June 1, 2026

El Paso County
2880 International Circle, Suite 110
Colorado Springs, CO 80910

Re: ***Legacy Church – Green Mountain Falls - PCM Certification Letter***
El Paso County, Colorado

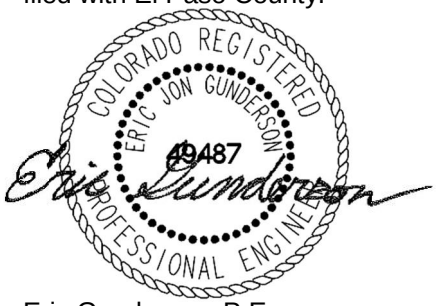
To whom it may concern:

This letter serves as the certification for Legacy Church – Green Mountain Falls, El Paso County, CO project consistent with El Paso County Engineering Manual ("ECM") Section 5.10.6.B, which states that Engineering Record Drawings shall be accompanied by a certification letter from the Engineer of Record which shall state that facilities constructed provide the required storage volume, meet the required release rates, the stage areas, elevations and outlet dimensions. Even though the as-built condition shows faster release rates for the WQCV compared to design levels, the ponds are generally constructed per the approved plans, have been operating effectively for multiple years, provide the required detention volumes and release at less than historic rates. Legacy Church consists of the following drainage facilities which are included in this certification:

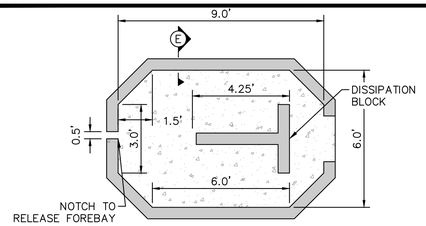
- West Full Spectrum Detention Pond
- East Full Spectrum Detention Pond

Based upon this information and information gathered during periodic site visits to the site during significant/key phases of the infrastructure installation, *Kimley-Horn & Associates, Inc.* is of the opinion that the work performed under the County Permit, per Section 5.10.6.B of the ECM, have been constructed in general compliance with the approved Construction Plans as filed with the County dated January 31st, 2020 and approved by El Paso County on July 21st, 2020.

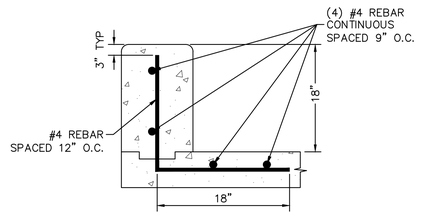
Statement Of Engineer In Responsible Charge:
I, Eric Gunderson, a registered Professional Engineer in the State of Colorado, in accordance with Sections 5.2 and 5.3 of the Bylaws and Rules of the State Board of Registration for Professional Engineers and Professional Land Surveyors, do hereby certify that I or a person under my responsible charge periodically observed the construction of the above-mentioned project. Based on the on-site field observations and review of pertinent documentation, it is my professional opinion that the required infrastructure improvements have been installed and are in general compliance with the approved Construction Plans as filed with El Paso County.



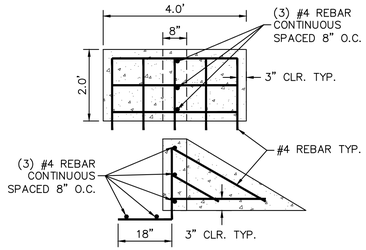
Eric Gunderson, P.E.
Colorado No. 49487



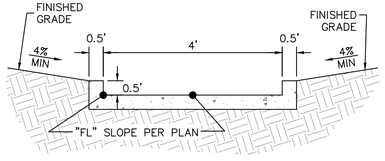
FOREBAY WALL PLAN VIEW DETAIL
N.T.S.



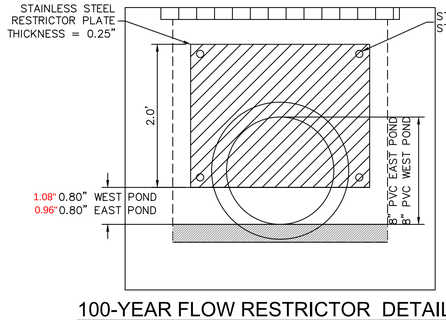
FOREBAY WALL SECTION E
N.T.S.



