



Please include the
County standard
signature block

June 12, 2020

Ms. Elizabeth Nijkamp
El Paso County
325 Akers Drive
Colorado Springs, CO 80922

Add PCD File No. WSEO201

RE: Major Amendment – Drainage Letter
Front Range Midway Solar Project
Fountain, CO

Please revise to:
Amendment to the
Preliminary Drainage Report

Dear Ms. Kijkamp:

CORE is writing this Drainage letter in support of the Major Amendment application to the Wind/Solar Energy Generation Overlay (WSE-O) district approved on April 24, 2018 (WSEO-17-001) for the Front Range Midway Solar Project (Project). Since the WSEO-17-001 approval in 2018, the FRMW Project design has been optimized resulting in changes to the Project boundary, layout and infrastructure. Per WSEO-17-001, many of the FRMW Project details remain the same, including the Applicant's intent to construct, operate, and maintain a 100.2-megawatt (MW) photovoltaic solar energy generation facility. The facilities included in the approved WSEO-17-001 included proposed solar panels, a project substation, and meteorological monitoring devices. The Project now includes the details for an Operations & Management facility and energy storage facility utilizing battery technology that will be coupled to the solar facility. The developable ground has also been reduced thus the project footprint has been revised to fit within the new project limits.

The minor basins within the site largely remained the same. The revised project layout removed the majority of the solar panels within basin A5 from the original approved permit. For this amendment, the original basin A5 has been divided into basins A5A and A5B. Panel layouts in basins A1, A6, and A7 stayed relatively the same. Panels in A8 were reduced with basin A10 and A11 still containing the largest concentration of panels. Basin A9 was combined with basin 12 from the original approved permit and now extends to the northeast corner of the property. Basin 12 has been redefined as the southeastern tip of the project with no development proposed.

The hydrology has been updated to represent the revised project footprint. Current rational method and Colorado Urban Hydrograph Procedure spreadsheets were used to determine the minor (5-yr) and major (100-yr) storm runoff. NOAA Atlas 14, volume 8, version 2, point precipitation frequency estimates from the Fountain station were used when calculating the hydrology. Extended Detention Basins have been recalculated utilizing the Mile High Flood District Detention spreadsheet version 4.03. The calculations are attached.

Sincerely,
CORE Consultants, Inc.

David Bacci P.E. #42104
Senior Project Engineer

Please include in your narrative a general description of any changes or the elimination of any of the proposed extended detention basins.

As this basin has been relocated,
please provide a description of the
flow in this basin.

NOAA Atlas 14, Volume 8, Version 2 FOUNTAIN

Station ID: 05-3063



Location name: Fountain, Colorado, USA*

Latitude: 38.6778°, Longitude: -104.7014°

Elevation:

Elevation (station metadata): 5560 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.267 (0.215-0.337)	0.319 (0.257-0.403)	0.413 (0.331-0.524)	0.500 (0.398-0.637)	0.631 (0.489-0.852)	0.743 (0.558-1.01)	0.863 (0.623-1.21)	0.994 (0.684-1.44)	1.18 (0.777-1.76)	1.33 (0.847-2.00)
10-min	0.390 (0.315-0.493)	0.467 (0.376-0.590)	0.605 (0.485-0.767)	0.732 (0.583-0.933)	0.925 (0.716-1.25)	1.09 (0.817-1.49)	1.26 (0.912-1.77)	1.46 (1.00-2.10)	1.73 (1.14-2.57)	1.95 (1.24-2.93)
15-min	0.476 (0.384-0.601)	0.569 (0.458-0.720)	0.737 (0.591-0.936)	0.892 (0.711-1.14)	1.13 (0.874-1.52)	1.33 (0.997-1.81)	1.54 (1.11-2.16)	1.78 (1.22-2.56)	2.11 (1.39-3.14)	2.38 (1.51-3.57)
30-min	0.674 (0.543-0.851)	0.804 (0.648-1.02)	1.04 (0.835-1.32)	1.26 (1.00-1.61)	1.59 (1.23-2.15)	1.88 (1.41-2.56)	2.18 (1.57-3.06)	2.51 (1.73-3.63)	2.99 (1.96-4.44)	3.37 (2.14-5.06)
60-min	0.864 (0.696-1.09)	1.01 (0.815-1.28)	1.30 (1.04-1.65)	1.57 (1.25-2.01)	2.01 (1.57-2.74)	2.40 (1.81-3.29)	2.82 (2.04-3.98)	3.29 (2.27-4.78)	3.98 (2.63-5.95)	4.55 (2.89-6.83)
2-hr	1.05 (0.854-1.32)	1.22 (0.988-1.53)	1.56 (1.25-1.96)	1.89 (1.51-2.39)	2.43 (1.92-3.31)	2.92 (2.22-4.00)	3.46 (2.53-4.87)	4.08 (2.84-5.90)	4.98 (3.32-7.40)	5.73 (3.68-8.54)
3-hr	1.16 (0.939-1.45)	1.32 (1.07-1.65)	1.67 (1.35-2.10)	2.03 (1.63-2.56)	2.64 (2.09-3.59)	3.19 (2.44-4.37)	3.82 (2.81-5.37)	4.53 (3.18-6.56)	5.60 (3.76-8.31)	6.49 (4.19-9.65)
6-hr	1.33 (1.08-1.65)	1.50 (1.22-1.86)	1.87 (1.52-2.34)	2.28 (1.84-2.85)	2.97 (2.38-4.04)	3.61 (2.80-4.94)	4.35 (3.23-6.10)	5.20 (3.69-7.49)	6.47 (4.39-9.56)	7.54 (4.92-11.1)
12-hr	1.49 (1.22-1.83)	1.69 (1.39-2.09)	2.13 (1.74-2.64)	2.58 (2.09-3.21)	3.33 (2.68-4.47)	4.02 (3.12-5.43)	4.80 (3.58-6.65)	5.68 (4.06-8.10)	6.99 (4.78-10.2)	8.09 (5.33-11.9)
24-hr	1.66 (1.37-2.04)	1.94 (1.60-2.38)	2.46 (2.02-3.03)	2.98 (2.43-3.68)	3.79 (3.04-5.00)	4.50 (3.51-6.00)	5.30 (3.97-7.25)	6.17 (4.43-8.70)	7.46 (5.14-10.8)	8.52 (5.67-12.4)
2-day	1.86 (1.54-2.26)	2.22 (1.84-2.71)	2.87 (2.37-3.51)	3.46 (2.84-4.25)	4.36 (3.49-5.66)	5.11 (3.99-6.72)	5.92 (4.46-8.00)	6.80 (4.91-9.47)	8.05 (5.59-11.5)	9.07 (6.10-13.1)
3-day	2.01 (1.67-2.44)	2.37 (1.97-2.88)	3.03 (2.51-3.69)	3.64 (3.00-4.46)	4.58 (3.69-5.93)	5.37 (4.21-7.04)	6.23 (4.72-8.39)	7.17 (5.21-9.95)	8.51 (5.95-12.2)	9.61 (6.50-13.8)
4-day	2.16 (1.80-2.61)	2.51 (2.09-3.05)	3.17 (2.63-3.85)	3.79 (3.12-4.62)	4.74 (3.84-6.14)	5.57 (4.38-7.29)	6.47 (4.92-8.70)	7.45 (5.44-10.3)	8.88 (6.23-12.7)	10.0 (6.83-14.4)
7-day	2.61 (2.18-3.14)	2.98 (2.49-3.59)	3.66 (3.05-4.42)	4.31 (3.57-5.23)	5.32 (4.33-6.84)	6.19 (4.91-8.06)	7.15 (5.48-9.56)	8.20 (6.03-11.3)	9.73 (6.89-13.8)	11.0 (7.53-15.7)
10-day	3.00 (2.51-3.59)	3.41 (2.86-4.09)	4.15 (3.47-5.00)	4.85 (4.03-5.87)	5.93 (4.83-7.57)	6.84 (5.43-8.85)	7.84 (6.02-10.4)	8.92 (6.59-12.2)	10.5 (7.46-14.8)	11.8 (8.11-16.8)
20-day	3.98 (3.36-4.75)	4.57 (3.85-5.45)	5.59 (4.69-6.68)	6.47 (5.41-7.78)	7.77 (6.33-9.76)	8.82 (7.03-11.3)	9.93 (7.66-13.0)	11.1 (8.24-15.0)	12.7 (9.12-17.8)	14.0 (9.78-19.8)
30-day	4.78 (4.04-5.67)	5.51 (4.66-6.55)	6.75 (5.69-8.04)	7.79 (6.53-9.33)	9.27 (7.55-11.5)	10.4 (8.32-13.2)	11.6 (8.98-15.1)	12.8 (9.56-17.2)	14.5 (10.4-20.1)	15.8 (11.1-22.2)
45-day	5.78 (4.91-6.83)	6.69 (5.68-7.92)	8.18 (6.92-9.71)	9.40 (7.91-11.2)	11.1 (9.02-13.6)	12.4 (9.87-15.5)	13.6 (10.6-17.6)	14.9 (11.1-19.8)	16.6 (12.0-22.8)	17.8 (12.6-25.0)
60-day	6.65 (5.66-7.84)	7.70 (6.54-9.08)	9.37 (7.94-11.1)	10.7 (9.05-12.8)	12.5 (10.2-15.4)	13.9 (11.1-17.3)	15.2 (11.8-19.5)	16.5 (12.4-21.9)	18.2 (13.2-24.9)	19.4 (13.8-27.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

