TERRA FORMA
SOLUTIONS

August 28, 2022

Mr. Brad Walters
Inspections Supervisor
El Paso County Planning & Community Development
2880 International Circle, Suite 110
Colorado Springs, CO 80910

Pond Certification

RE: Monument Steel Structures
18910 Base Camp Road

Mr. Walters,

Based on our review of the survey data provided by R.W. Bayer & Associates, Inc. on 07/21/2022 it is our opinion that the extended detention basin for Monument Steel Structures will perform as intended by Terra Forma Solutions within the approved drainage report for this site.

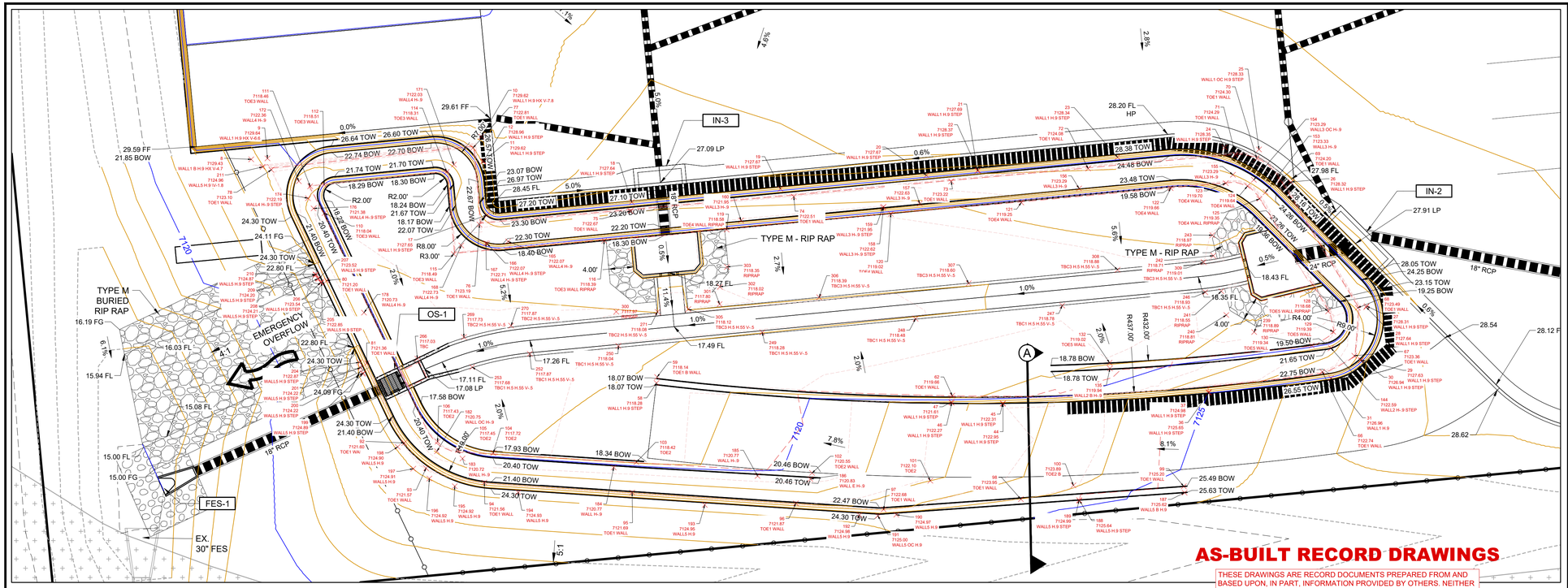
Survey data of the EDB shows that the basin has storage volume as calculated in the approved drainage report. See below charts, and attachments, summarizing the design vs. as-built conditions.

	18910 Base Camp Road					
	Design		As-Built		Δ	
	Vol (Ac-ft)	Elevation	Vol (Ac-ft)	Elevation	Vol (Ac-ft)	Elevation
WQCV	0.091	7119.10	0.099	7119.32	0.008	0.22
EURV	0.311	7120.96	0.327	7121.29	0.016	0.33
100-Year	0.537	7122.55	0.508	7122.59	-0.029	0.04
Spillway-Crest	N/A	7122.80	N/A	7122.86	N/A	0.06
Spillway-WSE	N/A	7123.30	N/A	7123.38	N/A	0.08
Top of Berm	N/A	7124.30	N/A	7124.87	N/A	0.57
Freeboard	N/A	1.00	N/A	1.49	N/A	0.49

It is our professional opinion that the pond, as constructed, will perform as intended by the approved report and provides the required storage volume and will meet the required release rates. Please see the attached redline approved plans and updated calculations per survey performed by R.W. Bayer & Associates, Inc.

Should you have any questions or concerns, please feel free to contact me at 303-257-7653 or todd@terraformas.com with any questions or comments.

Todd A. Johnson, P.E, President
For and on behalf of:
Terra Forma Solutions, Inc.