FOREBAY DISSIPATER DETAIL
N.T.S.



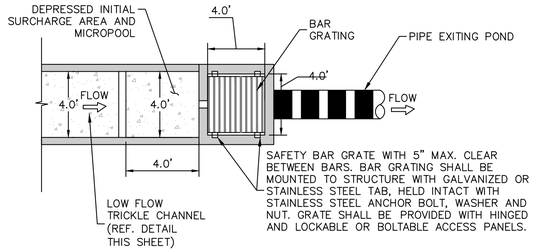
TRICKLE CHANNEL CROSS-SECTION DETAIL
N.T.S.



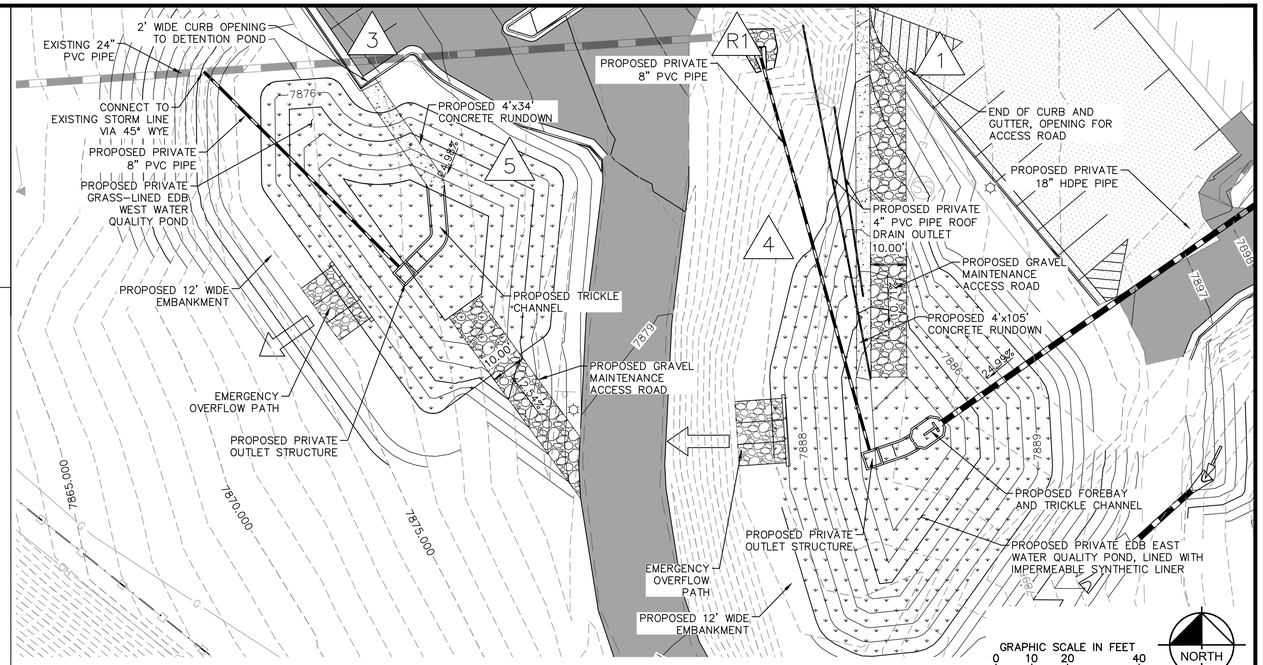
100-YEAR FLOW RESTRICTOR DETAIL
N.T.S.