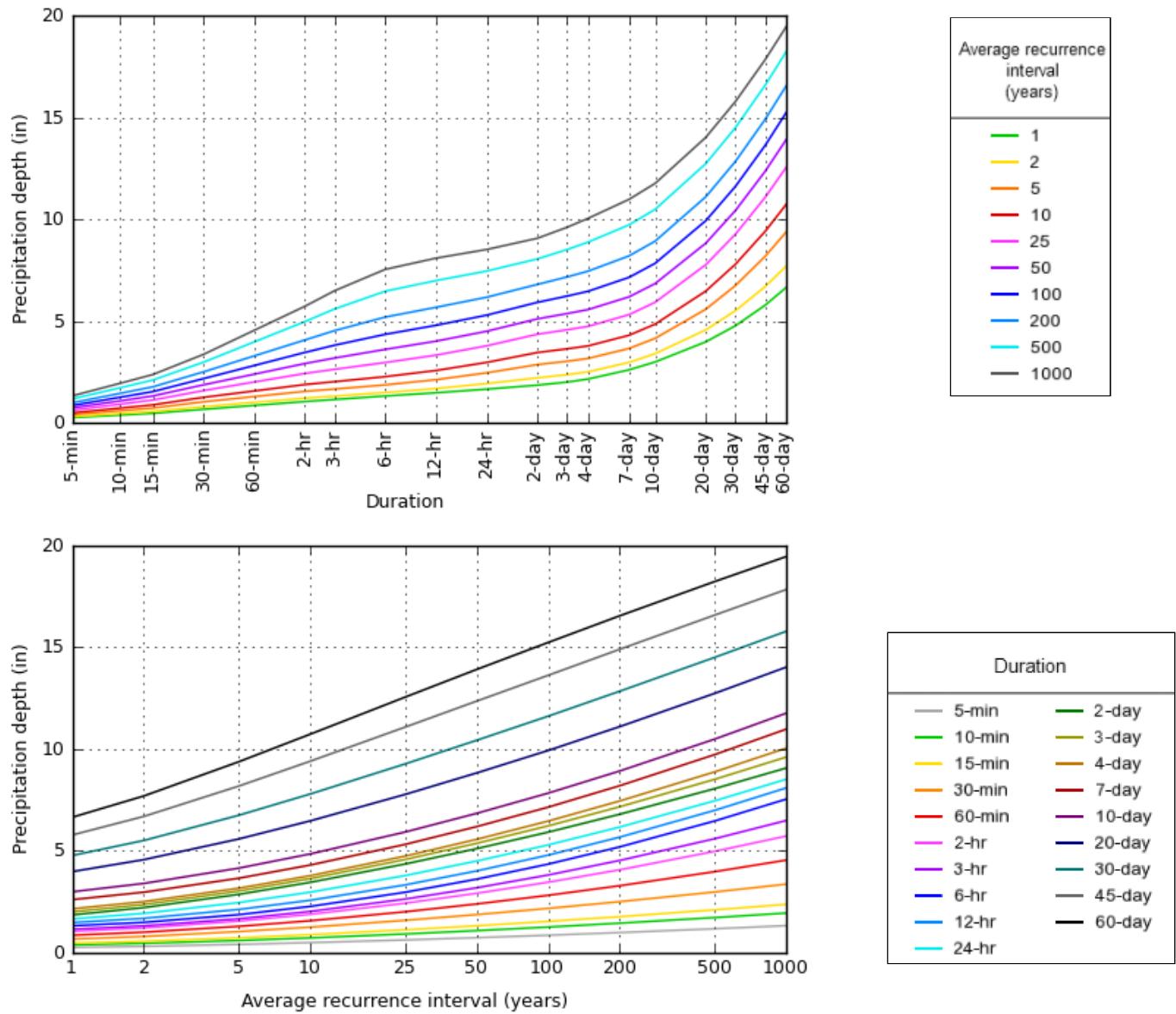
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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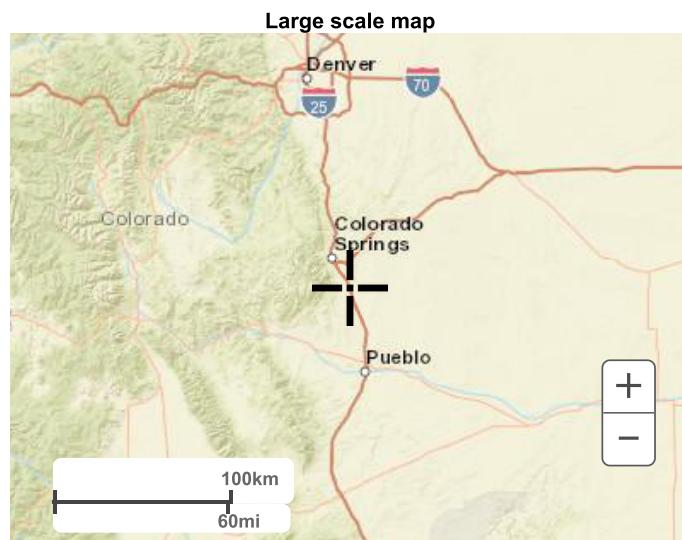
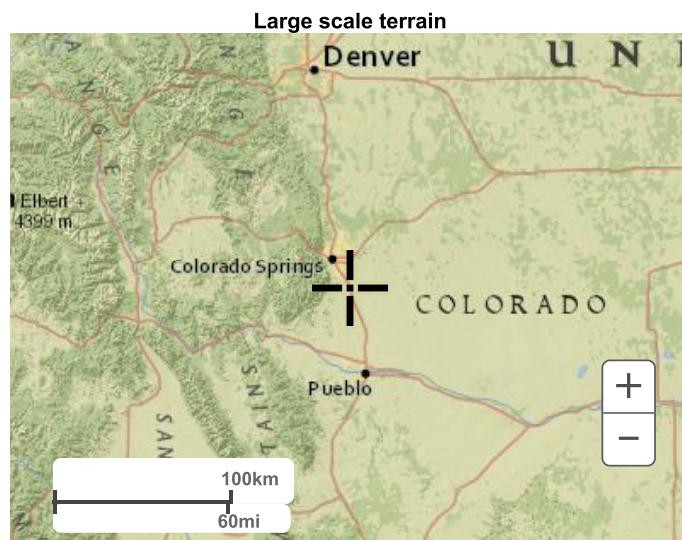
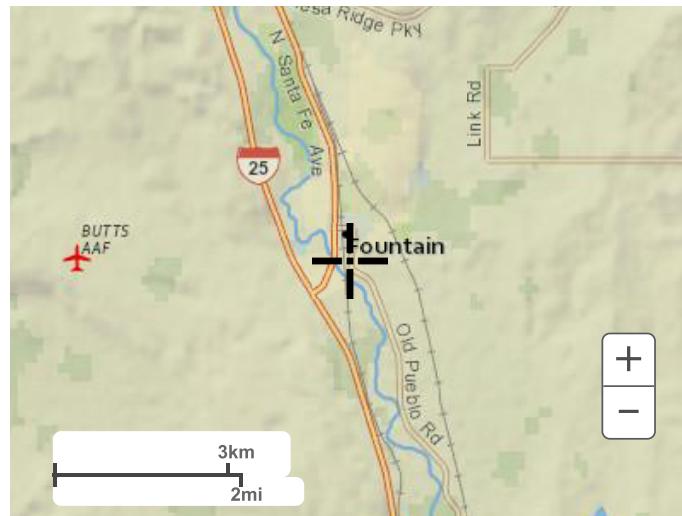
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 38.6778°, Longitude: -104.7014°

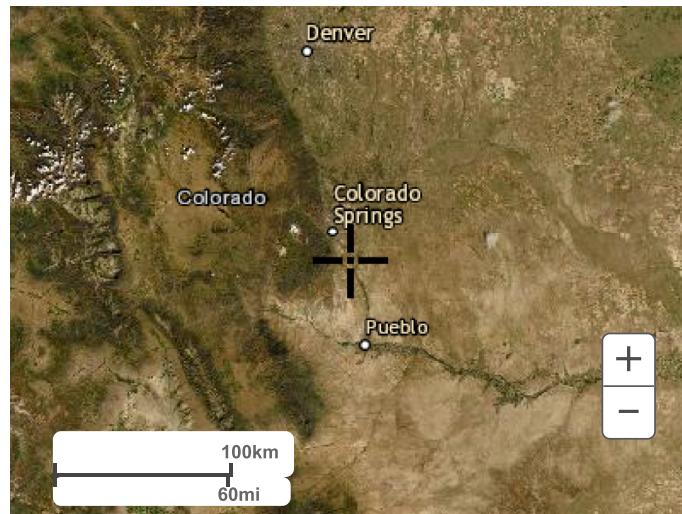


Maps & aerials

[Small scale terrain](#)



Large scale aerial

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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

COMPOSITE BASIN - WEIGHTED "C" CALCULATIONS

-REFERENCE UDFCD Vol.1 RUNOFF Table 6-3

% Imperv.	Design	Streets: Gravel	Gravel	Lawns		Historic	Total	Percent			
				Clay Soil							
				2-7% Slope	>7% Slope						
80.00%		40.00%		2.00%	2.00%	2.00%					
BASIN	Point	Area	Area	Area	Area	Area	Area	Impervious			
A-1	1	-	-	-	-	31.30	31.30	2.0%			
A-2	2	-	-	-	-	72.65	72.65	2.0%			
A-3	3	-	-	-	-	107.81	107.81	2.0%			
A-4	4	-	-	-	-	33.49	33.49	2.0%			
A-5B	5B	-	-	-	-	10.24	10.24	2.0%			
A-6	6	-	-	-	-	34.04	34.04	2.0%			
A-7	7	-	-	-	-	55.40	55.40	2.0%			
A-8	8	-	-	-	-	89.54	89.54	2.0%			
A-9	9	-	-	-	-	48.32	48.32	2.0%			
A-12	12	-	-	-	-	28.57	28.57	2.0%			

FRONT RANGE MID

CORE Project #: 19-177

Prepared By: DJB

It appears this may
be your historic
design not developed.

