protect the water rights of senior water users of both surface and tributary groundwater resources. However, the General Assembly has created a number of exceptions to the prior appropriation doctrine, many of which are described in Title 37, Article 92, Section 602 of Colorado Revised Statutes. Section 602(8) specifically concerns exceptions allowing for detention and retention of stormwater, as relevant here, stating that:

> The general assembly hereby declares that storm water detention and *infiltration facilities*, post-wildland fire facilities, and fire suppression ponds are essential for the protection of public safety and welfare, property, and the environment.

C.R.S. §37-92-602(8)(a) (emphasis added). Relevant subsections of this statutory regime applicable to the proposed Shire project include:

1. Stormwater facilities must be operated solely for stormwater management – C.R.S. §37-92-602(b)(I);

2. Stormwater facilities must be owned, operated, or subject to the oversight of a governmental entity – C.R.S. §37-92-602(8)(b)(I)(A);

3. Stormwater facilities must release or infiltrate at least 97% of water stored as a result of a "five-year storm" within 72 hours following the end of such rainfall event – C.R.S. §37-92-602(8)(b)(I)(B);

4. Stormwater facilities must release or infiltrate at least 99% of water stored as a result of a storm of greater than "five-year" intensity within one hundred and twenty hours following the end of such rainfall event – C.R.S. §37-92-602(8)(b)(I)(C);

5. Stormwater facilities must operate passively (i.e. without active water treatment processes) – C.R.S. §37-92-602(8)(b)(I)(D);

6. Stormwater detained and infiltrated in a stormwater facility, and as released therefrom, shall not be placed to beneficial use or used for any purpose, and shall be available for use in-priority by other water rights holders following its infiltration or release, and shall not form the basis for any claim of a water right, credit, or other right for the use of water – C.R.S. §37-92-602(8)(e)(I) and (III);

---

[1] It is my understanding that the City of Colorado Springs Drainage Criteria Manual, as adopted by El Paso County, may require infiltration/discharge rates of no greater than 12 hours, potentially rendering the maximum time periods prescribed by Colorado statute somewhat moot. It is further my understanding, however, that you have addressed these standards in your engineered Stormwater/Drainage report in support of the Shire at Old Ranch project.

7. Provided a stormwater facility is operated in compliance with the above provisions, there is a rebuttable presumption that such stormwater facility does not cause material injury to vested water rights, provided the operation of the facility approximates the natural hydrograph as would have existed or occurred prior to development – C.R.S. §37-92-602(8)(b)(II)(A).

It is my understanding that detention/infiltration facilities proposed for the Shire project will be in full compliance with all of the above provisions, infiltrating water at rates intended to approximate the properties natural condition without beneficial use of such stormwater flows, with only minimal sheet flow of water from the property at rates at or below what has historically occurred. It is my understanding that El Paso County will be provided authority for the oversight of such detention and infiltration facilities, and that the design and implementation of such facilities will be consistent not only with the statutory provisions described herein, but also with El Paso County's potentially stricter timing and operational guidance and regulations. It is therefore my opinion that the proposed stormwater detention and infiltration facilities anticipated at the Shire project in central El Paso County are entirely consistent with all legal guidance and requirements, based upon the information which has been made available to me as the Shire's water counsel.

I am happy to discuss further at your convenience, should you have questions, comments or concerns.

Sincerely,

MONSON, CUMMINS, SHOHET
& FARR, LLC

Chris D. Cummins
Attorney at Law

Art of Engineering, Inc.
515 Manitou Ave. #260
Manitou Springs, CO 80829

Service@.ArtofEngineering.com

719-528-1557 o 719-930-5146 c

El Paso County Planning Dept

25 Aug.2026

RE: PPR2410 Response to stormwater legal issues and infiltration

These drain times/infiltration times need to be reported to the state

To All Concerned,

I have received a legal opinion from our water attorney dated 24august2026 which pointed out several legal requirements of infiltrating stormwater for the Shire project, to which I'll answer below. Items 1-6 are legal requirements. Item 7 is a legal conclusion as to our infiltration strategies being valid.

1. "Stormwater facilities must be operated solely for stormwater management."
   Answer : That is the intent and operational purpose. Native grasses and weeds will naturally grow in the ponds. Owner may plant preferable plants rather than let noxious or invasive species to proliferate.

2. "Stormwater facilities must be owned, operated or subject to the oversight of a governmental entity."
   Answer : Yes, an agreement to that affect is part of our submittals to the County.