LEGEND

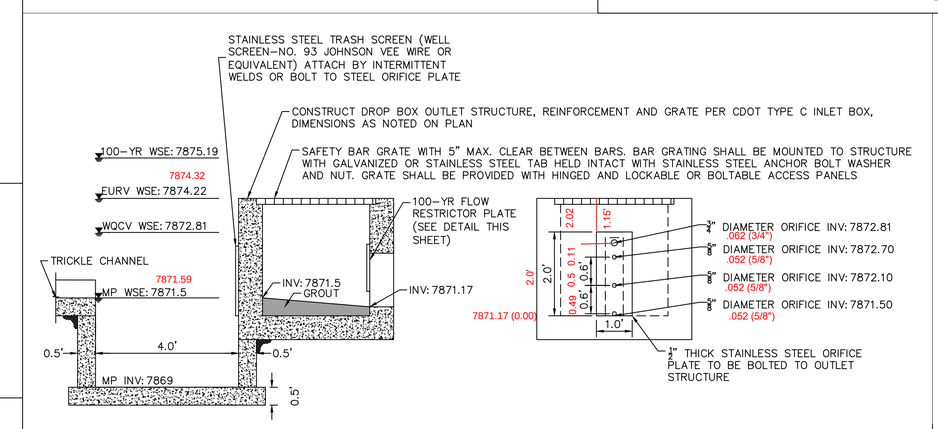
- PROPERTY LINE
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR



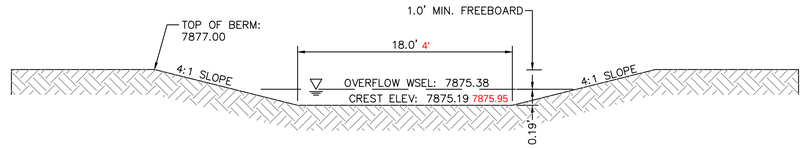
MICROPOOL DETAIL
N.T.S.



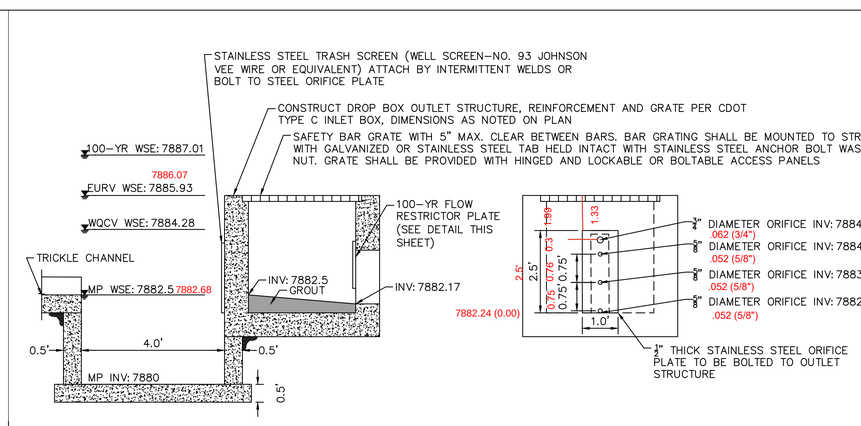
EXTENDED DETENTION PONDS



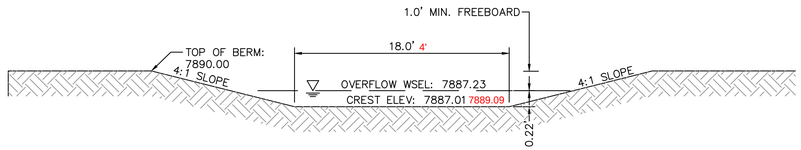
WEST POND OUTLET STRUCTURE PROFILE DETAIL
N.T.S.



WEST POND EMERGENCY SPILLWAY DETAIL (PROFILE VIEW)
N.T.S.



EAST POND OUTLET STRUCTURE PROFILE DETAIL
N.T.S.



EAST POND EMERGENCY SPILLWAY DETAIL (PROFILE VIEW)
N.T.S.