COMPOSITE DEVELOPED BASIN -WEIGHTED "C" CALCULATIONS

-REFERENCE UDFCD Vol.1 RUNOFF Table 6-4

i = % imperviousness/100 expressed as a decimal

C_A = Runoff coefficient for NRCS HSG A soils

C_B = Runoff coefficient for NRCS HSG B soils

$C_{C/D}$ = Runoff coefficient for NRCS HSG C and D soils.

Natural Resource Conservation Service (NRCS)

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
A	$C_A =$ $0.84i^{1.302}$	$C_A =$ $0.86i^{1.276}$	$C_A =$ $0.87i^{1.232}$	$C_A =$ $0.84i^{1.124}$	$C_A =$ $0.85i+0.025$	$C_A =$ $0.78i+0.110$	$C_A =$ $0.65i+0.254$
B	$C_B =$ $0.84i^{1.169}$	$C_B =$ $0.86i^{1.088}$	$C_B =$ $0.81i+0.057$	$C_B =$ $0.63i+0.249$	$C_B =$ $0.56i+0.328$	$C_B =$ $0.47i+0.426$	$C_B =$ $0.37i+0.536$
C/D	$C_{C/D} =$ $0.83i^{1.122}$	$C_{C/D} =$ $0.82i+0.035$	$C_{C/D} =$ $0.74i+0.132$	$C_{C/D} =$ $0.56i+0.319$	$C_{C/D} =$ $0.49i+0.393$	$C_{C/D} =$ $0.41i+0.484$	$C_{C/D} =$ $0.32i+0.588$

Basin ID	% Imperv.	i	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A-1	2.0%	0.02	A	0.01	0.01	0.01	0.13	31.30	31.30	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-2	2.0%	0.02	A	0.01	0.01	0.01	0.13	72.65	72.65	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-3	2.0%	0.02	A	0.01	0.01	0.01	0.13	107.81	107.81	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-4	2.0%	0.02	A	0.01	0.01	0.01	0.13	33.49	33.49	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-5B	2.0%	0.02	A	0.01	0.01	0.01	0.13	10.24	10.24	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-6	2.0%	0.02	A	0.01	0.01	0.01	0.13	34.04	34.04	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						

Basin ID	% Imperv.	<i>i</i>	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A-7	2.0%	0.02	A	0.01	0.01	0.01	0.13	55.40	55.40	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-8	2.0%	0.02	A	0.01	0.01	0.01	0.13	89.54	89.54	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-9	2.0%	0.02	A	0.01	0.01	0.01	0.13	48.32	48.32	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-12	2.0%	0.02	A	0.01	0.01	0.01	0.13	28.57	28.57	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

TIME OF CONCENTRATION CALCULATIONS

-REFERENCE UDFCD Vol.1 Section 2.4

NRCS Conveyance factors, K -REFERENCE UDFCD Vol.1 RUNOFF Table 6-2

SF-2	Heavy Meadow	2.50	Short Grass Pasture & Lawns	7.00	Grassed Waterway	15.00
	Tillage/field	5.00	Nearly Bare Ground	10.00	Paved Area & Shallow Gutter	20.00

SUB-BASIN DATA			INITIAL / OVERLAND TIME				CHANNEL / TRAVEL TIME T(t)				T(c) CHECK (URBANIZED BASINS)			FINAL T(c)		
DRAIN BASIN	AREA ac.	C(5)	Length ft.	Elev Change	Slope %	T(i) min	Length ft.	Elev Change	Slope %	Coeff.	Velocity fps	T(t) min.	COMP. T(c)	% IMPER-VIOUS Eq . 6-5	USDCM	
A-1	31.30	0.05	300	2.7	0.9	34.1	1170	34.9	3.0	7.0	1.2	16.1	50.2	2.0%	37.8	37.8
A-2	72.65	0.05	300	3.1	1.0	32.4	1665	22.1	1.3	7.0	0.8	34.4	66.8	2.0%	51.6	51.6
A-3	107.81	0.05	300	5.5	1.8	26.8	2883	45.3	1.6	7.0	0.9	54.8	81.6	2.0%	67.0	67.0
A-4	33.49	0.05	300	2.2	0.7	36.2	3635	44.7	1.2	7.0	0.8	78.0	114.2	2.0%	84.5	84.5
A-5B	10.24	0.05	300	6.0	2.0	26.1	908	33.7	3.7	7.0	1.3	11.2	37.3	2.0%	34.1	34.1
A-6	34.04	0.05	300	4.6	1.5	28.4	1318	24.3	1.8	7.0	1.0	23.1	51.5	2.0%	43.1	43.1
A-7	55.40	0.05	300	8.8	2.9	23.0	2169	50.2	2.3	7.0	1.1	33.9	56.9	2.0%	51.3	51.3
A-8	89.54	0.05	300	5.3	1.8	27.2	3108	77.7	2.5	7.0	1.1	46.8	74.0	2.0%	61.0	61.0
A-9	48.32	0.05	300	8.9	3.0	22.9	2163	70.0	3.2	7.0	1.3	28.6	51.5	2.0%	47.3	47.3
A-12	28.57	0.05	300	5.0	1.7	27.7	2235	49.0	2.2	7.0	1.0	35.9	63.6	2.0%	52.8	52.8

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

RATIONAL METHOD PEAK RUNOFF

5-Year STORM

Rainfall Depth-Duration-Frequency (1-hr) = 1.3

SF-3

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATON				DIRECT RUNOFF			
DESIGN POINT	DRAIN BASIN	AREA ac.	5yr Runoff COEFF	T(c) min	C x A	I in/hr	Q cfs
1	A-1	31.30	0.05	37.8	1.61	1.77	2.9
2	A-2	72.65	0.05	51.6	3.73	1.45	5.4
3	A-3	107.81	0.05	67.0	5.54	1.22	6.8
4	A-4	33.49	0.05	84.5	1.72	1.04	1.8
5B	A-5B	10.24	0.05	34.1	0.53	1.89	1.0
6	A-6	34.04	0.05	43.1	1.75	1.63	2.9
7	A-7	55.40	0.05	51.3	2.85	1.46	4.2
8	A-8	89.54	0.05	61.0	4.60	1.30	6.0
9	A-9	48.32	0.05	47.3	2.48	1.54	3.8
12	A-12	28.57	0.05	52.8	1.47	1.43	2.1

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

RATIONAL METHOD PEAK RUNOFF

100-YR STORM

SF-3 Rainfall Depth-Duration-Frequency (1-hr) = 2.82

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATION				DIRECT RUNOFF			
DESIGN POINT	DRAIN BASIN	AREA ac.	100yr RUNOFF COEFF C	T(c) min	C x A	I in/hr	Q cfs
1	A-1	31.30	0.49	37.83	15.41	3.84	59.23
2	A-2	72.65	0.49	51.62	35.76	3.15	112.65
3	A-3	107.81	0.49	66.99	53.06	2.64	140.33
4	A-4	33.49	0.49	84.51	16.48	2.25	37.10
5B	A-5B	10.24	0.49	34.12	5.04	4.10	20.65
6	A-6	34.04	0.49	43.09	16.75	3.54	59.34
7	A-7	55.40	0.49	51.27	27.27	3.16	86.30
8	A-8	89.54	0.49	60.97	44.07	2.82	124.26
9	A-9	48.32	0.49	47.25	23.78	3.34	79.38
12	A-12	28.57	0.49	52.77	14.06	3.11	43.67

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

COMPOSITE BASIN - WEIGHTED "C" CALCULATIONS

-REFERENCE UDFCD Vol.1 RUNOFF Table 6-3

% Imperv.	Design	Streets: Gravel	Gravel	Lawns		Historic	Total	Percent			
				Clay Soil							
				2-7% Slope	>7% Slope						
80.00%		40.00%		2.00%	2.00%	2.00%					
BASIN	Point	Area	Area	Area	Area	Area	Area	Impervious			
A-1	1	1.48	-	-	-	29.82	31.30	5.7%			
A-2	2	4.82	-	-	-	67.83	72.65	7.2%			
A-3	3	-	-	-	-	107.81	107.81	2.0%			
A-4	4	-	-	-	-	33.49	33.49	2.0%			
A-5B	5B	1.20	-	-	-	9.54	10.74	10.7%			
A-6	6	1.24	-	-	-	32.80	34.04	4.8%			
A-7	7	1.87	-	-	-	53.53	55.40	4.6%			
A-8	8	2.08	-	-	-	87.46	89.54	3.8%			
A-9	9	1.55	-	-	-	46.77	48.32	4.5%			
A-12	12	-	-	-	-	28.57	28.57	2.0%			

FRONT RANGE MID

CORE Project #: 19-177

Prepared By: DJB

COMPOSITE DEVELOPED BASIN -WEIGHTED "C" CALCULATIONS

-REFERENCE UDFCD Vol.1 RUNOFF Table 6-4

i = % imperviousness/100 expressed as a decimal

C_A = Runoff coefficient for NRCS HSG A soils

C_B = Runoff coefficient for NRCS HSG B soils

$C_{C/D}$ = Runoff coefficient for NRCS HSG C and D soils.