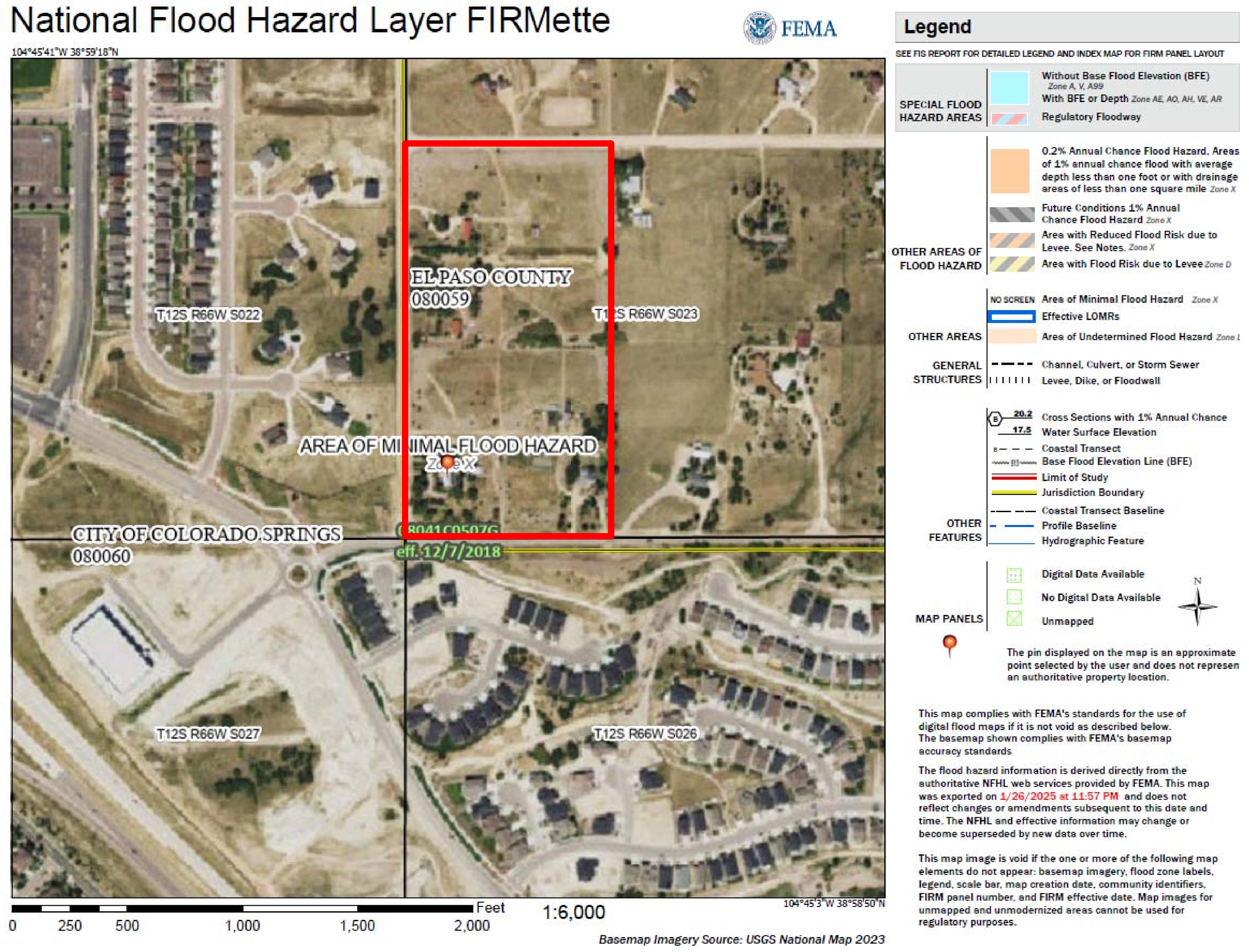
3. "Stormwater must release or infiltrate at least 97% of water stored as a result of a storm of greater than "five-year" intensity within 120 hours following the end of such a rainfall event."
   Answer : The four ponds will release stormwaters in the time frames predicted below based on soil tests. These time periods may differ after additional infiltration tests are done in the excavated ponds.
   Pond #1 will infiltrate a 5yr storm within approximately 3 hours
   Pond #2 & #3 are interconnected and infiltration period is calculated as one large area with the combined flows from Basin 3a and 3b. The infiltration period for a 5yr storm is calculated to be 11 hours.
   Pond #4 will discharge waters from a 5yr storm in less than 20 hours.

4. "Stormwater must release or infiltrate at least 99% of water stored as a result of a 'five-year storm" within 72 hours following the end of such a rainfall event."
   Answer : The four ponds will release stormwaters in the time frames predicted below based on soil tests. These time periods may differ after additional infiltration tests are done in the excavated ponds.
   Pond #1 will infiltrate a 100yr storm within approximately 13 hours
   Pond #2 & #3 are interconnected and infiltration period is calculated as one large area with the combined flows from Basin 3a and 3b. The infiltration period for a 100yr storm is calculated to be 23.6 hours.
   Pond #4 will discharge waters from a 100yr storm in less than 20 hours.

5. "Stormwater facilities must operate passively (i.e. without active water treatment processes)"
   Answer : No active water treatment systems are going to be used.

6. "Stormwater detained and infiltrated in a stormwater facility, and as released therefrom, shall not be placed to beneficial use ... "
   Answer : The Shire will not move or distribute captured stormwater for any beneficial use. However, grasses etc. that grow within ponds may benefit from the presence of stormwater. This is not any different than native grasses in the pre-development era from using rain waters. The Shire will likely not irrigate or water these grasses. Harvestable crops/plants etc. will not be grown within ponds (that would likely be deriving a beneficial use).