KEYMAP

KEYNOTES:

1. RETAINING WALLS
2. DETENTION POND
3. DETENTION POND MAINTENANCE ACCESS
4. OUTLET STRUCTURE
5. NOT USED
6. DRAINAGE SWALE
7. STORM INLET

LEGEND:

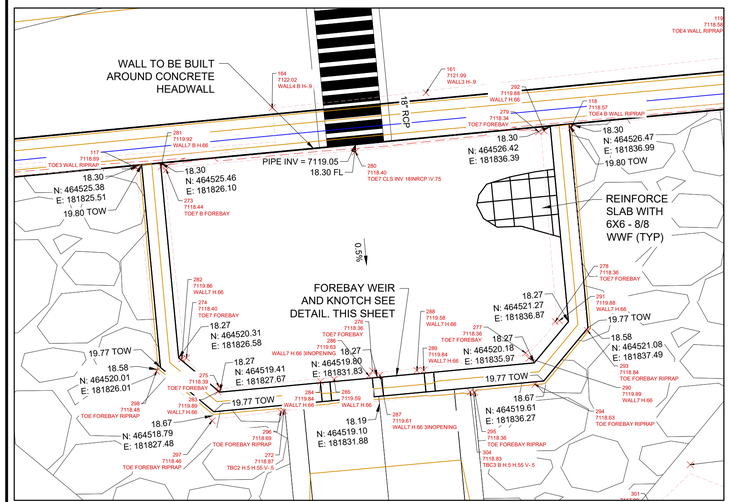
LP	=	LOW POINT
HP	=	HIGH POINT
FL	=	FLOW LINE
TOW	=	TOP OF WALL
BOW	=	FINISHED GRADE AT BOTTOM FACE OF WALL
FF	=	FINISHED FLOOR
FG	=	FINISHED GROUND

100 PROPOSED MAJOR CONTOUR
100 PROPOSED MINOR CONTOUR
100 EXISTING MAJOR CONTOUR
100 EXISTING MINOR CONTOUR

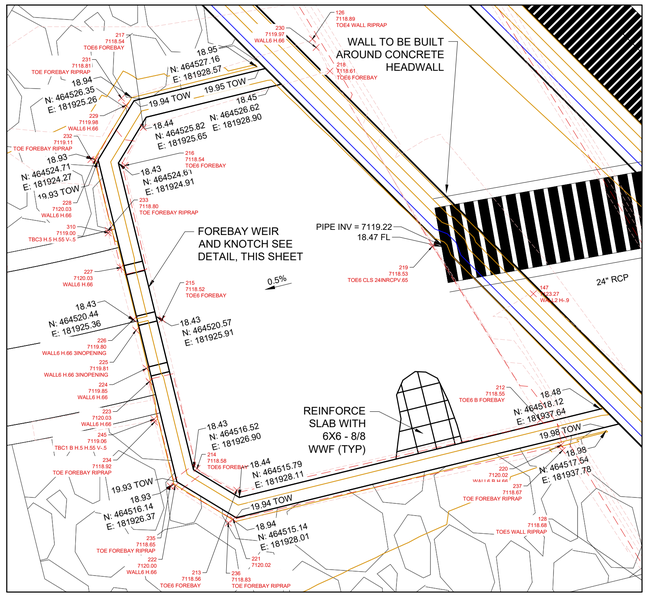
AS-BUILT RECORD DRAWINGS

THESE DRAWINGS ARE RECORD DOCUMENTS PREPARED FROM AND BASED UPON, IN PART, INFORMATION PROVIDED BY OTHERS. NEITHER TERRA FORMA SOLUTIONS, NOR THE ENGINEER OF RECORD, HAS VERIFIED THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERROR OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

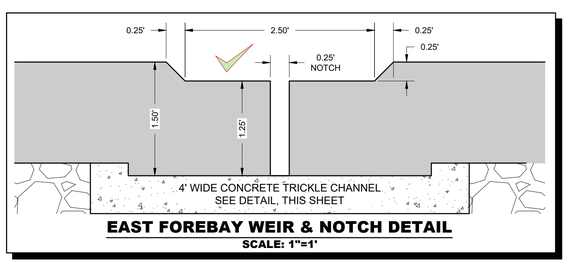
TERRA FORMA SOLUTIONS BY: TAJ DATE: 8.13.22



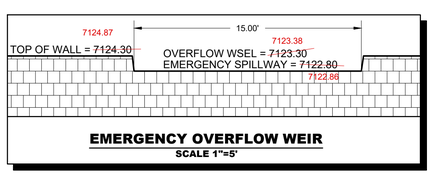
NORTH FOREBAY DETAIL
SCALE 1"=5'



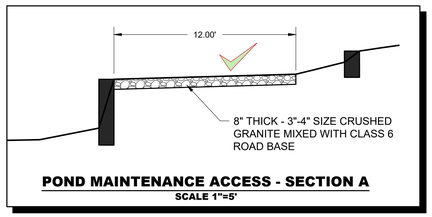
EAST FOREBAY DETAIL
SCALE 1"=5'



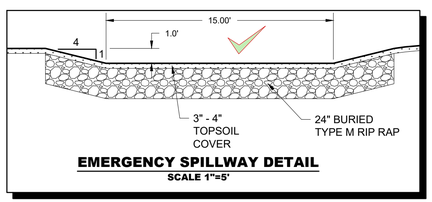
EAST FOREBAY WEIR & NOTCH DETAIL
SCALE: 1"=1'



