June 5th, 2025

Attn: Gleen Reese

Stormwater Engineer

El Paso County - Department of Public Works

3275 Akers Drive

Colorado Springs, CO 80922

RE: HOMESTEAD NORTH AT STERLING RANCH FILING NO. 3 – VOLUME CERTIFICATION LETTER FOR FULL SPECTRUM DETENTION POND A

Dear Mr. Reese,

Based upon survey of the as-built condition of Homestead North At Sterling Ranch Filing No. 3 Pond A, the required storage volume for WQCV, EURV and 100-year is provided. Additionally, the release rate for Pond A is at or below the historic 100-yr design storm level. It is our opinion that the site and adjacent properties (as affected by work performed under the County permit) are stable with respect to settlement and subsidence, sloughing of cut and fill slopes, revegetation or other ground cover, and that the improvements (public improvements, common development improvements, site grading and paving) meet or exceed the minimum design requirements. The PCM(s) provide the required storage volume and meet the required release rates, stage areas, elevations, and outlet dimensions, as documented by the attached revised MHFD-Detention spreadsheet that shows the as-built conditions.

I hereby certify that Pond A has been reasonably constructed, to the best of my knowledge and belief, per the approved Pond A design.
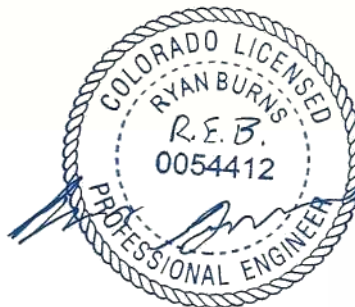

Respectfully submitted,

RYAN BURNS, PE

All Terrain Engineering LLC

rburns@allterraineng.com

203.577.8656

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)

Project: Homestead North at Sterling Ranch Filing No. 3

Basin ID: Pond A - As-Built

Example Zone Configuration (Retention Pond)

Depth Increment =		ft							
Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	0.00	--	--	--	--	76	0.002		
7156	--	0.79	--	--	--	634	0.015	280	0.006
7157	--	1.79	--	--	--	6,756	0.155	3,975	0.091
7158	--	2.79	--	--	--	19,514	0.448	17,110	0.393
7159	--	3.79	--	--	--	25,146	0.577	39,440	0.905
7160	--	4.79	--	--	--	28,762	0.660	66,394	1.524
7161	--	5.79	--	--	--	32,555	0.747	97,053	2.228
7162	--	6.79	--	--	--	36,478	0.837	131,569	3.020
7163	--	7.79	--	--	--	40,330	0.926	169,973	3.902
7163.5	--	8.29	--	--	--	42,329	0.972	190,638	4.376

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	29.95	acres
Watershed Length =	1,930	ft
Watershed Length to Centroid =	830	ft
Watershed Slope =	0.031	ft/ft
Watershed Imperviousness =	40.50%	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 =	User Input	

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

Optional User Overrides

Water Quality Capture Volume (WQCV) =	0.452	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	1.275	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	1.247	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	1.860	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	2.411	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	3.199	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	3.813	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	4.614	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 4 in.) =	8.451	acre-feet	4.00	inches
Approximate 2-yr Detention Volume =	0.941	acre-feet		
Approximate 5-yr Detention Volume =	1.313	acre-feet		
Approximate 10-yr Detention Volume =	1.803	acre-feet		
Approximate 25-yr Detention Volume =	2.013	acre-feet		
Approximate 50-yr Detention Volume =	2.112	acre-feet		
Approximate 100-yr Detention Volume =	2.416	acre-feet		

Define Zones and Basin Geometry

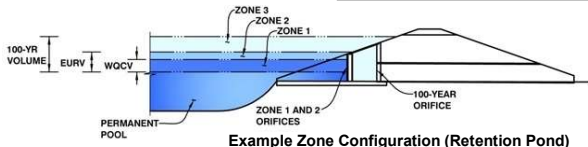|		
Zone 1 Volume (WQCV) =	0.452	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.823	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.141	acre-feet
Total Detention Basin Volume =	2.416	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention 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

DETENTION BASIN OUTLET STRUCTURE DESIGN
MHFD-Detention, Version 4.05 (January 2022)

Project: Homestead North at Sterling Ranch Filing No. 3
Basin ID: Pond A - As-Built

Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.93	0.452	Orifice Plate
Zone 2 (EURV)	4.41	0.823	Orifice Plate
Zone 3 (100-year)	6.04	1.141	Weir&Pipe (Restrict)
Total (all zones)		2.416	

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

			Calculated Parameters for Underdrain	
Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A ft²
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A feet

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)

			Calculated Parameters for Plate	
Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	N/A ft²
Depth at top of Zone using Orifice Plate =	4.50	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 ft²