Sincerely,
Scott Harvey, P.E.



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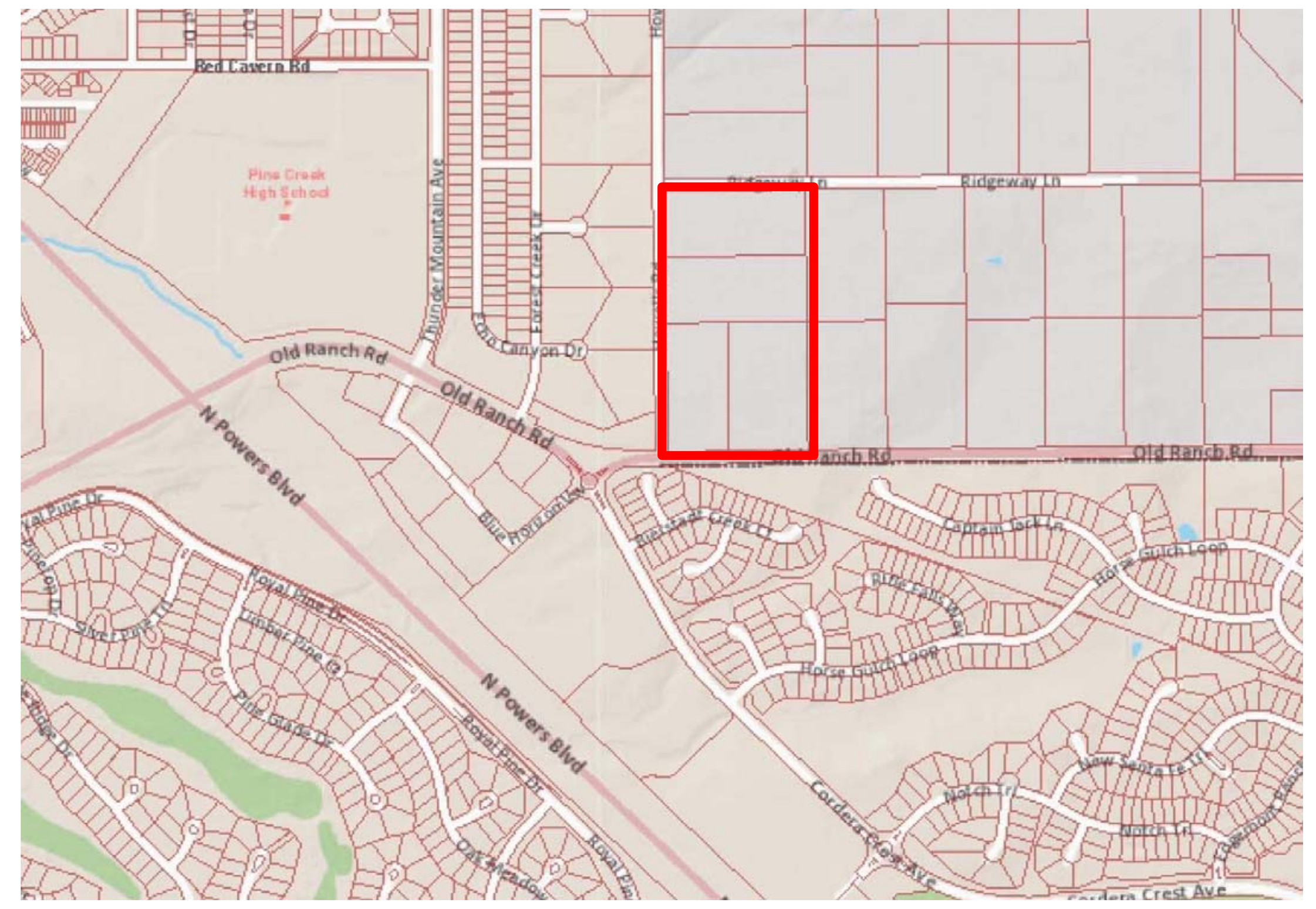


Vicinity Map

SOILS

Soils tests performed include: Sub-Surface Investigation, Pavement Design and Infiltration Rates. Entect Eng #212362. The soils are generally non-expansive sands. No special requirements for soil management were given other than standard slopes of 3:1 and proper/standard excavation safety. Below is their pavement recommendation.

No slopes exceeding 3:1 are anticipated.

