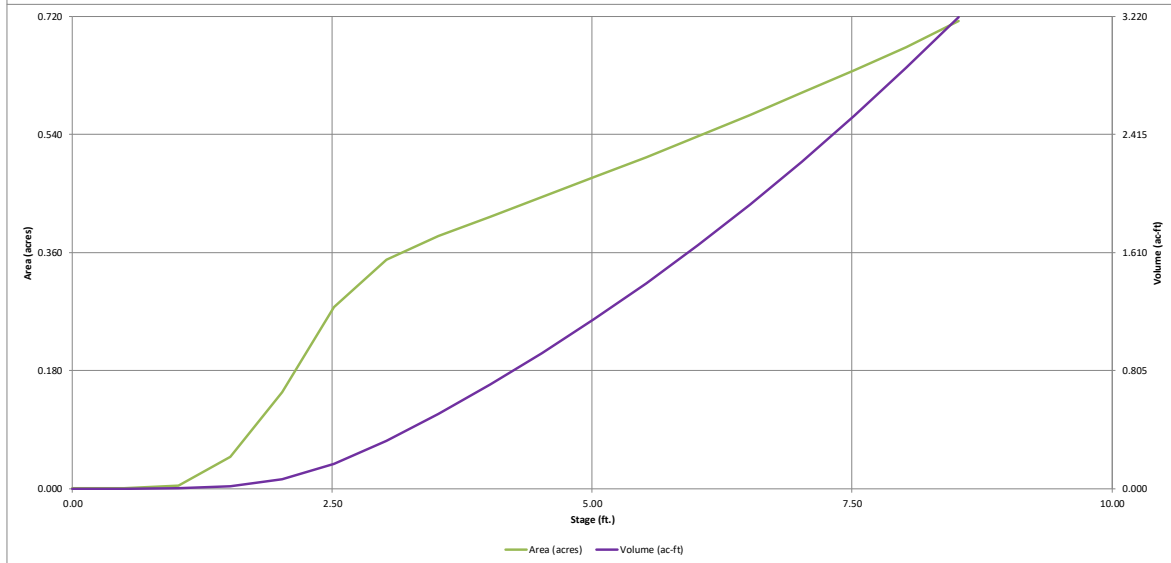
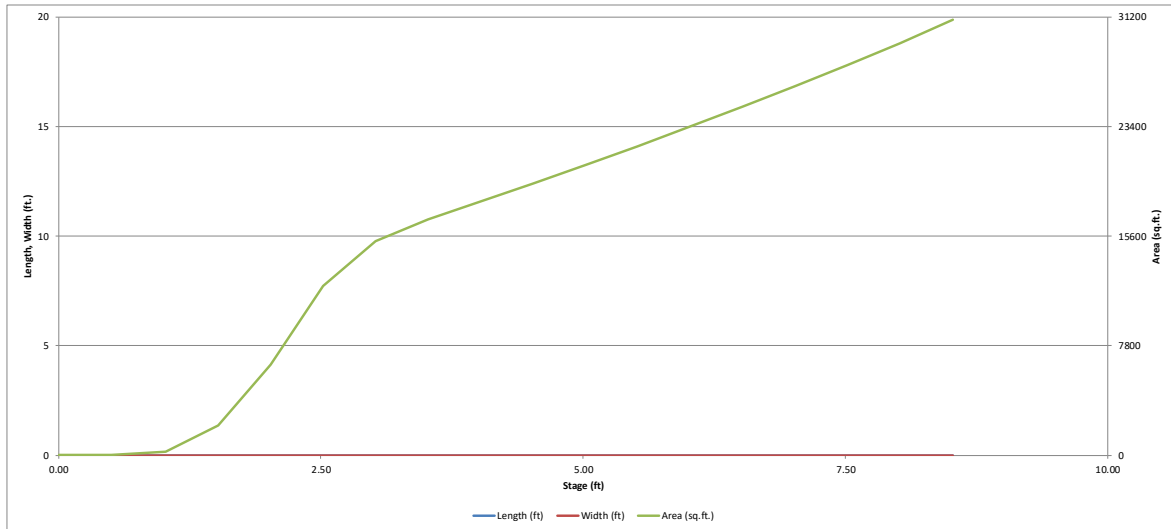