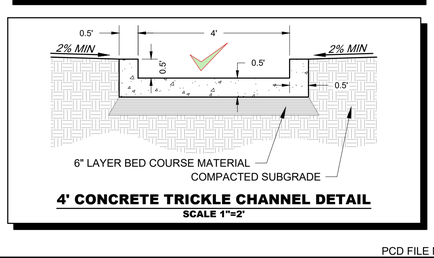
EMERGENCY OVERFLOW WEIR
SCALE 1"=5'



POND MAINTENANCE ACCESS - SECTION A
SCALE 1"=5'



EMERGENCY SPILLWAY DETAIL
SCALE 1"=5'



4' CONCRETE TRICKLE CHANNEL DETAIL
SCALE 1"=2'

PCD FILE NO. PPR205

0 10' 20'
1" = 10' (HORIZONTAL)

TERRA FORMA SOLUTIONS

REV. NO.	DESCRIPTION	DATE
6	MEDIAN GUARDRAIL MODIFICATION	03/12/2022
5	ADDITIONAL WATER LABELS	02/22/2021
4	WATER AND SAN REVISIONS	01/08/2021
3	VALUE ENGINEERING & PIKE PEAK BUILDING REVISIONS	01/20/2020
2	HANDICAP PARKING WITH VAN ACCESSIBILITY - REVISION	10/24/2019
1		

AS - BUILTS

MONUMENT STEEL STRUCTURES

EXTENDED DETENTION BASIN PLAN

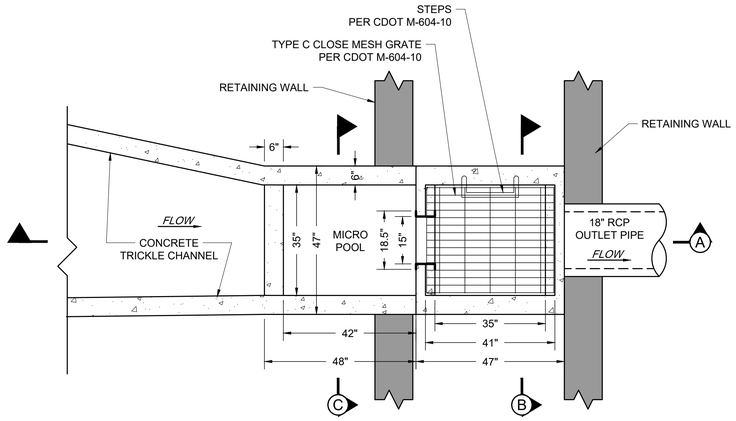
18910 BASE CAMP ROAD
MONUMENT, COLORADO

STEEL STRUCTURES AMERICA INC.®

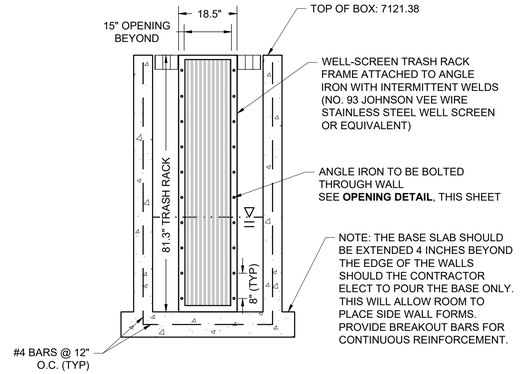
COLORADO LICENSED
TODD A. JOHNSON
37660
08/13/22
PROFESSIONAL ENGINEER

PROJ NO: SSA
ENG :
CHKD:
DATE : 08/17/2019

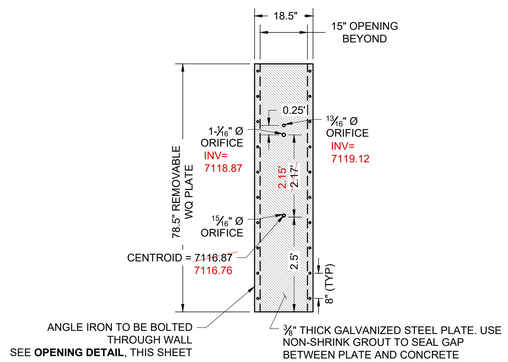
SHEET NUMBER
PD
8 OF 14



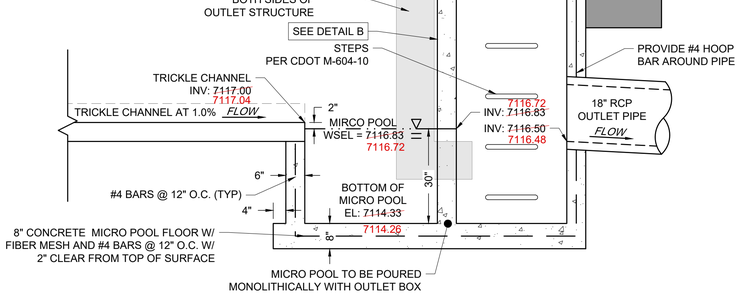
DETENTION POND OUTLET STRUCTURE MODIFIED TYPE C
SCALE: 1"=2'



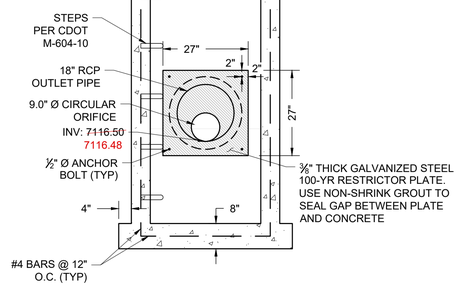
SECTION C
SCALE: 1"=2'