REV: 7/6/20
REV: 11/22/19
REV: 10/18/19

POND DETAILS
SHEET C2.9

Kimley»Horn

2 NORTH NEVADA AVENUE, SUITE 300
COLORADO SPRINGS, COLORADO 80903 (719) 453–0180

COLORADO REGISTERED PROFESSIONAL ENGINEER 49487 2/18/20

25164 TOPO - LEGACY CHURCH - ASBUILTS JH

GREEN MOUNTAIN FALLS 6:10-12:45

NR TO CREATE LOC

STORED PTS 302 & 311, check #10,000 on #

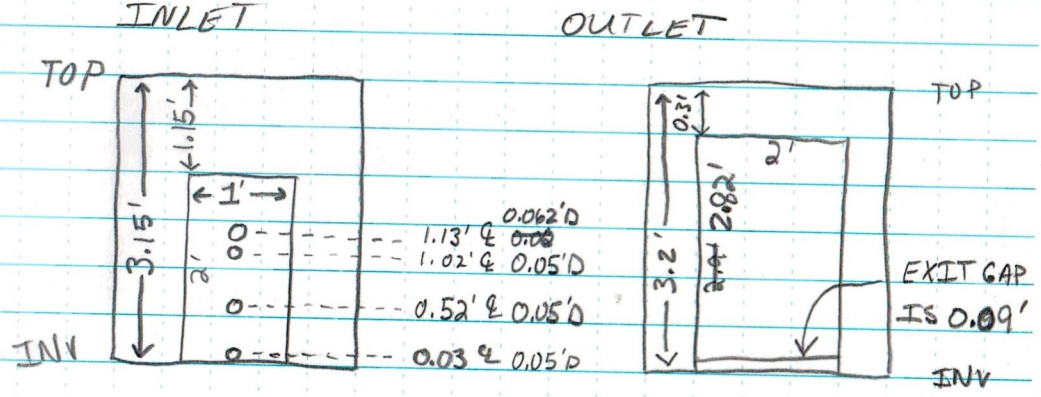
SET BASE PT #4,000, created gridpt #400

BASE on # 400 Hi: 2m

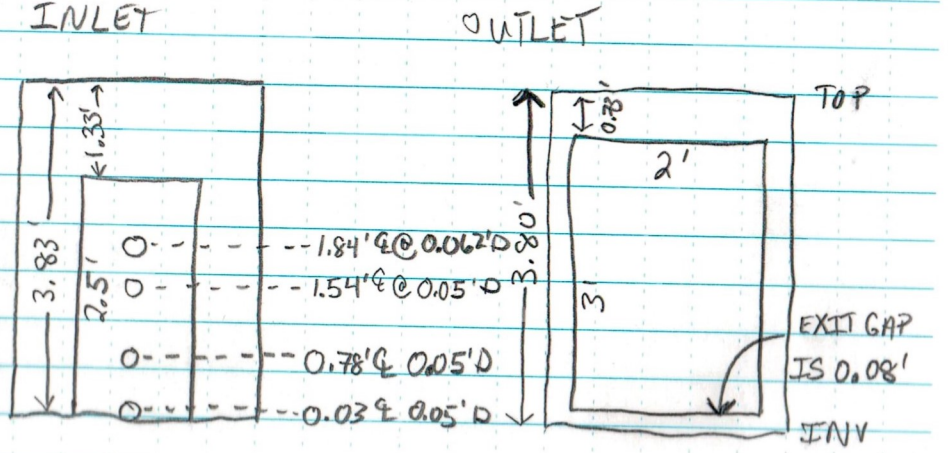
CHECK # 10,001 on # 302

AS BUILT TOPO, as instructed by Kimly-Horn, and "Final Acceptance Punchlist" in Docs FOLDER

WEST POND STRUCTURE



EAST POND STRUCTURE

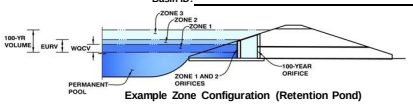


Scale: 1 square = _____

UD-Detention, Version 3.07 (February 2017)

Project: Legacy Church - Green Mountain Falls - East Pond - As Built

Basin ID:



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	1.77	acres
Watershed Length =	454	ft
Watershed Slope =	0.060	ft/ft
Watershed Imperviousness =	77.70%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	
Water Quality Capture Volume (WQCV) =	0.046	acre-feet
Excess Urban Runoff Volume (EURV) =	0.135	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.130	acre-feet
5-yr Runoff Volume (P1 = 1.51 in.) =	0.178	acre-feet
10-yr Runoff Volume (P1 = 1.75 in.) =	0.213	acre-feet
25-yr Runoff Volume (P1 = 2 in.) =	0.260	acre-feet
50-yr Runoff Volume (P1 = 2.25 in.) =	0.300	acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	0.348	acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
Approximate 2-yr Detention Volume =	0.122	acre-feet
Approximate 5-yr Detention Volume =	0.168	acre-feet
Approximate 10-yr Detention Volume =	0.192	acre-feet
Approximate 25-yr Detention Volume =	0.203	acre-feet
Approximate 50-yr Detention Volume =	0.208	acre-feet
Approximate 100-yr Detention Volume =	0.221	acre-feet