DETENTION BASIN STAGE-STORAGE TABLE BUILDER

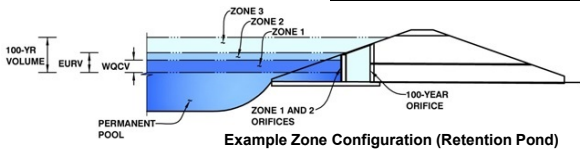
MHFD-Detention, Version 4.06 (July 2022)



DETENTION BASIN OUTLET STRUCTURE DESIGN

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Project: Venture on Venetucci
Basin ID: Extended Detention Basin



	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.89	0.283	Orifice Plate
Zone 2 (EURV)	4.84	0.784	Orifice Plate
Zone 3 (100-year)	6.02	0.590	Weir&Pipe (Restrict)
Total (all zones)		1.657	

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

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 =	7.708E-03	ft ²
Depth at top of Zone using Orifice Plate =	5.00	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 =	1.11	sq. inches (diameter = 1-3/16 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	1.70	2.50	3.00				
Orifice Area (sq. inches)	1.11	1.11	1.11	1.11				

	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)

Invert of Vertical Orifice =	Not Selected	Not Selected	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	Not Selected	Not Selected	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 Gate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

Overflow Weir Front Edge Height, Ho =	Zone 3 Weir: 5.00	Not Selected: N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Gate Upper Edge, H _g =	Zone 3 Weir: 5.00	Not Selected: N/A	feet
Overflow Weir Front Edge Length =	3.44	N/A	feet	Overflow Weir Slope Length =	2.79	N/A	feet
Overflow Weir Gate Slope =	0.00	N/A	H:V	Gate Open Area / 100-yr Orifice Area =	14.72	N/A	
Horiz. Length of Weir Sides =	2.79	N/A	feet	Overflow Gate Open Area w/o Debris =	7.59	N/A	ft ²
Overflow Gate Type =	Close Mesh Gate	N/A		Overflow Gate Open Area w/ Debris =	3.80	N/A	ft ²
Debris Clogging % =	50%	N/A	%				

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

Depth to Invert of Outlet Pipe =	Zone 3 Restrictor: 2.00	Not Selected: N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	Zone 3 Restrictor: 0.52	Not Selected: N/A	ft ²
Outlet Pipe Diameter =	18.00	N/A	inches	Outlet Orifice Centroid =	0.29	N/A	feet
Restrictor Plate Height Above Pipe Invert =	6.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.23	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	6.00	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth =	0.36	feet
Spillway Crest Length =	49.84	feet	Stage at Top of Freeboard =	8.36	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.70	acres
Freeboard above Max Water Surface =	2.00	feet	Basin Volume at Top of Freeboard =	3.10	acre-ft