Natural Resource Conservation Service (NRCS)

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
A	$C_A = 0.84i^{1.302}$	$C_A = 0.86i^{1.276}$	$C_A = 0.87i^{1.232}$	$C_A = 0.84i^{1.124}$	$C_A = 0.85i+0.025$	$C_A = 0.78i+0.110$	$C_A = 0.65i+0.254$
B	$C_B = 0.84i^{1.169}$	$C_B = 0.86i^{1.088}$	$C_B = 0.81i+0.057$	$C_B = 0.63i+0.249$	$C_B = 0.56i+0.328$	$C_B = 0.47i+0.426$	$C_B = 0.37i+0.536$
C/D	$C_{C/D} = 0.83i^{1.122}$	$C_{C/D} = 0.82i+0.035$	$C_{C/D} = 0.74i+0.132$	$C_{C/D} = 0.56i+0.319$	$C_{C/D} = 0.49i+0.393$	$C_{C/D} = 0.41i+0.484$	$C_{C/D} = 0.32i+0.588$

Basin ID	% Imperv.	i	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A-1	5.7%	0.06	A	0.02	0.02	0.03	0.15	31.30	31.30	0.03	0.08	0.17	0.51
			B	0.03	0.04	0.10	0.45						
			C or D	0.03	0.08	0.17	0.51						
A-2	7.2%	0.07	A	0.03	0.03	0.03	0.17	72.65	72.65	0.04	0.09	0.19	0.51
			B	0.04	0.05	0.12	0.46						
			C or D	0.04	0.09	0.19	0.51						
A-3	2.0%	0.02	A	0.01	0.01	0.01	0.13	107.81	107.81	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-4	2.0%	0.02	A	0.01	0.01	0.01	0.13	33.49	33.49	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						
A-5B	10.7%	0.11	A	0.05	0.05	0.06	0.19	10.74	10.74	0.07	0.12	0.21	0.53
			B	0.06	0.08	0.14	0.48						
			C or D	0.07	0.12	0.21	0.53						
A-6	4.8%	0.05	A	0.02	0.02	0.02	0.15	34.04	34.04	0.03	0.07	0.17	0.50
			B	0.02	0.03	0.10	0.45						
			C or D	0.03	0.07	0.17	0.50						

Basin ID	% Imperv.	<i>i</i>	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A-7	4.6%	0.05	A	0.02	0.02	0.02	0.15	55.40	55.40	0.03	0.07	0.17	0.50
			B	0.02	0.03	0.09	0.45						
			C or D	0.03	0.07	0.17	0.50						
A-8	3.8%	0.04	A	0.01	0.01	0.02	0.14	89.54	89.54	0.02	0.07	0.16	0.50
			B	0.02	0.02	0.09	0.44						
			C or D	0.02	0.07	0.16	0.50						
A-9	4.5%	0.05	A	0.01	0.02	0.02	0.15	48.32	48.32	0.03	0.07	0.17	0.50
			B	0.02	0.03	0.09	0.45						
			C or D	0.03	0.07	0.17	0.50						
A-12	2.0%	0.02	A	0.01	0.01	0.01	0.13	28.57	28.57	0.01	0.05	0.15	0.49
			B	0.01	0.01	0.07	0.44						
			C or D	0.01	0.05	0.15	0.49						

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

TIME OF CONCENTRATION CALCULATIONS

-REFERENCE UDFCD Vol.1 Section 2.4

NRCS Conveyance factors, K -REFERENCE UDFCD Vol.1 RUNOFF Table 6-2

SF-2	Heavy Meadow	2.50	Short Grass Pasture & Lawns	7.00	Grassed Waterway	15.00
	Tillage/field	5.00	Nearly Bare Ground	10.00	Paved Area & Shallow Gutter	20.00

SUB-BASIN DATA			INITIAL / OVERLAND TIME				CHANNEL / TRAVEL TIME T(t)				T(c) CHECK (URBANIZED BASINS)			FINAL T(c)		
DRAIN BASIN	AREA ac.	C(5)	Length ft.	Elev Change	Slope %	T(i) min	Length ft.	Elev Change	Slope %	Coeff.	Velocity fps	T(t) min.	COMP. T(c)	% IMPER-VIOUS Eq . 6-5	USDCM	
A-1	31.30	0.08	300	2.7	0.9	33.1	1170	34.9	3.0	7.0	1.2	16.1	49.3	5.7%	36.6	36.6
A-2	72.65	0.09	300	3.1	1.0	31.1	1665	22.1	1.3	7.0	0.8	34.4	65.5	7.2%	48.9	48.9
A-3	107.81	0.05	300	5.5	1.8	26.8	2883	45.3	1.6	7.0	0.9	54.8	81.6	2.0%	67.0	67.0
A-4	33.49	0.05	300	2.2	0.7	36.2	3635	44.7	1.2	7.0	0.8	78.0	114.2	2.0%	84.5	84.5
A-5B	10.74	0.12	300	6.0	2.0	24.3	908	33.7	3.7	7.0	1.3	11.2	35.5	10.7%	31.7	31.7
A-6	34.04	0.07	300	4.6	1.5	27.8	1318	24.3	1.8	7.0	1.0	23.1	50.9	4.8%	41.9	41.9
A-7	55.40	0.07	300	8.8	2.9	22.5	2169	50.2	2.3	7.0	1.1	33.9	56.4	4.6%	49.8	49.8
A-8	89.54	0.07	300	5.3	1.8	26.8	3108	77.7	2.5	7.0	1.1	46.8	73.6	3.8%	59.7	59.7
A-9	48.32	0.07	300	8.9	3.0	22.4	2163	70.0	3.2	7.0	1.3	28.6	51.1	4.5%	46.0	46.0
A-12	28.57	0.05	300	5.0	1.7	27.7	2235	49.0	2.2	7.0	1.0	35.9	63.6	2.0%	52.8	52.8

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

RATIONAL METHOD PEAK RUNOFF

5-Year STORM

Rainfall Depth-Duration-Frequency (1-hr) = 1.3

SF-3

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATON				DIRECT RUNOFF			
DESIGN POINT	DRAIN BASIN	AREA ac.	5yr Runoff COEFF	T(c) min	C x A	I in/hr	Q cfs
1	A-1	31.30	0.08	36.6	2.56	1.81	4.6
2	A-2	72.65	0.09	48.9	6.82	1.51	10.3
3	A-3	107.81	0.05	67.0	5.54	1.22	6.8
4	A-4	33.49	0.05	84.5	1.72	1.04	1.8
5B	A-5B	10.74	0.12	31.7	1.32	1.98	2.6
6	A-6	34.04	0.07	41.9	2.54	1.66	4.2
7	A-7	55.40	0.07	49.8	4.04	1.49	6.0
8	A-8	89.54	0.07	59.7	5.93	1.32	7.8
9	A-9	48.32	0.07	46.0	3.48	1.56	5.4
12	A-12	28.57	0.05	52.8	1.47	1.43	2.1

FRONT RANGE MIDWAY SOLAR PROJECT

CORE Project #: 19-177

Prepared By: DJB

RATIONAL METHOD PEAK RUNOFF

100-YR STORM

SF-3 Rainfall Depth-Duration-Frequency (1-hr) = 2.82

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATION				DIRECT RUNOFF			
DESIGN POINT	DRAIN BASIN	AREA ac.	100yr RUNOFF COEFF C	T(c) min	C x A	I in/hr	Q cfs
1	A-1	31.30	0.51	36.56	15.88	3.93	62.36
2	A-2	72.65	0.51	48.86	37.30	3.27	121.82
3	A-3	107.81	0.49	66.99	53.06	2.64	140.33
4	A-4	33.49	0.49	84.51	16.48	2.25	37.10
5B	A-5B	10.74	0.53	31.66	5.67	4.29	24.30
6	A-6	34.04	0.50	41.90	17.15	3.61	61.84
7	A-7	55.40	0.50	49.84	27.87	3.22	89.84
8	A-8	89.54	0.50	59.72	44.74	2.86	127.90
9	A-9	48.32	0.50	46.04	24.28	3.39	82.41
12	A-12	28.57	0.49	52.77	14.06	3.11	43.67

EXISTING 5-YR

Summary of CUHP Input Parameters (Version 2.0.0)