Optional User Override 1-hr Precipitation

1.19	inches
1.51	inches
1.75	inches
2.00	inches
2.25	inches
2.52	inches
	inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.046	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.088	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.087	acre-feet
Total Detention Basin Volume =	0.221	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 ft

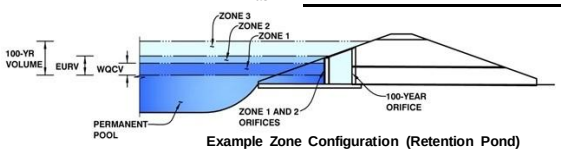
Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	16	0.000		
7882.50	--	0.26	--	--	--	16	0.000	13	0.000
7883.00	--	0.76	--	--	--	50	0.001	92	0.002
7883.50	--	1.26	--	--	--	186	0.004	252	0.006
7884.00	--	1.76	--	--	--	462	0.011	560	0.013
7884.50	--	2.26	--	--	--	779	0.018	1,038	0.024
7885.00	--	2.76	--	--	--	1,134	0.026	1,677	0.039
7885.50	--	3.26	--	--	--	1,472	0.034	2,488	0.057
7886.00	--	3.76	--	--	--	1,822	0.042	3,484	0.080
7886.50	--	4.26	--	--	--	2,196	0.050	4,674	0.107
7887.00	--	4.76	--	--	--	2,619	0.060	6,094	0.140
7887.50	--	5.26	--	--	--	3,099	0.071	7,760	0.178
7888.00	--	5.76	--	--	--	3,635	0.083	9,723	0.223
7888.50	--	6.26	--	--	--	4,261	0.098	11,994	0.275
7889.00	--	6.76	--	--	--	4,945	0.114	14,597	0.335
7889.50	--	7.26	--	--	--	5,866	0.135		

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Legacy Church - Green Mountain Falls - East Pond

Basin ID:



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.99	0.046	Orifice Plate
Zone 2 (EURV)	4.69	0.088	Circular Orifice
Zone 3 (100-year)	5.75	0.087	Weir&Pipe (Restrict)
		0.221	Total

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		
Invert 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 =	1.81	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	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)	0.03	0.78	1.54					
Orifice Area (sq. inches)	0.30	0.30	0.30					

	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)

	Zone 2 Circular	Not Selected		Calculated Parameters for Vertical Orifice	Zone 2 Circular	Not Selected	
Invert of Vertical Orifice =	1.81	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.00	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	3.83	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.03	N/A	feet
Vertical Orifice Diameter =	0.75	N/A	inches				

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 3 Weir	Not Selected		Calculated Parameters for Overflow Weir	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	3.43	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	3.43	N/A	feet
Overflow Weir Front Edge Length =	4.00	N/A	feet	Over Flow Weir Slope Length =	4.00	N/A	feet
Overflow Weir Slope =	0.00	N/A	H:V (enter zero for flat grate)	Grate Open Area / 100-yr Orifice Area =	472.04	N/A	should be ≥ 4
Horiz. Length of Weir Sides =	4.00	N/A	feet	Overflow Grate Open Area w/o Debris =	11.20	N/A	ft^2
Overflow Grate Open Area % =	70%	N/A	%, grate open area/total area	Overflow Grate Open Area w/ Debris =	5.60	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 =	0.33	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	0.02	N/A	ft^2
Outlet Pipe Diameter =	8.00	N/A	inches	Outlet Orifice Centroid =	0.05	N/A	feet
Restrictor Plate Height Above Pipe Invert =	0.96		inches	Half-Central Angle of Restrictor Plate on Pipe =	0.71	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