Basecourse/Asphalt Pavement Sections - Soil Type 1

Parking Areas

Alternatives	Asphalt (in)	Basecourse (in)
1 – Asphalt Over Basecourse	4.0	6.0
2 – Full Depth Asphalt	5.0¹	--

Drive Areas

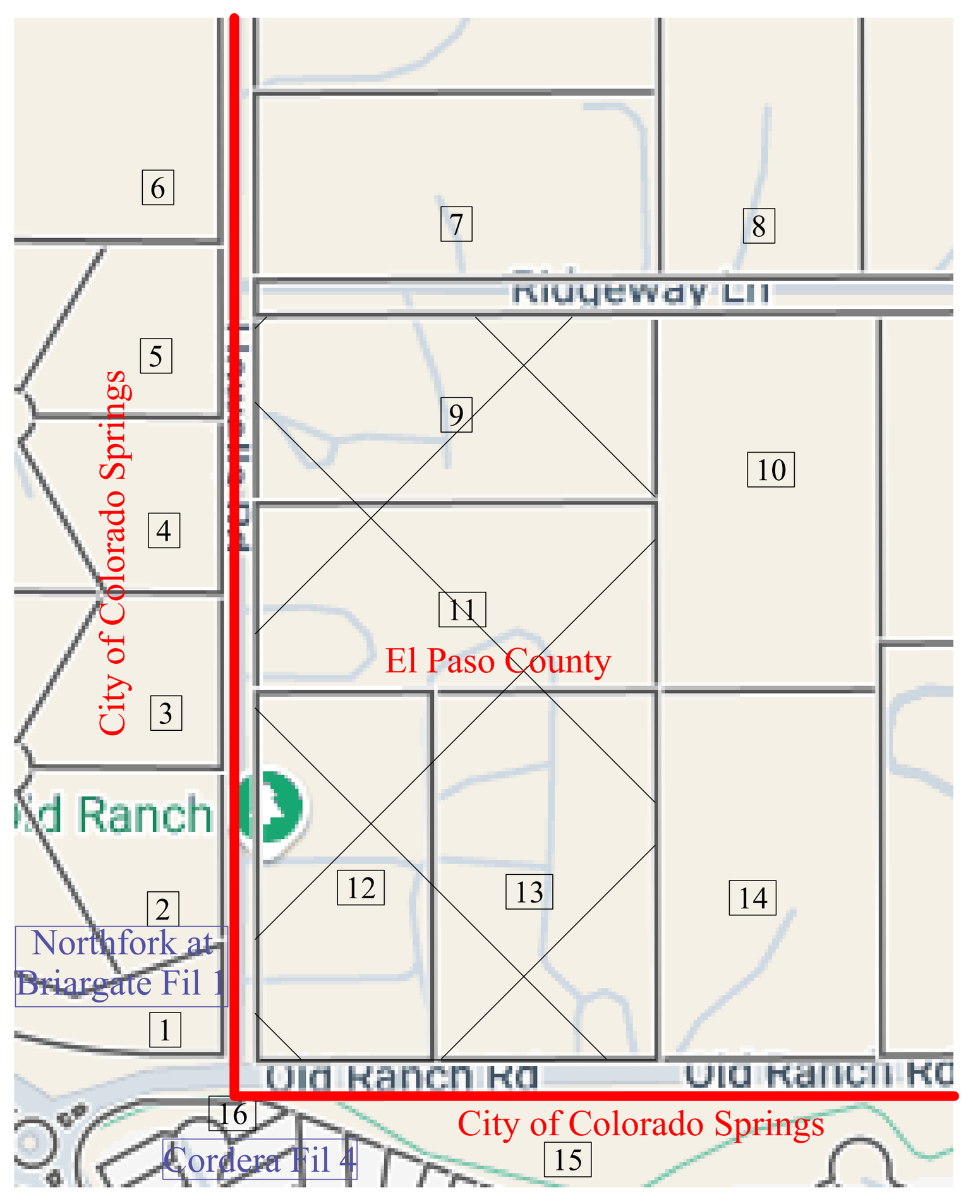
Alternatives	Asphalt (in)	Basecourse (in)
1 – Asphalt Over Basecourse	4.0	6.0
2 – Full Depth Asphalt	5.0¹	--

Truck Areas

Alternatives	Asphalt (in)	Basecourse (in)
1 – Asphalt Over Basecourse	4.0	6.0
2 – Full Depth Asphalt	5.0¹	--

1 – Full Depth Sections are currently not allowed by El Paso County.

Owner has elected to use 5" full depth Asphalt pavement.
See Interior Roadway Pavement Recommendations by