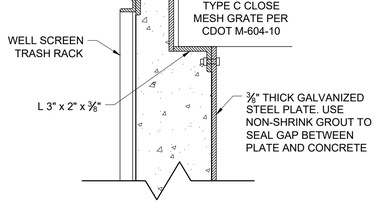
WATER QUALITY CONTROL PLATE DETAIL
SCALE: 1"=2'



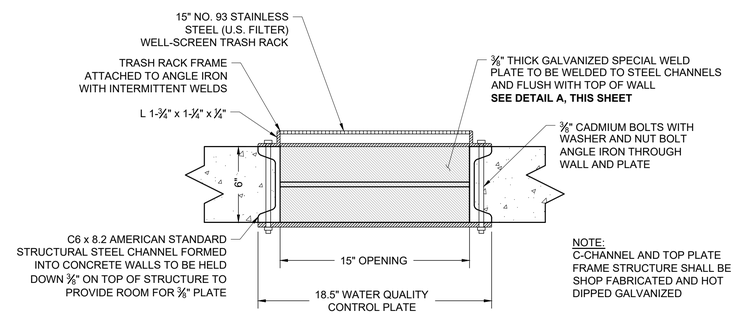
SECTION A
SCALE: 1"=2'



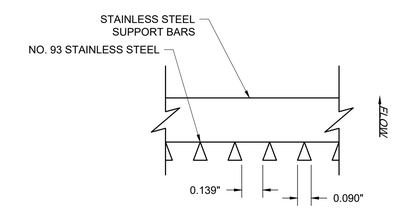
SECTION B
SCALE: 1"=2'



DETAIL A
SCALE: 1"=0.5'



OPENING DETAIL
SCALE: 1"=0.5'



DETAIL B
N.T.S.

NOTE:

CONTRACTOR MUST COMPLETE DETENTION POND GRADING AND PROVIDE DETENTION POND CERTIFICATION TO ENGINEER PRIOR TO CONSTRUCTING ANY OUTFALL STRUCTURE (WATER QUALITY PLATE, BOX INLET, WEIR, ETC). DETENTION POND CERTIFICATION NEEDS TO BE DONE AFTER THE SOD IS IN PLACE.

AS-BUILT RECORD DRAWINGS

THESE DRAWINGS ARE RECORD DOCUMENTS PREPARED FROM AND BASED UPON, IN PART, INFORMATION PROVIDED BY OTHERS. NEITHER TERRA FORMA SOLUTIONS, NOR THE ENGINEER OF RECORD, HAS VERIFIED THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERROR OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

TERRA FORMA SOLUTIONS BY: TAJ DATE: 8.13.22

PCD FILE NO. PPR205

TERRA FORMA SOLUTIONS

REV. NO.	DESCRIPTION	DATE
6	MEDIAN GUARDRAIL MODIFICATION	03/12/2022
5	ADDITIONAL WATER LABELS	02/22/2021
4	WATER AND SAN REVISIONS	01/08/2021
3	VALUE ENGINEERING & PIKE PEAK BUILDING REVISIONS	01/20/2020
2	HANDICAP PARKING WITH VAN ACCESSIBILITY - REVISION	10/24/2019

AS - BUILTS

MONUMENT STEEL STRUCTURES

OUTLET STRUCTURE

18910 BASE CAMP ROAD
MONUMENT, COLORADO

COLORADO LICENSED
TODD A. JOHNSON
37660
08/13/22
PROFESSIONAL ENGINEER

PROJ NO: SSA
ENG :
CHKD:
DATE : 08/17/2019

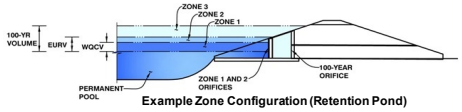
SHEET NUMBER
OS
9 OF 14

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: 18910 Base Camp Road

Basin ID: Lot 2 SSA - As Built



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	4.67	acres
Watershed Length =	630	ft
Watershed Length to Centroid =	250	ft
Watershed Slope =	0.034	ft/ft
Watershed Imperviousness =	64.16%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Sedalia	

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

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.098	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.327	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.284	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.388	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	0.477	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	0.586	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	0.680	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	0.794	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.1 in.) =	1.018	acre-feet	3.10	inches
Approximate 2-yr Detention Volume =	0.253	acre-feet		
Approximate 5-yr Detention Volume =	0.340	acre-feet		
Approximate 10-yr Detention Volume =	0.434	acre-feet		
Approximate 25-yr Detention Volume =	0.468	acre-feet		
Approximate 50-yr Detention Volume =	0.487	acre-feet		
Approximate 100-yr Detention Volume =	0.527	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.098	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.229	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.200	acre-feet
Total Detention Basin Volume =	0.527	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