			Calculated Parameters for Spillway		
Spillway Invert Stage=	6.85	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.50	feet
Spillway Crest Length =	4.00	feet	Stage at Top of Freeboard =	8.35	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.00	acres
Freeboard above Max Water Surface =	1.00	feet			

Routed Hydrograph Results

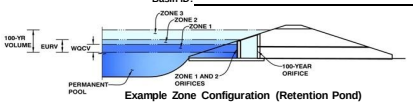
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	0.53	1.07	1.19	1.51	1.75	2.00	2.25	2.52	0.00
Calculated Runoff Volume (acre-ft) =	0.046	0.135	0.130	0.178	0.213	0.260	0.300	0.348	0.000
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.046	0.135	0.129	0.177	0.212	0.260	0.299	0.347	#N/A
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.01	0.13	0.34	0.80	1.05	1.37	0.00
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.2	0.6	1.4	1.9	2.4	0.0
Peak Inflow Q (cfs) =	0.8	2.4	2.3	3.1	3.7	4.6	5.2	6.1	#N/A
Peak Outflow Q (cfs) =	0.056	0.2	0.2	0.259	0.3	0.3	0.3	0.298	#N/A
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	1.2	0.4	0.2	0.2	0.1	#N/A
Structure Controlling Flow =	Vertical Orifice 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	#N/A
Max Velocity through Grate 1 (fps) =	N/A	0.01	0.01	0.0	0.0	0.0	0.0	0.0	#N/A
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) =	17	22	22	23	23	25	26	27	#N/A
Time to Drain 99% of Inflow Volume (hours) =	19	25	25	26	27	28	30	31	#N/A
Maximum Ponding Depth (ft) =	2.77	4.30	4.21	4.87	5.27	5.77	6.14	6.53	#N/A
Area at Maximum Ponding Depth (acres) =	0.03	0.06	0.06	0.07	0.08	0.10	0.11	0.12	#N/A
Maximum Volume Stored (acre-ft) =	0.039	0.110	0.104	0.148	0.179	0.224	0.261	0.307	#N/A

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Legacy Church - Green Mountain Falls- West Pond - As Built

Basin ID:



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	1.49	acres
Watershed Length =	445	ft
Watershed Slope =	0.080	ft/ft
Watershed Imperviousness =	74.10%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	
Water Quality Capture Volume (WQCV) =	0.037	acre-feet
Excess Urban Runoff Volume (EURV) =	0.108	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.104	acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	0.143	acre-feet
10-yr Runoff Volume (P1 = 1.75 in.) =	0.172	acre-feet
25-yr Runoff Volume (P1 = 2 in.) =	0.213	acre-feet
50-yr Runoff Volume (P1 = 2.25 in.) =	0.247	acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	0.288	acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
Approximate 2-yr Detention Volume =	0.097	acre-feet
Approximate 5-yr Detention Volume =	0.134	acre-feet
Approximate 10-yr Detention Volume =	0.154	acre-feet
Approximate 25-yr Detention Volume =	0.164	acre-feet
Approximate 50-yr Detention Volume =	0.168	acre-feet
Approximate 100-yr Detention Volume =	0.180	acre-feet

Optional User Override 1-hr Precipitation

1.19	inches
1.50	inches
1.75	inches
2.00	inches
2.25	inches
2.52	inches
	inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.037	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.071	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.072	acre-feet
Total Detention Basin Volume =	0.180	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 ft

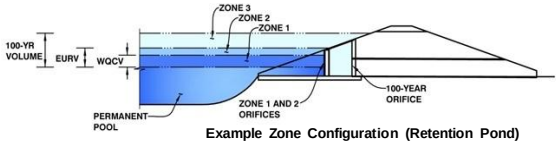
Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	17	0.000		
72.00	--	0.83	--	--	--	339	0.008	144	0.003
72.50	--	1.33	--	--	--	1,079	0.025	492	0.011
73.00	--	1.83	--	--	--	1,500	0.034	1,132	0.026
73.50	--	2.33	--	--	--	1,868	0.043	1,989	0.046
74.00	--	2.83	--	--	--	2,212	0.051	3,009	0.069
74.50	--	3.33	--	--	--	2,570	0.059	4,204	0.097
75.00	--	3.83	--	--	--	2,952	0.068	5,585	0.128
75.50	--	4.33	--	--	--	3,355	0.077	7,162	0.164
76.00	--	4.83	--	--	--	3,820	0.088	8,955	0.206
76.50	--	5.33	--	--	--	4,411	0.101	11,013	0.253
77.00	--	5.83	--	--	--	4,893	0.112	13,339	0.306