Adjacent Properties, City / County Boundary, Subdivisions

Property Ownership

Mark	Address	Tax Sched #	Owner	Owner Address	Subdividion
1	10509 Forest Creek Dr.	6222404010	North Fork at Briargate HOA	1755 Telstar Dr Ste 211, Colorado Springs, CO 80920-1018	Northfork at Briargate Fil No. 1
2	10516 Echo Canyon Dr	6222404002	Stabler Family Trust	10516 Echo Canyon Dr, Colorado Springs, CO 80908-7411	Northfork at Briargate Fil No. 1
3	10517 Echo Canyon Dr	6222404003	Arden Duerksen et al	10517 Echo Canyon Dr, Colorado Springs, CO 80908-7411	Northfork at Briargate Fil No. 1
4	3725 Morrowind Ct	6222404006	Christopher Diehl et al	3725 Morrowind Ct, Colorado Springs, CO 80908-7416	Northfork at Briargate Fil No. 1
5	3726 Morrowind Ct	6222404007	Jeffrey Waguespack	3726 Morrowind Ct, Colorado Springs, CO 80908-7416	Northfork at Briargate Fil No. 1
6	10817 Frosted Pine Dr	6222404009	North Fork at Briagate HOA Inc	11002 Benton St, Broomfield, CO 80020-3286	Northfork at Briargate Fil No. 1
7	3820 Ridgeway Ln	6223000101	Eric Wach et al	3820 Ridgeway Ln, Colorado Springs CO 80908-3742	Tract in NW4SW4 Sec 23
8	3970 Ridgeway Ln	6223000102	Scott Dayberry et al	3770 Ridgeway Ln, Colorado Springs, CO 80908-3742	Tract in NW4SW4 Sec 23
9	10755 Howells Rd	6223000058	Monica Phelan	10755 Howells Rd, Colorado Springs CO 80908-3771	Tract in SW4SW4 Sec 23
10	3975 Ridgeway Ln	6223000057	David Swasey et al	3975 Ridgeway Ln, Colorado Springs CO 80908-3741	Portion of Tract in N2S2W4 Sec 23
11	10655 Howells Rd	6223000059	Old Ranch Road Properties LLC	4955 Austin Bluffs Pkwy, Colorado Springs CO 80918-5043	Tract in SW4SW4 Sec 23
12	3820 Old Ranch Rd	6223000061	Old Ranch Road Properties LLC	4955 Austin Bluffs Pkwy, Colorado Springs CO 80918-5043	W 315 ft of S2s2Sw4 Sec 23
13	3890 Old Ranch Rd	6223000060	Old Ranch Road Properties LLC	4955 Austin Bluffs Pkwy, Colorado Springs CO 80918-5043	E 385 ft of W 715 ft of S2S2SW4 Sec 23
14	3970 Old Ranch Rd	6223000056	Stray Winds VI LLC	4050 Old Ranch Rd, Colorado Springs CO 80908-3751	E 385ft of W 1100 ft of S2S2SW4 Sec 23
15	4143 Captain Jack Ln	6226207095	Cordera Community Association Inc	9540 Federal Dr Ste 200, Colorado Springs CO 80921	Tract A Cordera Fil No 4
16	10478 Marshall Mesa Ct	6227112006	Cordera Community Association Inc	11002 Benton St, Broomfield CO 80020-3286	

Design Engineer's Statement:

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

19 Aug 2026

Scott Harvey, P.E. #28758 Date

Owner/Developer's Statement:

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

19 Aug 2026

Mark Phelan Date
Old Ranch Road Properties LLC
4955 Austin Bluffs Pkwy
Colorado Springs, CO 80918

El Paso County:

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

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

Conditions:

County File No. PPR2410

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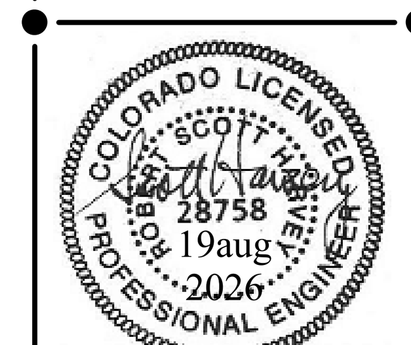


for Shire 19aug2026

The Shire at Old Ranch

Howend Old Ranch Rd
El Paso County CO

Art of Engineering, Inc.
Architectural, Civil and Construction Services
PO Box 704 Colorado Springs, CO 80901
Phone: 719-528-1557
Email: Service@ArtofEngineering.com