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in./hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con't Imperv. Perv. Fraction	Receiv. Perv. Fraction	
A5A	A5A	5	0.316	0.479	1.072	0.014	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.62
A10	A10	5	0.370	0.856	1.425	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.62
A11	A11	5	0.345	0.785	1.525	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.62

EXISTING 5-YR

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5A	Existing 5-yr Storm	0.157	0.256	58.1	12.91	30.2	9.12	21.5	163	733,623	0.24	173,242	50.0	36	173,257	0.18
A10	Existing 5-yr Storm	0.157	0.268	77.7	17.50	40.4	12.37	29.2	143	858,967	0.24	202,842	60.0	32	202,840	0.14
A11	Existing 5-yr Storm	0.157	0.262	79.0	17.42	41.1	12.31	29.0	131	800,560	0.24	189,049	60.0	30	189,031	0.13

EXISTING 100-YR

Summary of CUHP Input Parameters (Version 2.0.0)

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in./hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con't Imperv. Perv. Fraction	Receiv. Perv. Fraction	
A5A	A5A	100	0.316	0.479	1.072	0.014	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81
A10	A10	100	0.370	0.856	1.425	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81
A11	A11	100	0.345	0.785	1.525	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81

EXISTING 100-YR

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5A	Existing 100-yr Storm	0.156	0.255	58.1	12.85	30.2	9.08	21.4	163	733,623	1.84	1,349,173	60.0	248	1,349,302	1.23
A10	Existing 100-yr Storm	0.156	0.267	77.7	17.43	40.4	12.31	29.0	143	858,967	1.84	1,579,688	70.0	233	1,579,673	0.99
A11	Existing 100-yr Storm	0.156	0.261	79.0	17.35	41.1	12.26	28.9	131	800,560	1.84	1,472,275	70.0	215	1,472,127	0.97

PROPOSED 5-YR

Summary of CUHP Input Parameters (Version 2.0.0)

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in./hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con't Imperv. Perv. Fraction	Receiv. Perv. Fraction	
A5A	A5A	5	0.316	0.479	1.072	0.014	2.2	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.78
A10	A10	5	0.370	0.856	1.425	0.019	4.3	0.35	0.05	3.00	0.50	0.0018	0.00	0.09	0.04	3.52
A11	A11	5	0.345	0.785	1.525	0.019	4.3	0.35	0.05	3.00	0.50	0.0018	0.00	0.09	0.04	3.52

PROPOSED 5-YR

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5A	Proposed 5-yr Storm	0.156	0.255	58.1	12.86	30.2	9.09	21.4	163	733,623	0.24	174,696	50.0	36	174,712	0.18
A10	Proposed 5-yr Storm	0.150	0.257	77.5	16.78	40.3	11.86	28.0	143	858,967	0.26	222,537	60.0	35	222,533	0.15
A11	Proposed 5-yr Storm	0.150	0.251	78.8	16.71	41.0	11.81	27.9	131	800,560	0.26	207,405	60.0	32	207,385	0.14

PROPOSED 100-YR

Summary of CUHP Input Parameters (Version 2.0.0)

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in./hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con't Imperv. Perv. Fraction	Receiv. Perv. Fraction	
A5A	A5A	100	0.316	0.479	1.072	0.014	2.2	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	2.00
A10	A10	100	0.370	0.856	1.425	0.019	4.3	0.35	0.05	3.00	0.50	0.0018	0.00	0.09	0.04	3.92
A11	A11	100	0.345	0.785	1.525	0.019	4.3	0.35	0.05	3.00	0.50	0.0018	0.00	0.09	0.04	3.92

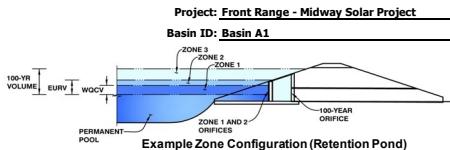
PROPOSED 100-YR

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5A	Proposed 100-yr Storm	0.156	0.254	58.1	12.81	30.2	9.05	21.3	163	733,623	1.84	1,350,808	60.0	248	1,350,947	1.23
A10	Proposed 100-yr Storm	0.148	0.254	77.5	16.63	40.3	11.75	27.7	143	858,967	1.86	1,601,749	70.0	236	1,601,695	1.00
A11	Proposed 100-yr Storm	0.148	0.249	78.7	16.56	40.9	11.70	27.6	131	800,560	1.86	1,492,836	70.0	217	1,492,709	0.98

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	31.30 acres
Watershed Length =	1,470 ft
Watershed Length to Centroid =	530 ft
Watershed Slope =	0.026 ft/ft
Watershed Imperviousness =	5.70% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.106 acre-feet
Excess Urban Runoff Volume (EURV) =	0.142 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.209 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	0.706 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	1.295 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	2.582 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	3.589 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	4.866 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	8.083 acre-feet
Approximate 2-yr Detention Volume =	0.095 acre-feet
Approximate 5-yr Detention Volume =	0.300 acre-feet
Approximate 10-yr Detention Volume =	0.455 acre-feet
Approximate 25-yr Detention Volume =	0.605 acre-feet
Approximate 50-yr Detention Volume =	0.651 acre-feet
Approximate 100-yr Detention Volume =	1.002 acre-feet

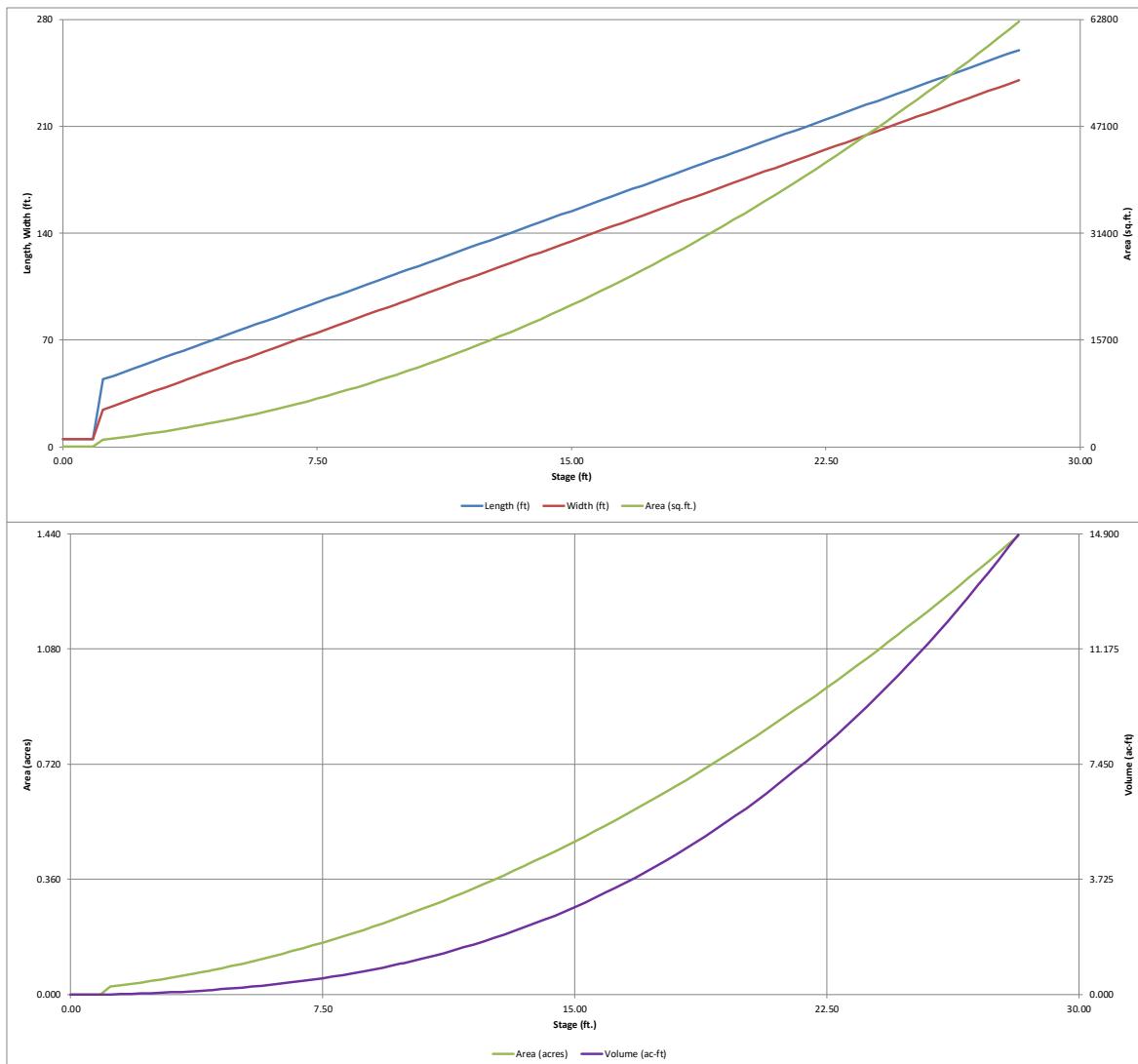
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.106 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.036 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.860 acre-feet
Total Detention Basin Volume =	1.002 acre-feet
Initial Surcharge Volume (ISV) =	14 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	28 ft ²
Surcharge Volume Length (L _{SV}) =	5.3 ft
Surcharge Volume Width (W _{SV}) =	5.3 ft
Depth of Basin Floor (H _{FLOOR}) =	0.19 ft
Length of Basin Floor (L _{FLOOR}) =	44.0 ft
Width of Basin Floor (W _{FLOOR}) =	24.3 ft
Area of Basin Floor (A _{FLOOR}) =	1,069 ft ²
Volume of Basin Floor (V _{FLOOR}) =	80 ft ³
Depth of Main Basin (H _{MAIN}) =	8.71 ft
Length of Main Basin (L _{MAIN}) =	113.7 ft
Width of Main Basin (W _{MAIN}) =	94.0 ft
Area of Main Basin (A _{MAIN}) =	10,683 ft ²
Volume of Main Basin (V _{MAIN}) =	43,930 ft ³
Calculated Total Basin Volume (V _{total}) =	1.011 acre-feet