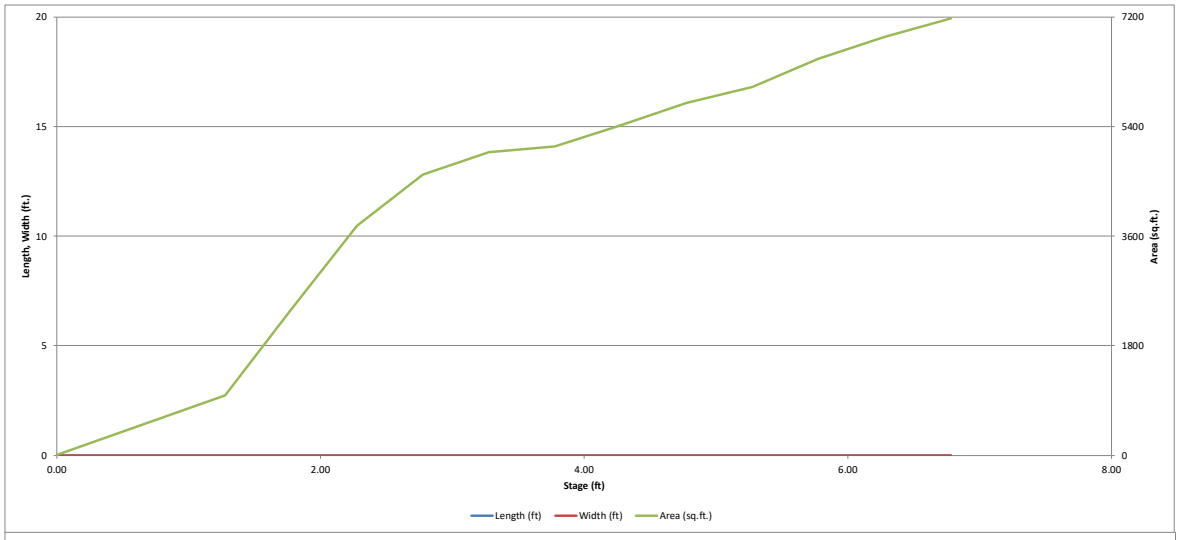
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

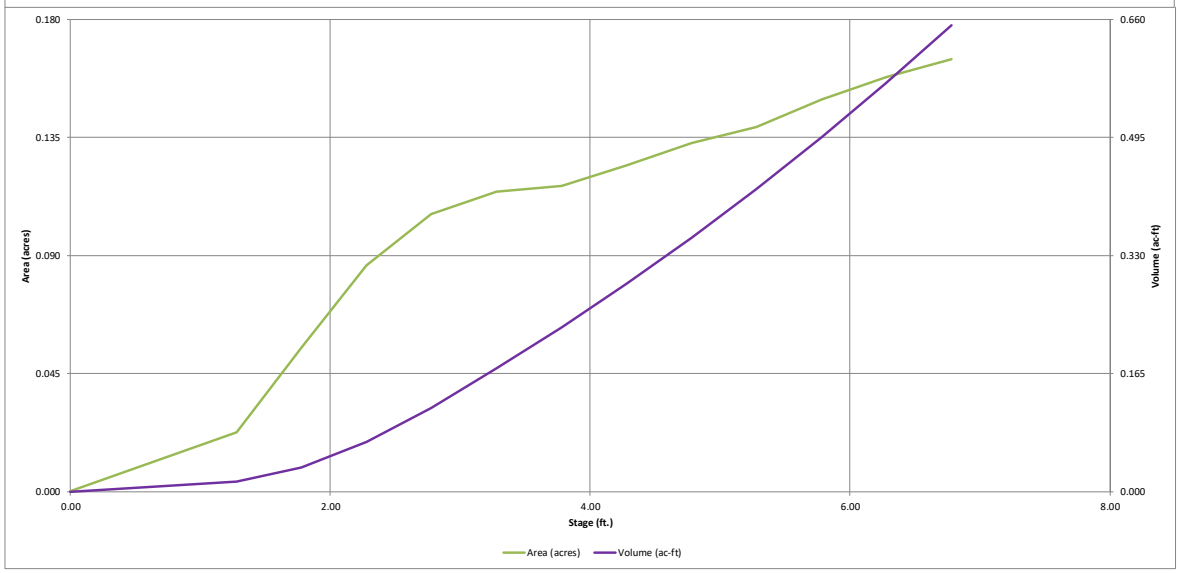
Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	11	0.000		
7118	--	1.28	--	--	--	983	0.023	636	0.015
7118.5	--	1.78	--	--	--	2,393	0.055	1,480	0.034
7119	--	2.28	--	--	--	3,764	0.086	3,019	0.069
7119.5	--	2.78	--	--	--	4,606	0.106	5,112	0.117
7120	--	3.28	--	--	--	4,984	0.114	7,509	0.172
7120.5	--	3.78	--	--	--	5,075	0.117	10,024	0.230
7121	--	4.28	--	--	--	5,419	0.124	12,647	0.290
7121.5	--	4.78	--	--	--	5,792	0.133	15,450	0.355
7122	--	5.28	--	--	--	6,055	0.139	18,412	0.423
7122.5	--	5.78	--	--	--	6,512	0.149	21,554	0.495
7123	--	6.28	--	--	--	6,877	0.158	24,901	0.572
7123.5	--	6.78	--	--	--	7,180	0.165	28,415	0.652

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)



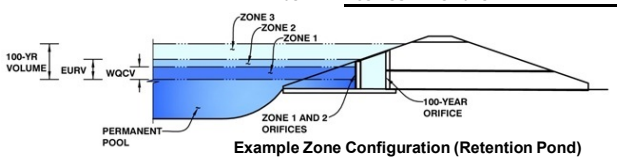


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)