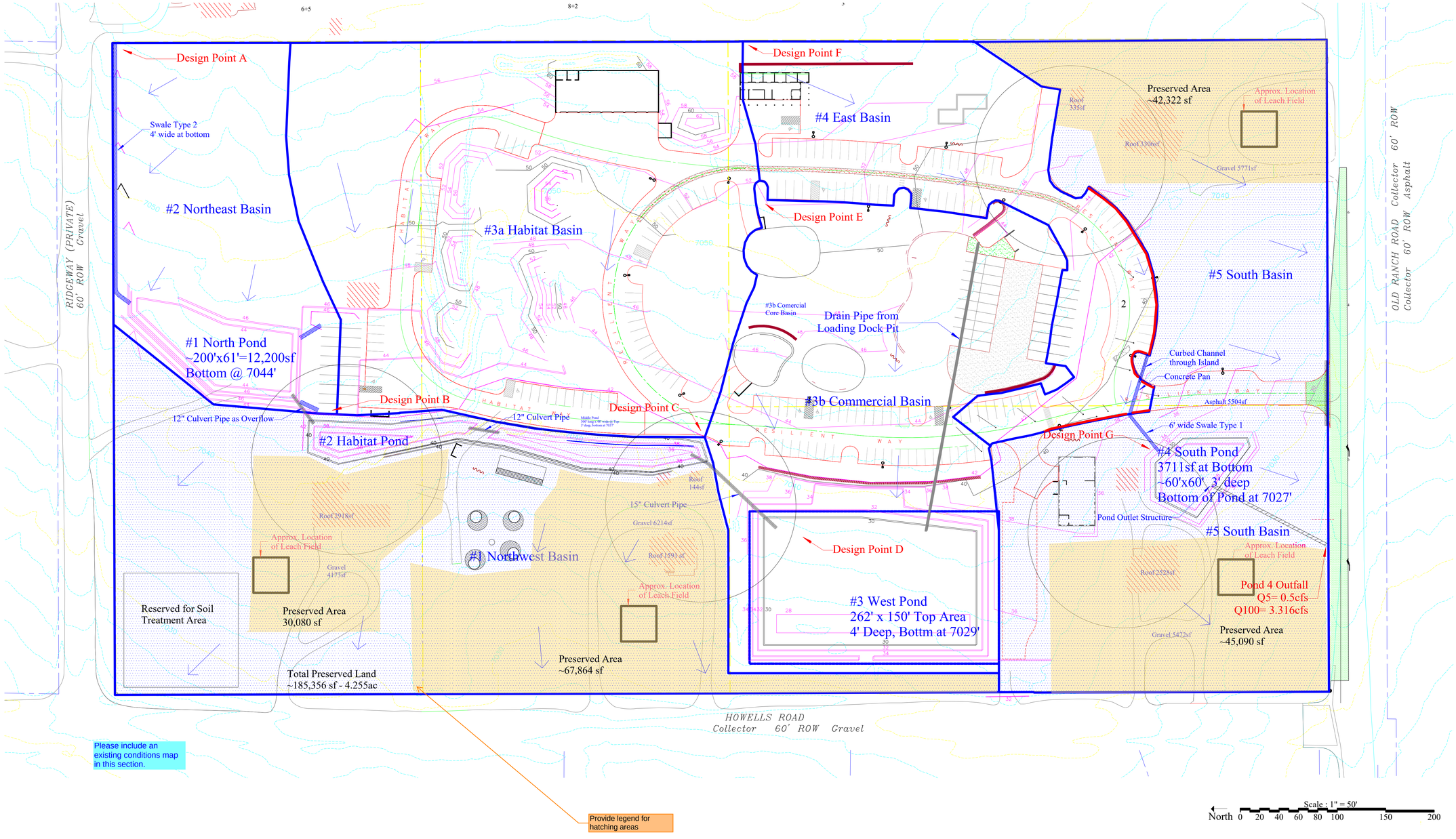
Client Information:
Mark Phelan
4955 Austin Bluffs Pkwy
Colorado Springs, CO 80918
719-243-2678
Mark@PhelanGardens.com

REVISIONS

Number	Date	Purpose

Project Number : 14010
Project Phase:Development Plan
Drawn by : RSH
Drawing Date : 19 Aug 2026

Cover Sheet for Drainage Report



Exempted Areas from PCM's

Area	Size (acres)
NW Basin #1	4.273
South Basin #5	4.448
Road widening	0.29
Utilities	0.036
Total	9.047

Yellow shaded areas are undistubred
Blue shaded areas are uncontrolled basin
Green shaded area is roadway work

County File No. PPR2410

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COLORADO LICENSED SCOTT HOWARD KATSOS 38758 10 July 2026 PROFESSIONAL ENGINEER

The Shire at Old Ranch

Howend Old Ranch Rd
El Paso County CO

Art of Engineering, Inc.
Architectural, Civil and Construction Services
PO Box 704 Colorado Springs, CO 80901
Phone: 719-528-1557
Email: Service@ArtofEngineering.com

Client Information:
Mark and Monica Phelan
4955 Austin Bluffs Pkwy
Colorado Springs, CO 80918

Kyle Katsos 719-359-2495

REVISIONS

Number	Date	Purpose

Project Number : 14010
Project Phase:Development Plan
Drawn by : RSH
Drawing Date : 10 July 2026

DR -2
PCM Areas
Exempted

flows from this basin reach pond 1, please revise the location of this design point

Ensure offsite flows are included in ponds or show how the flows are routed around site.

what is flowing to DP F?

Design Point A

Provide a design calculation of this swale. Discuss in report

Swale Type 2
4' wide at bottom

2

#2 Northeast Basin

#2 NE Basin - Post Development		
	Qpk (cfs)	Volume (cf)
5 yr	0.328	1,809
100 yr	2.088	9,647
Pond Capacity		43,971
Area (ac)	1.71	
Time to fully inf	3	13

3a

#3a Habitat Basin

#3a Habitat Basin POST		
	Qpk (cfs)	Volume (cf)
5 yr	3.141	10,555
100 yr	8.696	29,218
Pond Capacity		9,486
Area (ac)	4.194	
Time to fully inf	50	139

Design Point F

4

#4 East Basin

#4 East Basin - Post Development		
	Target Qpk (cfs)	Volume (cf)
5 yr	3.23	10,076
100 yr	6.604	13,868
Pond Capacity		14,364
Area (ac)	1.822	