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.50	3.00	3.25				
Orifice Area (sq. inches)	1.86	1.86	1.86	2.00				

	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		Calculated Parameters for Vertical Orifice		
				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 ft²
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A feet
Vertical Orifice Diameter =	N/A	N/A	inches			

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		Calculated Parameters for Overflow Weir	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	4.39	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	4.39	N/A	feet
Overflow Weir Front Edge Length =	5.00	N/A	feet	Overflow Weir Slope Length =	5.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	5.01	N/A	
Horiz. Length of Weir Sides =	5.00	N/A	feet	Overflow Grate Open Area w/o Debris =	17.40	N/A	ft²
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	8.70	N/A	ft²
Debris Clogging % =	50%	N/A	%				

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

	Zone 3 Restrictor	Not Selected		Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	3.48	N/A	ft²
Outlet Pipe Diameter =	30.00	N/A	inches	Outlet Orifice Centroid =	0.94	N/A	feet
Restrictor Plate Height Above Pipe Invert =	20.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.91	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

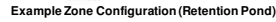|			Calculated Parameters for Spillway	
Spillway Invert Stage=	6.87	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.78 feet
Spillway Crest Length =	30.00	feet	Stage at Top of Freeboard =	8.65 feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.97 acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	4.38 acre-ft

Routed Hydrograph Results

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

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	4.00
CUHP Runoff Volume (acre-ft) =	0.452	1.275	1.247	1.860	2.411	3.199	3.813	4.614	8.451
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	1.247	1.860	2.411	3.199	3.813	4.614	8.451
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	3.2	9.0	13.6	24.4	30.6	39.2	76.8
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.11	0.30	0.46	0.82	1.02	1.31	2.56
Peak Inflow Q (cfs) =	N/A	N/A	17.8	27.5	34.8	47.5	56.5	67.8	122.0
Peak Outflow Q (cfs) =	0.2	0.4	0.4	6.0	12.2	24.0	32.3	36.8	80.5
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.7	0.9	1.0	1.0	0.9	1.0
Structure Controlling Flow =	Plate	Overflow Weir 1	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	0.01	N/A	0.3	0.7	1.3	1.8	2.1	2.4
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	40	70	70	71	69	66	65	62	53
Time to Drain 99% of Inflow Volume (hours) =	41	75	74	77	76	75	74	73	68
Maximum Ponding Depth (ft) =	2.92	4.41	4.26	4.70	4.90	5.20	5.38	5.78	7.41
Area at Maximum Ponding Depth (acres) =	0.46	0.63	0.62	0.65	0.67	0.70	0.71	0.75	0.89
Maximum Volume Stored (acre-ft) =	0.452	1.279	1.180	1.465	1.591	1.802	1.929	2.221	3.557

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)

Project: Homestead North at Sterling Ranch Filing No. 3

Basin ID: Pond A

Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	29.95	acres
Watershed Length =	1,930	ft
Watershed Length to Centroid =	830	ft
Watershed Slope =	0.031	ft/ft
Watershed Imperviousness =	40.50%	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 =	User Input	

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

Optional User Overrides

Water Quality Capture Volume (WQCV) =	0.452	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	1.275	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	1.247	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	1.860	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	2.411	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	3.199	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	3.813	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	4.614	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 4 in.) =	8.451	acre-feet	4.00	inches
Approximate 2-yr Detention Volume =	0.941	acre-feet		
Approximate 5-yr Detention Volume =	1.313	acre-feet		
Approximate 10-yr Detention Volume =	1.803	acre-feet		
Approximate 25-yr Detention Volume =	2.013	acre-feet		
Approximate 50-yr Detention Volume =	2.112	acre-feet		
Approximate 100-yr Detention Volume =	2.416	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.452	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.823	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.141	acre-feet
Total Detention Basin Volume =	2.416	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H$_{total}$) =	user	ft
Depth of Trickle Channel (H$_{TC}$) =	user	ft
Slope of Trickle Channel (S$_{TC}$) =	user	ft/ft
Slopes of Main Basin Sides (S$_{main}$) =	user	H:V
Basin Length-to-Width Ratio (R$_{L/W}$) =	user	
Initial Surcharge Area (A$_{ISV}$) =	user	ft^2
Surcharge Volume Length (L$_{ISV}$) =	user	ft
Surcharge Volume Width (W$_{ISV}$) =	user	ft
Depth of Basin Floor (H$_{FLOOR}$) =	user	ft
Length of Basin Floor (L$_{FLOOR}$) =	user	ft
Width of Basin Floor (W$_{FLOOR}$) =	user	ft
Area of Basin Floor (A$_{FLOOR}$) =	user	ft^2
Volume of Basin Floor (V$_{FLOOR}$) =	user	ft^3
Depth of Main Basin (H$_{MAIN}$) =	user	ft
Length of Main Basin (L$_{MAIN}$) =	user	ft
Width of Main Basin (W$_{MAIN}$) =	user	ft
Area of Main Basin (A$_{MAIN}$) =	user	ft^2
Volume of Main Basin (V$_{MAIN}$) =	user	ft^3
Calculated Total Basin Volume (V$_{total}$) =	**user**	acre-feet