Depth Increment =	0.30 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		5.3	5.3	28		0.001		
ISV	0.50		5.3	5.3	28		0.001	14	0.000
	0.60		5.3	5.3	28		0.001	17	0.000
	0.90		5.3	5.3	28		0.001	25	0.001
Floor	1.19		44.0	24.3	1,069		0.025	109	0.002
	1.20		44.1	24.4	1,074		0.025	119	0.003
	1.50		46.5	26.8	1,244		0.029	467	0.011
	1.80		48.9	29.2	1,426		0.033	867	0.020
	2.10		51.3	31.6	1,619		0.037	1,323	0.030
	2.40		53.7	34.0	1,824		0.042	1,840	0.042
	2.70		56.1	36.4	2,040		0.047	2,419	0.056
	3.00		58.5	38.8	2,267		0.052	3,065	0.070
	3.30		60.9	41.2	2,507		0.058	3,780	0.087
	3.60		63.3	43.6	2,757		0.063	4,570	0.105
Zone 1 (WQCV)	3.63		63.6	43.8	2,783		0.064	4,653	0.107
	3.90		65.7	46.0	3,020		0.069	5,436	0.125
Zone 2 (EURV)	4.14		67.6	47.9	3,238		0.074	6,187	0.142
	4.20		68.1	48.4	3,293		0.076	6,383	0.147
	4.50		70.5	50.8	3,579		0.082	7,413	0.170
	4.80		72.9	53.2	3,875		0.089	8,531	0.196
	5.10		75.3	55.6	4,184		0.096	9,739	0.224
	5.40		77.7	58.0	4,503		0.103	11,042	0.253
	5.70		80.1	60.4	4,835		0.111	12,443	0.286
	6.00		82.5	62.8	5,178		0.119	13,944	0.320
	6.30		84.9	65.2	5,532		0.127	15,550	0.357
	6.60		87.3	67.6	5,898		0.135	17,265	0.396
	6.90		89.7	70.0	6,275		0.144	19,090	0.438
	7.20		92.1	72.4	6,664		0.153	21,031	0.483
	7.50		94.5	74.8	7,065		0.162	23,090	0.530
	7.80		96.9	77.2	7,477		0.172	25,271	0.580
	8.10		99.3	79.6	7,900		0.181	27,577	0.633
	8.40		101.7	82.0	8,335		0.191	30,013	0.689
	8.70		104.1	84.4	8,782		0.202	32,580	0.748
	9.00		106.5	86.8	9,240		0.212	35,283	0.810
	9.30		108.9	89.2	9,710		0.223	38,125	0.875
	9.60		111.3	91.6	10,191		0.234	41,110	0.944
Zone 3 (100-year)	9.85		113.3	93.6	10,600		0.243	43,708	1.003
	9.90		113.7	94.0	10,683		0.245	44,241	1.016
	10.20		116.1	96.4	11,188		0.257	47,521	1.091
	10.50		118.5	98.8	11,703		0.269	50,954	1.170
	10.80		120.9	102.1	12,230		0.281	54,544	1.252
	11.10		123.3	103.6	12,769		0.293	58,294	1.338
	11.40		125.7	106.0	13,319		0.306	62,207	1.428
	11.70		128.1	108.4	13,881		0.319	66,286	1.522
	12.00		130.5	110.8	14,454		0.332	70,536	1.619
	12.30		132.9	113.2	15,039		0.345	74,960	1.721
	12.60		135.3	115.6	15,635		0.359	79,561	1.826
	12.90		137.7	118.0	16,243		0.373	84,343	1.936
	13.20		140.1	120.4	16,863		0.387	89,308	2.050
	13.50		142.5	122.8	17,493		0.402	94,461	2.169
	13.80		144.9	125.2	18,136		0.416	99,805	2.291
	14.10		147.3	127.6	18,790		0.431	105,344	2.418
	14.40		149.7	130.0	19,455		0.447	111,080	2.550
	14.70		152.1	132.4	20,132		0.462	117,018	2.686
	15.00		154.5	134.8	20,821		0.478	123,161	2.827
	15.30		156.9	137.2	21,521		0.494	129,512	2.973
	15.60		159.3	139.6	22,232		0.510	136,074	3.124
	15.90		161.7	142.0	22,955		0.527	142,852	3.279
	16.20		164.1	144.4	23,690		0.544	149,849	3.440
	16.50		166.5	146.8	24,436		0.561	157,067	3.606
	16.80		168.9	149.2	25,193		0.578	164,511	3.777
	17.10		171.3	151.6	25,962		0.596	172,184	3.953
	17.40		173.7	154.0	26,743		0.614	180,090	4.134
	17.70		176.1	156.4	27,535		0.632	188,231	4.321
	18.00		178.5	158.8	28,339		0.651	196,612	4.514
	18.30		180.9	161.2	29,154		0.669	205,236	4.712
	18.60		183.3	163.6	29,981		0.688	214,106	4.915
	18.90		185.7	166.0	30,819		0.708	223,226	5.125
	19.20		188.1	168.4	31,669		0.727	232,598	5.340
	19.50		190.5	170.8	32,530		0.747	242,074	5.551
	19.80		192.9	173.2	33,403		0.767	252,118	5.758
	20.10		195.3	175.6	34,287		0.787	262,271	6.021
	20.40		197.7	178.0	35,183		0.808	272,691	6.260
	20.70		200.1	180.4	36,098		0.829	283,382	6.506
	21.00		202.5	182.8	37,009		0.850	294,347	6.757
	21.30		204.9	185.2	37,940		0.871	305,589	7.015
	21.60		207.3	187.6	38,882		0.893	317,111	7.280
	21.90		209.7	190.0	39,835		0.914	328,919	7.551
	22.20		212.1	192.4	40,800		0.937	341,014	7.829
	22.50		214.5	194.8	41,776		0.959	353,400	8.113
	22.80		216.9	197.2	42,764		0.982	366,081	8.404
	23.10		219.3	199.6	43,764		1.005	379,060	8.702
	23.40		221.7	202.0	44,775		1.028	392,340	9.007
	23.70		224.1	204.4	45,797		1.051	405,926	9.319
	24.00		226.5	206.8	46,832		1.075	419,820	9.638
	24.30		228.9	209.2	47,877		1.099	434,026	9.964
	24.60		231.3	211.6	48,934		1.123	448,547	10.297
	24.90		233.7	214.0	50,003		1.148	463,388	10.638
	25.20		236.1	216.4	51,083		1.173	478,550	10.986
	25.50		238.5	218.8	52,175		1.198	494,039	11.342
	25.80		240.9	221.2	53,270		1.223	509,656	11.705
	26.10		243.3	223.6	54,373		1.249	526,006	12.075
	26.40		245.7	226.0	55,519		1.275	542,751	12.441

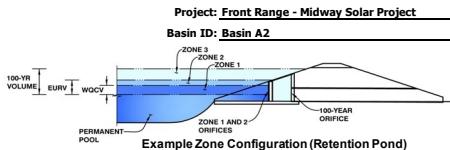
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	72.65 acres
Watershed Length =	1,964 ft
Watershed Length to Centroid =	927 ft
Watershed Slope =	0.011 ft/ft
Watershed Imperviousness =	7.20% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.305 acre-feet
Excess Urban Runoff Volume (EURV) =	0.424 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.556 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	1.732 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	3.114 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	6.107 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	8.456 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	11.469 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	18.917 acre-feet
Approximate 2-yr Detention Volume =	0.286 acre-feet
Approximate 5-yr Detention Volume =	0.805 acre-feet
Approximate 10-yr Detention Volume =	1.174 acre-feet
Approximate 25-yr Detention Volume =	1.574 acre-feet
Approximate 50-yr Detention Volume =	1.711 acre-feet
Approximate 100-yr Detention Volume =	2.578 acre-feet