Roof 335sf

Roof 3306sf

Approx. Location of Leach Field

Gravel 5771sf

Design Point E

Contours need to tie into existing contours

What and where is the loading dock? This area was not mentioned in the drainage report. Why does it need it's own pipe? Provide calculations for sizing and indicate that the flow is part of the pond design

Drain Pipe from Loading Dock Pit

#3b Comercial Core Basin

Contour labeled with different elevations

3b

#3b Commercial Basin

#3b Commercial Basin POST		
	Qpk (cfs)	Volume (cf)
5 yr	3.748	13,494
100 yr	9.054	23,903
Pond Capacity		140,402
Area (ac)	3.525	

5

#5 South Basin

#5 South Basin - Post Development		
	Qpk (cfs)	Volume (cf)
5 yr	1.465	6,242
100 yr	8.703	29,243
Area (ac)	5.457	

Curb

Provide calculation sizing channel curb widths

Curbed Channel through Island

Concrete Pan

Asphalt 5504sf

(2) 12" Culvert Pipes

6' wide Swale Type

Provide design calculations for culvert sizing and outlet protection. Discuss within report

Provide design calculations for swale. Discuss within report

#4 South Pond
3711sf at Bottom
~60'x60', 3' deep
Bottom of Pond at 7027'

Provide size for culvert

Pond Outlet Structure

#5 South Basin

Approx. Location of Leach Field

Culvert Pipe

Pond 4 Outfall
Q5= 0.5cfs
Q100= 3.316cfs

Roof 2528sf

Gravel 5472sf

What are these? Please label

#1 North Pond
~200'x61'=12,200sf
Bottom @ 7044'

If these are roads, please label as public or private and show edges

Design Point B

Design Point C

12" Culvert Pipe as Overflow

12" Culvert Pipe

Middle Pond
360' long x 40' wide @ Top
3' deep, bottom at 7037'

#2 Habitat Pond

Provide same information as on other ponds

Show and label outlet

Roof 144sf

15" Culvert Pipe

Gravel 6214sf

Roof 2918sf

Approx. Location of Leach Field

Gravel 4173sf

1

#1 Northwest Basin

#1 NW Basin - Post Development		
	Qpk (cfs)	Volume (cf)
5 yr	0.821	5,171
100 yr	4.879	22,541
Area (ac)	4.273	

Roof 1591 sf

Approx. Location of Leach Field

Design Point D

Provide bottom area for pond to be consistent with other pond labels

Hatch and show gravvel and roof areas within each basin

#3 West Pond
262' x 150' Top Area
4' Deep, Bottm at 7029'

Reserved for Soil Treatment Area

What are circles meant for?

Show where emergency overflows from each pond goes

North 0 20 40 60 80 100 150 200

Scale : 1" = 50'

- Provide legend
- Provide design point summary table
- Show and label existing roadside ditches for Howell Road and Old Ranch Road. Provide design calculations for ditches.
- Label existing roads

County File No. PPR2410

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COLORADO LICENSED 38758 10 July 2026 PROFESSIONAL ENGINEER

The Shire at Old Ranch

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Client Information:
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4955 Austin Bluffs Pkwy
Colorado Springs, CO 80918