Depth Increment = _____ ft

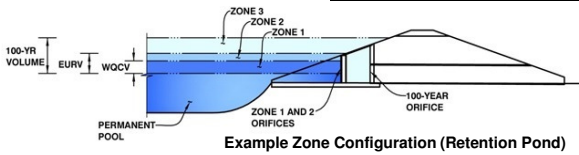| Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	10	0.000		
7155.44	--	0.33	--	--	--	50	0.001	10	0.000
7156	--	0.89	--	--	--	829	0.019	256	0.006
7157	--	1.89	--	--	--	7,288	0.167	4,314	0.099
7158	--	2.89	--	--	--	19,027	0.437	17,472	0.401
7159	--	3.89	--	--	--	26,352	0.605	40,161	0.922
7160	--	4.89	--	--	--	30,164	0.692	68,419	1.571
7161	--	5.89	--	--	--	34,095	0.783	100,548	2.308
7162	--	6.89	--	--	--	38,115	0.875	136,653	3.137
7163	--	7.89	--	--	--	42,286	0.971	176,853	4.060

55.11

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.05 (January 2022)

Project: Homestead North at Sterling Ranch Filing No. 3
Basin ID: Pond A

Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.01	0.452	Orifice Plate
Zone 2 (EURV)	4.46	0.823	Orifice Plate
Zone 3 (100-year)	6.03	1.141	Weir&Pipe (Restrict)
Total (all zones)		2.416	

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

			Calculated Parameters for Underdrain		
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

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)

			Calculated Parameters for Plate		
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 =	4.50	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

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.50	3.00	3.25				
Orifice Area (sq. inches)	1.86	1.86	1.86	2.00				

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

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		Calculated Parameters for Overflow Weir	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	4.50	N/A	ft (relative to basin bottom at Stage = 0 ft) Height of Grate Upper Edge, H$_t$ =		4.50	N/A	feet
Overflow Weir Front Edge Length =	5.00	N/A	feet Overflow Weir Slope Length =		5.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V Grate Open Area / 100-yr Orifice Area =		5.01	N/A	
Horiz. Length of Weir Sides =	5.00	N/A	feet Overflow Grate Open Area w/o Debris =		17.40	N/A	ft^2
Overflow Grate Type =	Type C Grate	N/A	Overflow Grate Open Area w/ Debris =		8.70	N/A	ft^2
Debris Clogging % =	50%	N/A	%				

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

	Zone 3 Restrictor	Not Selected		Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft) Outlet Orifice Area =		3.48	N/A	ft^2
Outlet Pipe Diameter =	30.00	N/A	inches Outlet Orifice Centroid =		0.94	N/A	feet
Restrictor Plate Height Above Pipe Invert =	20.00		inches Half-Central Angle of Restrictor Plate on Pipe =		1.91	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

			Calculated Parameters for Spillway		
Spillway Invert Stage=	5.90	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.78	feet
Spillway Crest Length =	30.00	feet	Stage at Top of Freeboard =	7.68	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.95	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	3.86	acre-ft

Routed Hydrograph Results

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

Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	4.00
CUHP Runoff Volume (acre-ft) =	0.452	1.275	1.247	1.860	2.411	3.199	3.813	4.614	8.451
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	1.247	1.860	2.411	3.199	3.813	4.614	8.451
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	3.2	9.0	13.6	24.4	30.6	39.2	76.8
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.11	0.30	0.46	0.82	1.02	1.31	2.56
Peak Inflow Q (cfs) =	N/A	N/A	17.8	27.5	34.8	47.5	56.5	67.8	122.0
Peak Outflow Q (cfs) =	0.2	0.4	0.4	5.4	11.5	23.1	31.2	37.0	96.3
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.6	0.8	0.9	1.0	0.9	1.3
Structure Controlling Flow =	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	0.3	0.6	1.3	1.8	2.1	2.3
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	68	67	70	68	66	64	62	53
Time to Drain 99% of Inflow Volume (hours) =	**40**	72	72	76	75	74	73	71	67
Maximum Ponding Depth (ft) =	3.01	4.46	4.31	4.79	4.99	5.29	5.47	5.82	6.60
Area at Maximum Ponding Depth (acres) =	0.46	0.65	0.64	0.68	0.70	0.73	0.74	0.78	0.85
Maximum Volume Stored (acre-ft) =	0.455	1.281	1.177	1.495	1.640	1.848	1.980	2.246	2.879