Project: 18910 Base Camp Road

Basin ID: Lot 2 SSA - As Built



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.59	0.098	Orifice Plate
Zone 2 (EURV)	4.57	0.229	Orifice Plate
Zone 3 (100-year)	6.00	0.200	Weir&Pipe (Circular)
Total (all zones)		0.527	

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

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

Calculated Parameters for Underdrain

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

Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	N/A	ft^2
Depth at top of Zone using Orifice Plate =	4.67	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	N/A	sq. inches	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	2.15	2.40					
Orifice Area (sq. inches)	0.69	0.89	0.52					

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

User Input: Vertical Orifice (Circular or Rectangular)

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

Calculated Parameters for Vertical Orif

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

	Zone 3 Weir	Not Selected				
Overflow Weir Front Edge Height, Ho =	4.67	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	5.40	N/A
Overflow Weir Front Edge Length =	2.50	N/A	feet	Overflow Weir Slope Length =	3.01	N/A
Overflow Weir Grate Slope =	4.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	13.47	N/A
Horiz. Length of Weir Sides =	2.92	N/A	feet	Overflow Grate Open Area w/o Debris =	5.95	N/A
Overflow Grate Type =	Close Mesh Grate	N/A		Overflow Grate Open Area w/ Debris =	2.98	N/A
Debris Clogging % =	50%	N/A	%			

Calculated Parameters for Overflow W

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

	Zone 3 Circular	Not Selected				
Depth to Invert of Outlet Pipe =	0.24	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	0.44	N/A
Circular Orifice Diameter =	9.00	N/A	inches	Outlet Orifice Centroid =	0.38	N/A
				Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A

Calculated Parameters for Outlet Pipe w/ Flow Restriction Pla

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	6.14	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.52	feet
Spillway Crest Length =	14.35	feet	Stage at Top of Freeboard =	7.66	feet
Spillway End Slopes =	0.00	H:V	Basin Area at Top of Freeboard =	0.16	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	0.65	acre-ft