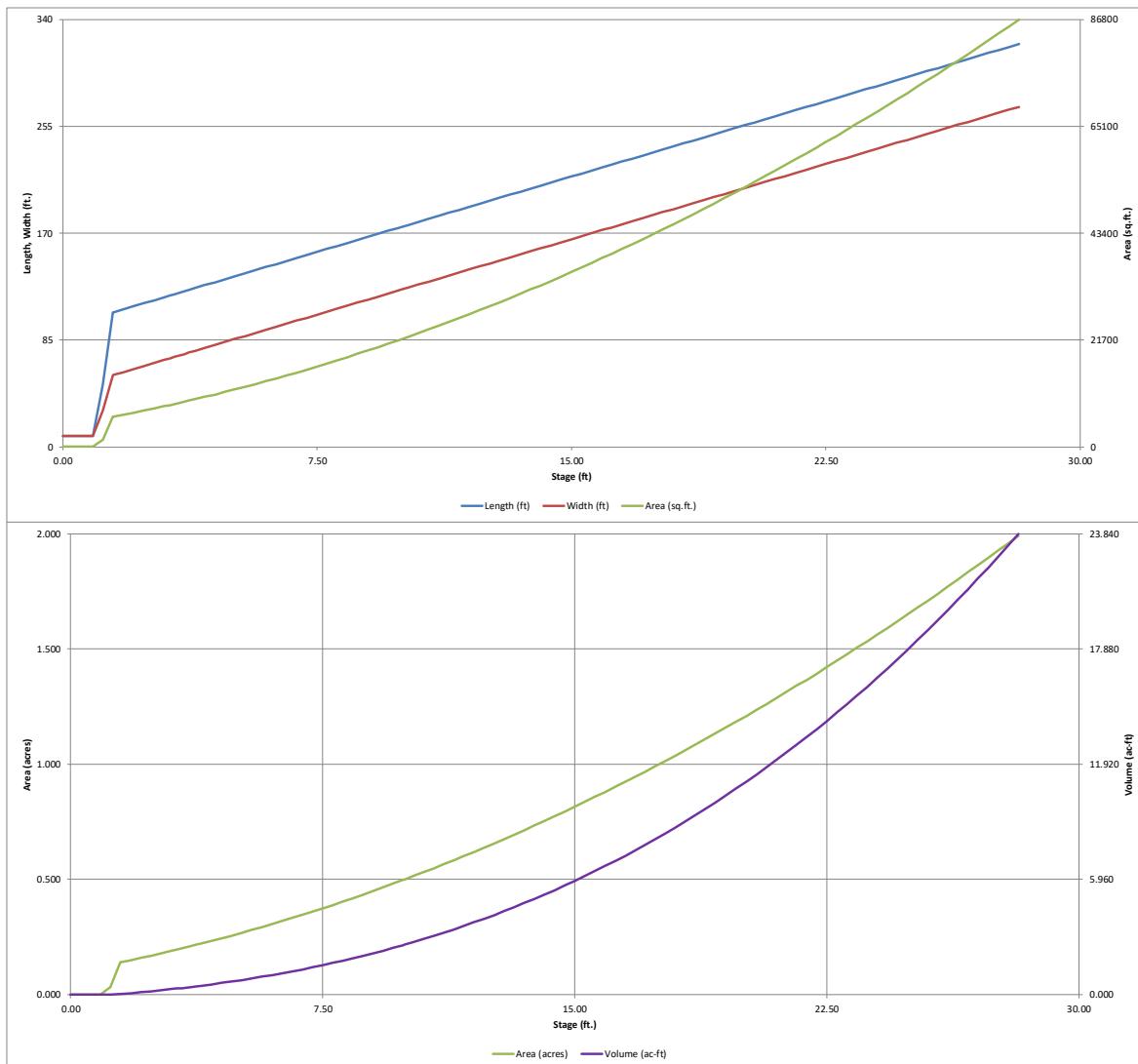
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.305 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.119 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	2.154 acre-feet
Total Detention Basin Volume =	2.578 acre-feet
Initial Surcharge Volume (ISV) =	40 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	80 ft ²
Surcharge Volume Length (L _{SV}) =	8.9 ft
Surcharge Volume Width (W _{SV}) =	8.9 ft
Depth of Basin Floor (H _{FLOOR}) =	0.48 ft
Length of Basin Floor (L _{FLOOR}) =	106.8 ft
Width of Basin Floor (W _{FLOOR}) =	56.9 ft
Area of Basin Floor (A _{FLOOR}) =	6,082 ft ²
Volume of Basin Floor (V _{FLOOR}) =	1,097 ft ³
Depth of Main Basin (H _{MAIN}) =	8.42 ft
Length of Main Basin (L _{MAIN}) =	174.2 ft
Width of Main Basin (W _{MAIN}) =	124.3 ft
Area of Main Basin (A _{MAIN}) =	21,651 ft ²
Volume of Main Basin (V _{MAIN}) =	110,044 ft ³
Calculated Total Basin Volume (V _{total}) =	2,553 acre-feet

Depth Increment =	0.30 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		8.9	8.9	80		0.002		
ISV	0.50		8.9	8.9	80		0.002	40	0.001
	0.60		8.9	8.9	80		0.002	48	0.001
	0.90		8.9	8.9	80		0.002	72	0.002
	1.20		49.7	28.9	1,438		0.033	204	0.005
Floor	1.48	106.8	56.9	6,082		0.140	1,182	0.027	
	1.50	107.0	57.1	6,108		0.140	1,304	0.030	
	1.80	109.4	59.5	6,500		0.149	3,196	0.073	
	2.10	111.8	61.9	6,919		0.159	5,210	0.120	
	2.40	114.2	64.3	7,342		0.169	7,349	0.169	
	2.70	116.6	66.7	7,776		0.179	9,616	0.221	
	3.00	119.0	69.1	8,221		0.189	12,015	0.276	
Zone 1 (WQCV)	3.16	120.3	70.4	8,464		0.194	13,350	0.306	
	3.30	121.4	71.5	8,678		0.199	14,550	0.334	
	3.60	123.8	73.9	9,147		0.210	17,224	0.395	
Zone 2 (EURV)	3.74	124.9	75.0	9,370		0.215	18,520	0.425	
	3.90	126.2	76.3	9,627		0.221	20,040	0.460	
	4.20	128.6	78.7	10,119		0.232	23,001	0.528	
	4.50	131.0	81.1	10,622		0.244	26,112	0.599	
	4.80	133.4	83.5	11,137		0.256	29,376	0.674	
	5.10	135.8	85.9	11,663		0.268	32,796	0.753	
	5.40	138.2	88.3	12,201		0.280	36,375	0.835	
	5.70	140.6	90.7	12,751		0.293	40,117	0.921	
	6.00	143.0	93.1	13,311		0.306	44,026	1.011	
	6.30	145.4	95.5	13,884		0.319	48,105	1.104	
	6.60	147.8	97.9	14,468		0.332	52,358	1.202	
	6.90	150.2	100.3	15,063		0.346	56,787	1.304	
	7.20	152.6	102.7	15,670		0.360	61,397	1.409	
	7.50	155.0	105.1	16,288		0.374	66,190	1.520	
	7.80	157.4	107.5	16,918		0.388	71,171	1.634	
	8.10	159.8	109.9	17,560		0.403	76,343	1.753	
	8.40	162.2	112.3	18,213		0.418	81,708	1.876	
	8.70	164.6	114.7	18,877		0.433	87,272	2.003	
	9.00	167.0	117.1	19,554		0.449	93,036	2.136	
	9.30	169.4	119.5	20,241		0.465	99,005	2.273	
Zone 3 (100-year)	9.94	171.8	121.9	20,940		0.481	105,182	2.415	
	10.20	176.6	126.7	22,373		0.514	118,173	2.713	
	10.50	179.0	129.1	23,107		0.530	124,995	2.869	
	10.80	181.4	131.5	23,852		0.548	132,038	3.031	
	11.10	183.8	133.9	24,608		0.565	139,307	3.198	
	11.40	186.2	136.3	25,377		0.583	146,805	3.370	
	11.70	188.6	138.7	26,156		0.600	154,534	3.548	
	12.00	191.0	141.1	26,948		0.619	162,500	3.730	
	12.30	193.4	143.5	27,750		0.637	170,704	3.919	
	12.60	195.8	145.9	28,565		0.656	179,151	4.113	
	12.90	198.2	148.3	29,391		0.675	187,844	4.312	
	13.20	200.6	150.7	30,228		0.694	196,786	4.518	
	13.50	203.0	153.1	31,077		0.713	205,982	4.729	
	13.80	205.4	155.5	31,937		0.733	215,434	4.946	
	14.10	207.8	157.9	32,809		0.753	225,145	5.169	
	14.40	210.2	160.3	33,692		0.773	235,120	5.398	
	14.70	212.6	162.7	34,587		0.794	245,362	5.633	
	15.00	215.0	165.1	35,494		0.815	255,874	5.874	
	15.30	217.4	167.5	36,412		0.836	266,659	6.122	
	15.60	219.8	169.9	37,341		0.857	277,722	6.376	
	15.90	222.2	172.3	38,282		0.879	289,065	6.636	
	16.20	224.6	174.7	39,235		0.901	300,692	6.903	
	16.50	227.0	177.1	40,199		0.923	312,607	7.176	
	16.80	229.4	179.5	41,174		0.945	324,813	7.457	
	17.10	231.8	181.9	42,161		0.968	337,313	7.744	
	17.40	234.2	184.3	43,160		0.991	350,111	8.037	
	17.70	236.6	186.7	44,170		1.014	363,210	8.338	
	18.00	239.0	189.1	45,192		1.037	376,614	8.646	
	18.30	241.4	191.5	46,225		1.061	390,326	8.961	
	18.60	243.8	193.9	47,270		1.085	404,350	9.283	
	18.90	246.2	196.3	48,326		1.109	418,889	9.612	
	19.20	248.6	198.7	49,394		1.134	433,347	9.948	
	19.50	251.0	201.1	50,462		1.159	448,032	10.282	
	19.80	253.4	203.5	51,564		1.184	463,632	10.614	
	20.10	255.8	205.9	52,666		1.209	479,266	11.002	
	20.40	258.2	208.3	53,780		1.235	495,233	11.369	
	20.70	260.6	210.7	54,905		1.260	511,535	11.743	
	21.00	263.0	213.1	56,042		1.287	528,177	12.125	
	21.30	265.4	215.5	57,190		1.313	545,161	12.515	
	21.60	267.8	217.9	58,350		1.340	562,492	12.913	
	21.90	270.2	220.3	59,522		1.366	580,173	13.319	
	22.20	272.6	222.7	60,705		1.394	598,206	13.733	
	22.50	275.0	225.1	61,889		1.421	616,597	14.155	
	22.80	277.4	227.5	63,105		1.449	635,347	14.586	
	23.10	279.8	229.9	64,323		1.477	654,461	15.024	
	23.40	282.2	232.3	65,552		1.505	673,942	15.472	
	23.70	284.6	234.7	66,792		1.533	693,793	15.927	
	24.00	287.0	237.1	68,044		1.562	714,018	16.392	
	24.30	289.4	239.5	69,308		1.591	734,620	16.865	
	24.60	291.8	241.9	70,583		1.620	755,604	17.346	
	24.90	294.2	244.3	71,869		1.650	776,971	17.837	
	25.20	296.6	246.7	73,168		1.680	798,26	18.336	
	25.50	299.0	249.1	74,477		1.710	820,673	18.845	
	25.80	301.4	251.5	75,790		1.740	845,414	19.362	
	26.10	303.8	253.9	77,101		1.770	865,353	19.863	
	26.40	306.2	256.3	78,425		1.803	883,694	20.323	
	26.70	308.6	258.7						