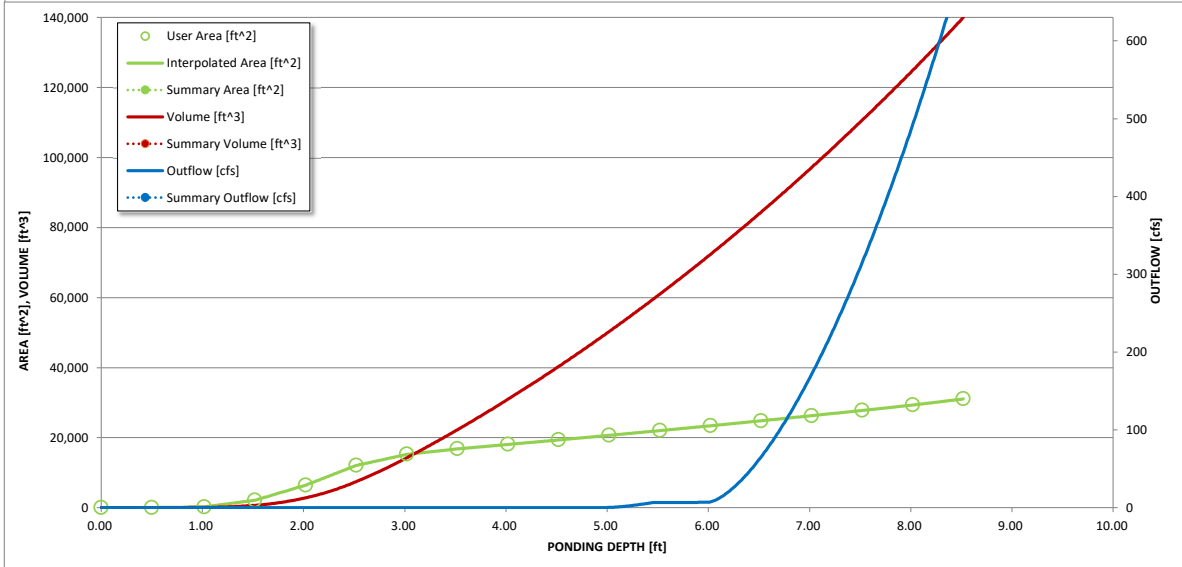
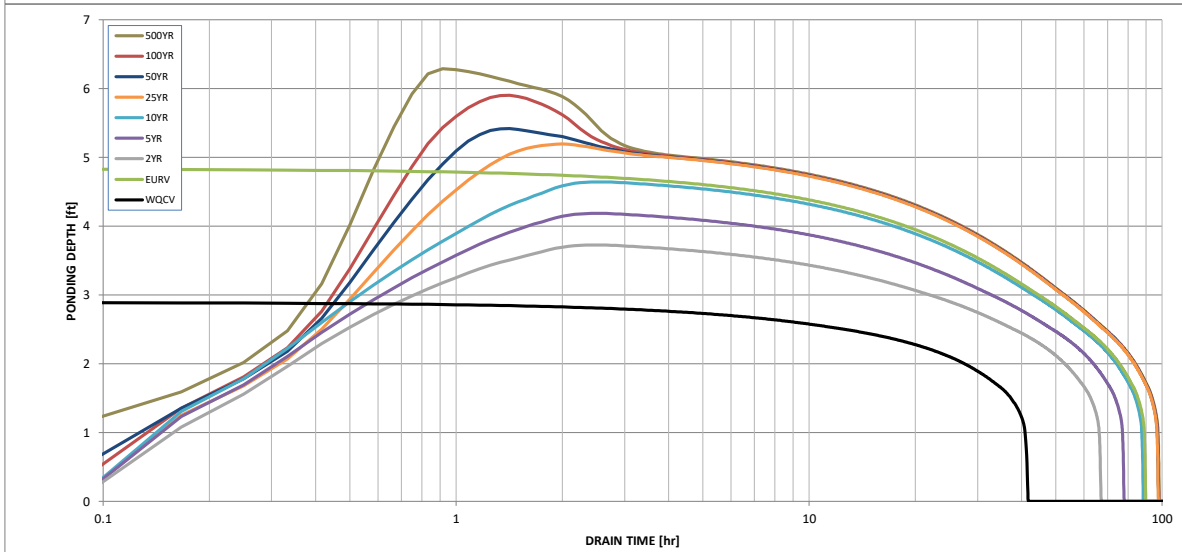
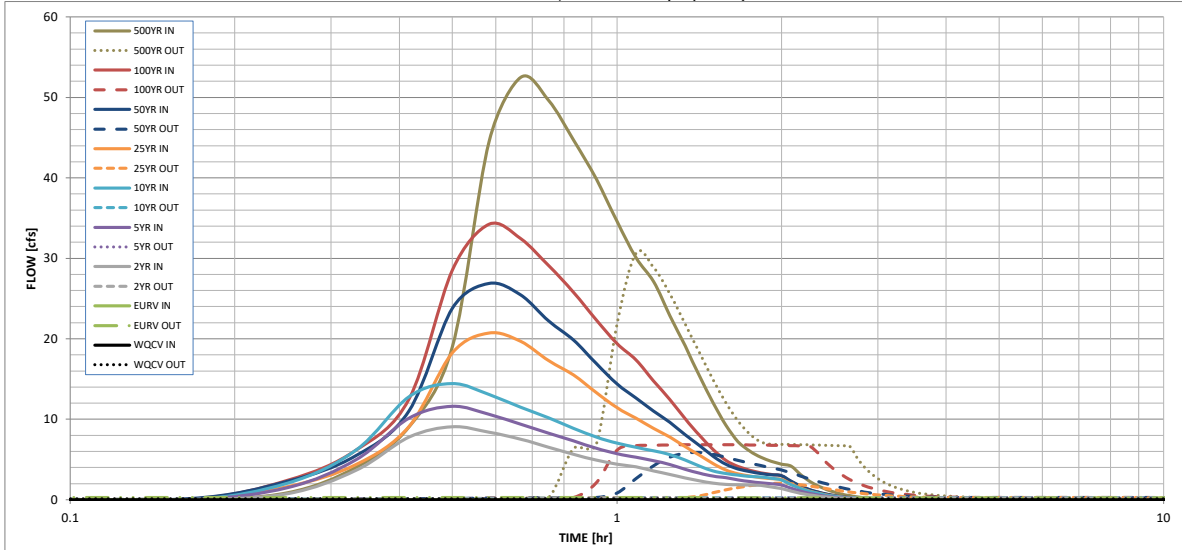
Routed Hydrograph Results