Calculated Parameters for Spillway

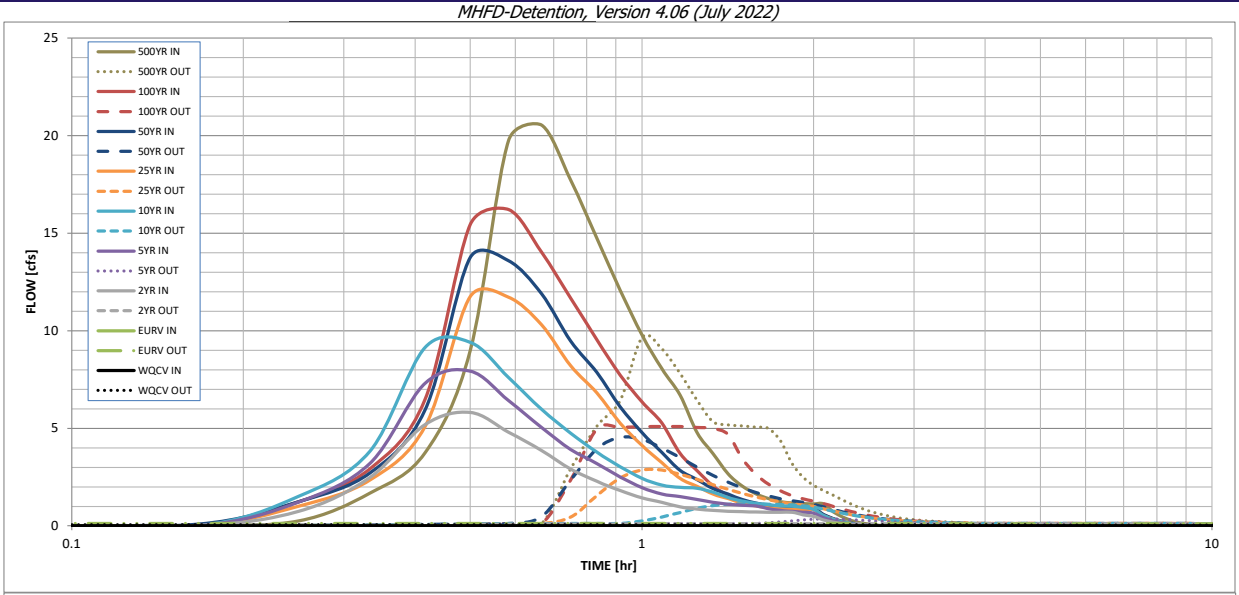
Routed Hydrograph Results

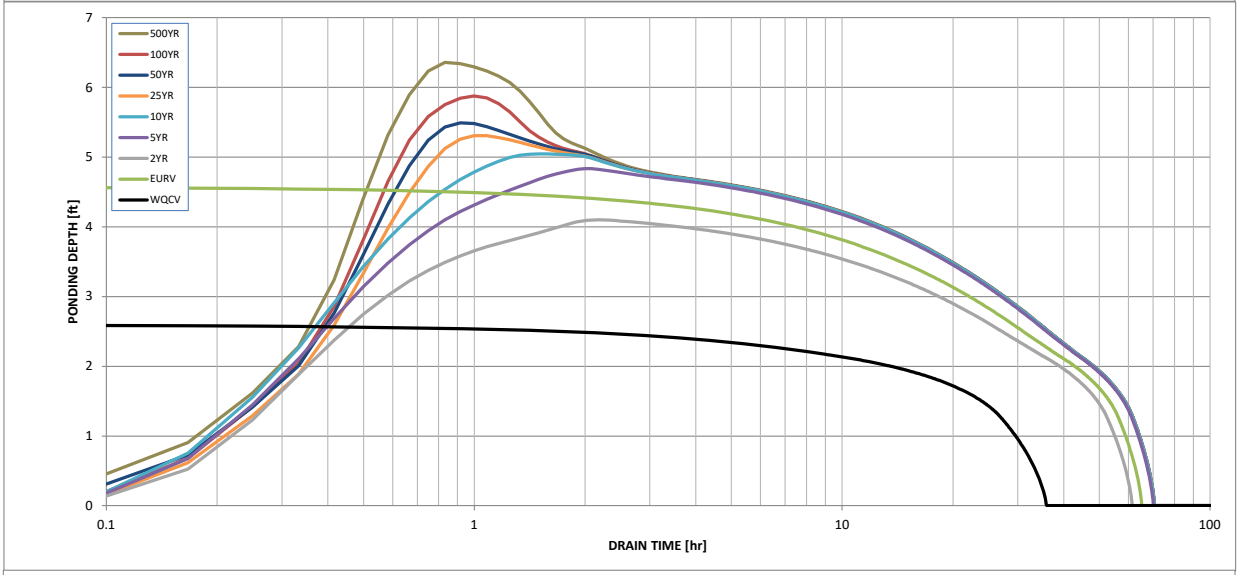
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AI

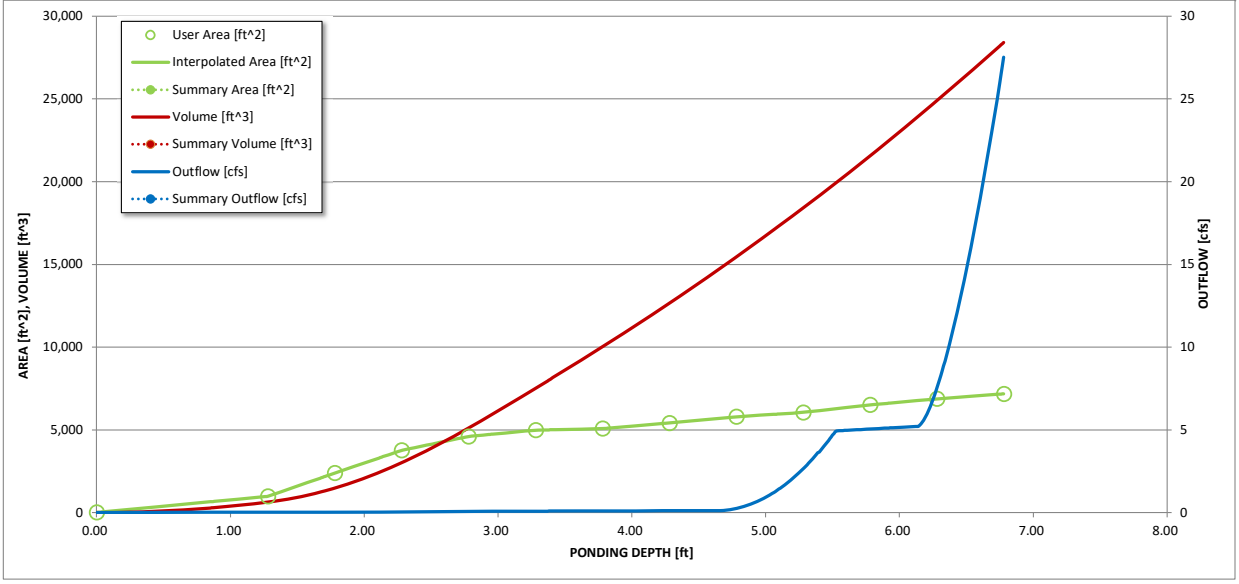
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52
CUHP Runoff Volume (acre-ft) =	0.098	0.327	0.284	0.388	0.477	0.586	0.680	0.794
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.284	0.388	0.477	0.586	0.680	0.794
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.6	1.8	2.7	4.7	5.9	7.3
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A						
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.14	0.38	0.57	1.00	1.26	1.57
Peak Inflow Q (cfs) =	N/A	N/A	5.8	7.9	9.4	11.8	13.8	16.2
Peak Outflow Q (cfs) =	0.1	0.1	0.1	0.4	1.1	2.9	4.5	5.1
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.2	0.4	0.6	0.8	0.7
Structure Controlling Flow =	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	0.0	0.2	0.5	0.7	0.8
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	33	59	55	63	62	60	59	58
Time to Drain 99% of Inflow Volume (hours) =	**35**	62	59	67	67	66	66	65
Maximum Ponding Depth (ft) =	2.60	4.57	4.10	4.83	5.04	5.31	5.49	5.87
Area at Maximum Ponding Depth (acres) =	0.10	0.13	0.12	0.13	0.14	0.14	0.14	0.15
Maximum Volume Stored (acre-ft) =	0.099	0.327	0.267	0.361	0.390	0.425	0.451	0.508