Kyle Katsos 719-359-2495

REVISIONS		
Number	Date	Purpose

Project Number : 14010

Project Phase:Development Plan

Drawn by : RSH

Drawing Date : 10 July 2026

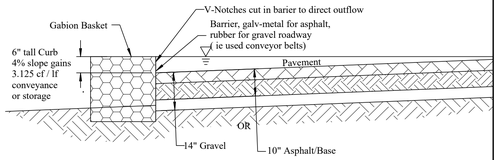
DR -3
Drainage Plan

This legend needs to be on the map sheets

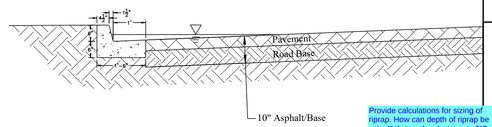
Features Legend

- EXISTING INTERMEDIATE CONTOURS (2' INTERVAL)
- EXISTING INDEX CONTOURS (10' INTERVAL)
- NEW INTERMEDIATE CONTOURS (2' INTERVAL)
- NEW INDEX CONTOURS (10' INTERVAL)
- SP9 STORM POND NO'S – SEE DRAIN'G STUDY
- NEW 5" FULL DEPTH ASPHALT (PER GEOTECH.) PAVED PARKING LOT/DRIVE – STRIPING & ACCESSIBLE SPACES WHERE SHOWN. NUMBER = COUNT. TIMBER PARKING BUMPERS ADJACENT PEDESTRIAN WALKS.
- CONCRETE PAVED OUTDOOR PRODUCT DISPLAY AREA
- NEW HARD SURFACE WALKS (SEE LS PLAN)
- NEW PARKING/DRIVE SURFACE GRAVEL PAVED). NUMBER INDICATES LOCAL AREA SPACE COUNT
- EPCO CURB CUT APRON – SEE SP2
- NEW 4" D. x 6'–0" W. BREEZE PEDESTRIAN PATH
- NEW 6' HIGH WIRE MESH WILDLIFE FENCE W/ GATES WHERE INDICATED
- NEW 3' HIGH WIRE MESH FENCING
- NEW 6' HIGH DECORATIVE FENCING
- NEW GABION RETAINING WALLS
- BOLLARDS & CHAIN TRAFFIC CONTROL
- ZONING BUILDING SETBACK LINE
- PROPERTY LINES
- EXISTING VEGETATION – MINIMIZE DISTURBANCE
- EXISTING BUILDINGS TO REMAIN
- EXISTING BUILDINGS TO BE REMOVED
- NEW BUILDINGS & SECONDARY ADDRESSING NO.
- FABRIC STRUCTURE ON WD DECK
- DUMPSTER SCREEN WALLS W/ CONCRETE PAVING
- EV ELECTRIC VEHICLE CHARGING STATION
- BIKE RACKS: 11 STALLS REQ'D. 4*5 RACKS = 20 PROVIDED)
- TRAFFIC VIEW TRIANGLE
- ADA ACCESSIBLE ROUTE
- SIGNAGE – SE SGN1
- 8.0d TYP. STORAGE PODS (SEE PLAN FOR LENGTH)

Type 1 Curb - Gabion Basket



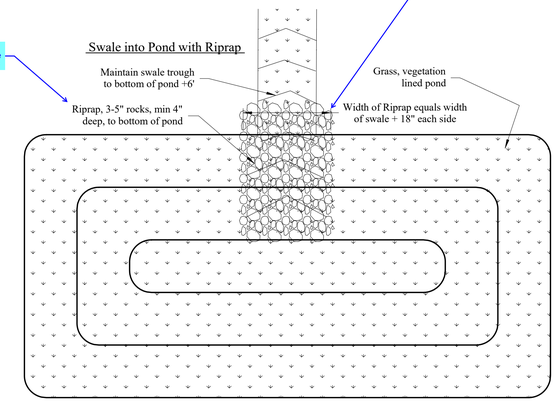
Type 2 Curb - Standard Concrete Curb



Provide calculations for sizing of riprap. How can depth of riprap be only 4" if size of rocks is up to 5"?

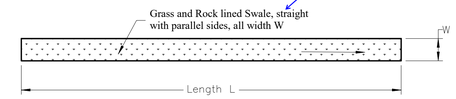
Swale into Pond with Riprap

Show on the drainage map where these are located on the ponds

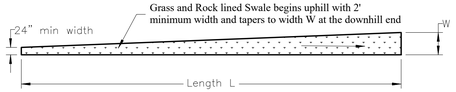


Grass and rock will not hold up to vertical slopes

Swale Type 1 Straight

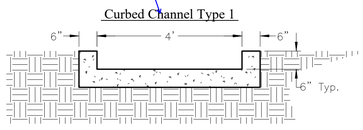


Swale Type 2 Tapered

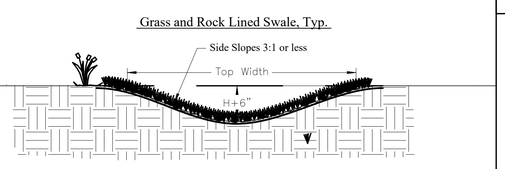


Provide calculations for sizing of channel

Curbed Channel Type 1



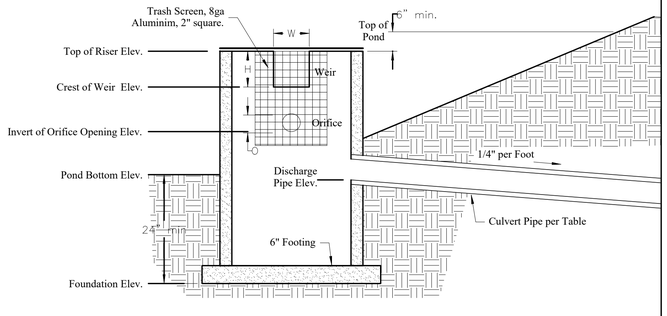
Grass and Rock Lined Swale, Typ.



Pond Outlet Structure Sizing

Outlet Dimensions	Pond #2	Pond #4
Bottom of Foundation	7034	7025
Bottom of Pond	7036	7027
Discharge Pipe Elevation	7036	7027
Top of Riser	7039	7029
Culvert Pipe Size (in)	15	12
Culvert Invert Elevation	7036	7027
Orifice 1 Elevation	7036.25	7027.5
Orifice 1 Diameter	8"	12"
Orifice 2 Elevation	7037	na
Orifice 2 Diameter	8"	na
Weir Elevation	7038	7028.5
Weir H	4"	6"
Weir W	48"	24"
Outfall Elevation	7032	7024

Pond Outlet Structure



County File No. PPR2410

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Client Information:
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Kyle Katsos 719-359-2495

REVISIONS

Number	Date	Purpose

Project Number : 14010

Project Phase:Development Plan

Drawn by : RSH

Drawing Date : 10 July 2026

DR -4
Drainage Details