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									
One-Hour Rainfall Depth (in)	N/A	N/A	0.97	1.24	1.50	1.89	2.24	2.61	3.62
CUHP Runoff Volume (acre-ft)	0.283	1.067	0.625	0.819	1.024	1.373	1.730	2.150	3.290
Inflow Hydrograph Volume (acre-ft)	N/A	N/A	0.625	0.819	1.024	1.373	1.730	2.150	3.290
CUHP Predevelopment Peak Q (cfs)	N/A	N/A	0.0	0.1	0.2	1.2	4.2	7.8	17.7
OPTIONAL Override Predevelopment Peak Q (cfs)	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre)	N/A	N/A	0.00	0.01	0.01	0.09	0.31	0.57	1.29
Peak Inflow Q (cfs)	N/A	N/A	9.1	11.6	14.4	20.7	26.9	34.2	52.5
Peak Outflow Q (cfs)	0.1	0.3	0.2	0.2	0.2	2.0	5.9	6.8	30.6
Ratio Peak Outflow to Predevelopment Q	N/A	N/A	N/A	2.5	1.6	1.7	1.4	0.9	1.7
Structure Controlling Flow	Plate	Plate	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Gate 1 (fps)	N/A	N/A	N/A	N/A	N/A	0.2	0.7	0.9	0.9
Max Velocity through Gate 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 (hrs)	39	81	62	71	80	87	85	83	78
Time to Drain 99% of Inflow Volume (hours)	41	87	65	75	85	93	93	92	89
Maximum Ponding Depth (ft)	2.89	4.84	3.73	4.19	4.64	5.19	5.42	5.90	6.29
Area at Maximum Ponding Depth (acres)	0.33	0.46	0.40	0.42	0.45	0.48	0.50	0.53	0.55
Maximum Volume Stored (acre-ft)	0.283	1.071	0.589	0.778	0.979	1.237	1.345	1.597	1.803

DETENTION BASIN OUTLET STRUCTURE DESIGN

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