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.25
	0:15:00	0.00	0.00	0.75	1.22	1.51	1.01	1.24	1.23	1.67
	0:20:00	0.00	0.00	2.49	3.21	3.83	2.35	2.71	2.93	3.75
	0:25:00	0.00	0.00	5.20	7.31	9.14	5.09	5.95	6.49	8.97
	0:30:00	0.00	0.00	5.81	7.93	9.41	11.76	13.75	15.43	19.75
	0:35:00	0.00	0.00	4.80	6.42	7.60	11.72	13.58	16.21	20.54
	0:40:00	0.00	0.00	3.87	5.05	5.98	10.30	11.90	14.02	17.72
	0:45:00	0.00	0.00	2.91	3.92	4.75	8.20	9.47	11.67	14.74
	0:50:00	0.00	0.00	2.28	3.19	3.77	6.81	7.86	9.54	12.07
	0:55:00	0.00	0.00	1.81	2.50	3.03	5.26	6.09	7.72	9.78
	1:00:00	0.00	0.00	1.43	1.96	2.43	4.12	4.78	6.36	8.05
	1:05:00	0.00	0.00	1.21	1.63	2.09	3.24	3.77	5.28	6.71
	1:10:00	0.00	0.00	0.98	1.50	1.97	2.43	2.84	3.71	4.78
	1:15:00	0.00	0.00	0.86	1.35	1.93	2.02	2.37	2.83	3.70
	1:20:00	0.00	0.00	0.79	1.21	1.72	1.63	1.91	2.04	2.67
	1:25:00	0.00	0.00	0.75	1.11	1.45	1.39	1.63	1.57	2.04
	1:30:00	0.00	0.00	0.73	1.05	1.27	1.16	1.34	1.27	1.65
	1:35:00	0.00	0.00	0.71	1.02	1.16	1.02	1.17	1.08	1.39
	1:40:00	0.00	0.00	0.70	0.88	1.08	0.93	1.06	0.96	1.24
	1:45:00	0.00	0.00	0.70	0.79	1.03	0.87	0.99	0.91	1.17
	1:50:00	0.00	0.00	0.70	0.74	1.00	0.84	0.95	0.89	1.14
	1:55:00	0.00	0.00	0.57	0.70	0.94	0.83	0.93	0.88	1.13
	2:00:00	0.00	0.00	0.49	0.65	0.84	0.82	0.92	0.88	1.13
	2:05:00	0.00	0.00	0.31	0.41	0.54	0.52	0.59	0.57	0.72
	2:10:00	0.00	0.00	0.19	0.26	0.34	0.33	0.37	0.36	0.45
	2:15:00	0.00	0.00	0.12	0.15	0.20	0.20	0.23	0.22	0.28
	2:20:00	0.00	0.00	0.06	0.09	0.12	0.12	0.13	0.13	0.16
	2:25:00	0.00	0.00	0.03	0.05	0.06	0.07	0.07	0.07	0.09
	2:30:00	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.03	0.04
	2:35:00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
	2:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Monument Steel Structures - PCD File No. PPR205**

Facility Location & Jurisdiction: **18910 Base Camp Road - El Plaso County**

User Input: Watershed Characteristics

Extended Detention Basin (EDB)	EDB	
Watershed Area =	4.67	acres
Watershed Length =	630	ft
Watershed Length to Centroid =	250	ft
Watershed Slope =	0.034	ft/ft
Watershed Imperviousness =	64.2%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

Location for 1-hr Rainfall Depths (use dropdown):

Sedalia

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

Once CUHP has been run and the Stage-Area-Discharge information has been provided, click 'Process Data' to interpolate the Stage-Area-Volume-Discharge data and generate summary results in the table below. Once this is complete, click 'Print to PDF'.

After completing and printing this worksheet to a pdf, go to:
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif
Create a new stormwater facility, and attach the PDF of this worksheet to that record.

User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	0	0.00	0.00
2.60	4,303	2.60	0.06
4.10	5,288	4.10	0.11
4.57	5,635	4.57	0.12
4.84	5,818	4.84	0.36
5.05	5,929	5.05	1.13
5.31	6,073	5.31	2.86
5.49	6,238	5.49	4.54
5.87	6,578	5.87	5.10
6.36	6,919	6.36	9.65

Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	0.83	1.11	1.36	2.00	2.29	in
CUHP Runoff Volume =	0.098	0.178	0.254	0.337	0.586	0.707	acre-ft
Inflow Hydrograph Volume =	N/A	0.178	0.254	0.337	0.586	0.707	acre-ft
Time to Drain 97% of Inflow Volume =	37.8	51.3	**60.3**	68.0	68.9	67.0	hours
Time to Drain 99% of Inflow Volume =	41.2	55.8	65.7	74.2	77.2	**76.0**	hours
Maximum Ponding Depth =	2.27	2.99	3.65	4.32	5.25	5.55	ft
Maximum Ponded Area =	0.09	0.10	0.11	0.13	0.14	**0.14**	acres
Maximum Volume Stored =	0.098	0.167	0.240	0.320	0.443	0.485	acre-ft

Stormwater Detention and Infiltration Design Data Sheet