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Legacy Church - Green Mountain Falls - West Pond

Basin ID:



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.11	0.037	Orifice Plate
Zone 2 (EURV)	3.52	0.071	Circular Orifice
Zone 3 (100-year)	4.53	0.072	Weir&Pipe (Restrict)
		0.180	Total

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		
Invert 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 =	1.10	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	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)	0.03	0.52	1.02					
Orifice Area (sq. inches)	0.30	0.30	0.30					

	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)

	Zone 2 Circular	Not Selected		Calculated Parameters for Vertical Orifice	Zone 2 Circular	Not Selected	
Invert of Vertical Orifice =	1.10	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.00	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	3.15	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.03	N/A	feet
Vertical Orifice Diameter =	0.75	N/A	inches				

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 3 Weir	Not Selected		Calculated Parameters for Overflow Weir	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	3.15	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	3.15	N/A	feet
Overflow Weir Front Edge Length =	4.00	N/A	feet	Over Flow Weir Slope Length =	4.00	N/A	feet
Overflow Weir Slope =	0.00	N/A	H:V (enter zero for flat grate)	Grate Open Area / 100-yr Orifice Area =	397.54	N/A	should be ≥ 4
Horiz. Length of Weir Sides =	4.00	N/A	feet	Overflow Grate Open Area w/o Debris =	11.20	N/A	ft^2
Overflow Grate Open Area % =	70%	N/A	%, grate open area/total area	Overflow Grate Open Area w/ Debris =	5.60	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 =	0.33	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	0.03	N/A	ft^2
Outlet Pipe Diameter =	8.00	N/A	inches	Outlet Orifice Centroid =	0.05	N/A	feet
Restrictor Plate Height Above Pipe Invert =	1.08		inches	Half-Central Angle of Restrictor Plate on Pipe =	0.75	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

			Calculated Parameters for Spillway		
Spillway Invert Stage=	4.78	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.43	feet
Spillway Crest Length =	4.00	feet	Stage at Top of Freeboard =	6.21	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.11	acres
Freeboard above Max Water Surface =	1.00	feet			

Routed Hydrograph Results

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) =	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	0.00
Calculated Runoff Volume (acre-ft) =	0.037	0.108	0.104	0.143	0.172	0.213	0.247	0.288	0.000
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.036	0.107	0.103	0.142	0.172	0.213	0.246	0.288	#N/A
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.01	0.12	0.32	0.76	1.00	1.31	0.00
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.2	0.5	1.1	1.5	2.0	0.0
Peak Inflow Q (cfs) =	0.6	1.8	1.7	2.4	2.8	3.5	4.1	4.7	#N/A
Peak Outflow Q (cfs) =	0.049	0.254	0.250	0.269	0.281	0.296	0.456	1.410	#N/A
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	1.5	0.6	0.3	0.3	0.7	#N/A
Structure Controlling Flow =	Vertical Orifice 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Spillway	Spillway	#N/A
Max Velocity through Grate 1 (fps) =	N/A	0.02	0.02	0.0	0.0	0.0	0.0	0.0	#N/A
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) =	15	24	24	24	25	25	26	25	#N/A
Time to Drain 99% of Inflow Volume (hours) =	16	26	26	27	28	29	29	29	#N/A
Maximum Ponding Depth (ft) =	1.94	3.22	3.18	3.66	4.01	4.50	4.83	4.97	#N/A
Area at Maximum Ponding Depth (acres) =	0.04	0.06	0.06	0.06	0.07	0.08	0.09	0.09	#N/A
Maximum Volume Stored (acre-ft) =	0.030	0.090	0.088	0.116	0.141	0.177	0.206	0.217	#N/A