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)

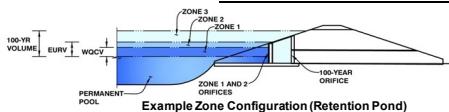


DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)

Project: Front Range - Midway Solar Project

Basin ID: Basin A5B



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB
Watershed Area =	10.74 acres
Watershed Length =	1,208 ft
Watershed Length to Centroid =	514 ft
Watershed Slope =	0.033 ft/ft
Watershed Imperviousness =	10.70% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.064 acre-feet
Excess Urban Runoff Volume (EURV) =	0.096 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.107 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	0.285 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	0.493 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	0.933 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	1.280 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	1.722 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	2.820 acre-feet
Approximate 2-yr Detention Volume =	0.066 acre-feet
Approximate 5-yr Detention Volume =	0.157 acre-feet
Approximate 10-yr Detention Volume =	0.213 acre-feet
Approximate 25-yr Detention Volume =	0.286 acre-feet
Approximate 50-yr Detention Volume =	0.315 acre-feet
Approximate 100-yr Detention Volume =	0.457 acre-feet

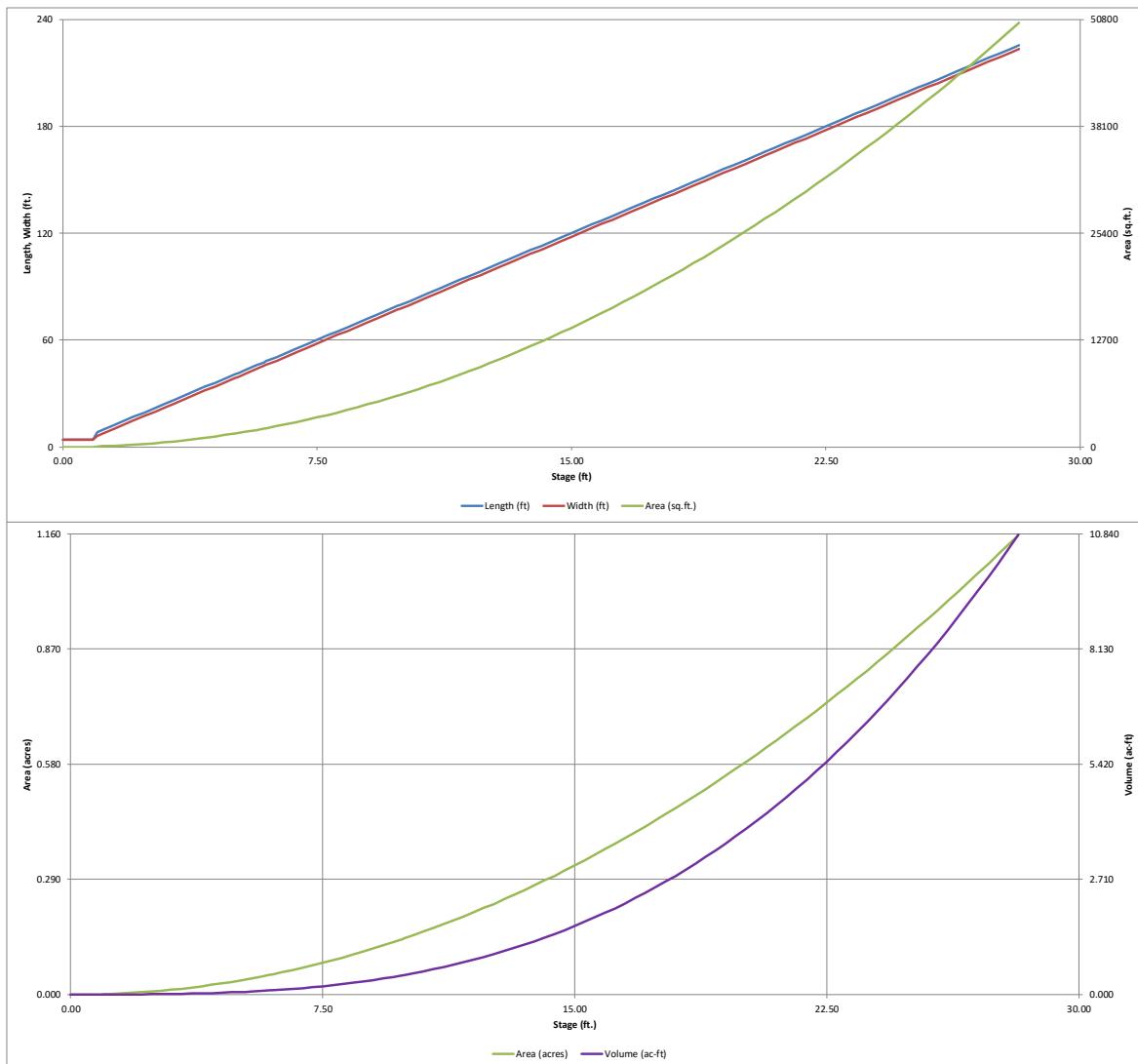
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.064 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.033 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.361 acre-feet
Total Detention Basin Volume =	0.457 acre-feet
Initial Surcharge Volume (ISV) =	8 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	17 ft ²
Surcharge Volume Length (L _{SV}) =	4.1 ft
Surcharge Volume Width (W _{SV}) =	4.1 ft
Depth of Basin Floor (H _{FLOOR}) =	0.02 ft
Length of Basin Floor (L _{FLOOR}) =	8.2 ft
Width of Basin Floor (W _{FLOOR}) =	6.1 ft
Area of Basin Floor (A _{FLOOR}) =	50 ft ²
Volume of Basin Floor (V _{FLOOR}) =	1 ft ³
Depth of Main Basin (H _{MAIN}) =	8.88 ft
Length of Main Basin (L _{MAIN}) =	79.2 ft
Width of Main Basin (W _{MAIN}) =	77.1 ft
Area of Main Basin (A _{MAIN}) =	6,107 ft ²
Volume of Main Basin (V _{MAIN}) =	19,851 ft ³
Calculated Total Basin Volume (V _{total}) =	0.456 acre-feet

Depth Increment =	0.30 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		4.1	4.1	17		0.000		
ISV	0.50		4.1	4.1	17		0.000	8	0.000
	0.60		4.1	4.1	17		0.000	10	0.000
	0.90		4.1	4.1	17		0.000	15	0.000
Floor	1.02		8.2	6.1	50		0.001	17	0.000
	1.20		9.6	7.5	72		0.002	28	0.001
	1.50		12.0	9.9	119		0.003	56	0.001
	1.80		14.4	12.3	177		0.004	101	0.002
	2.10		16.8	14.7	247		0.006	164	0.004
	2.40		19.2	17.1	328		0.008	250	0.006
	2.70		21.6	19.5	421		0.010	362	0.008
	3.00		24.0	21.9	526		0.012	504	0.012
	3.30		26.4	24.3	642		0.015	679	0.016
	3.60		28.8	26.7	769		0.018	890	0.020
	3.90		31.2	29.1	908		0.021	1,142	0.026
	4.20		33.6	31.5	1,059		0.024	1,436	0.033
	4.50		36.0	33.9	1,221		0.028	1,778	0.041
	4.80		38.4	36.3	1,394		0.032	2,170	0.050
	5.10		40.8	38.7	1,579		0.036	2,616	0.060
Zone 1 (WQCV)	5.20		41.6	39.5	1,644		0.038	2,777	0.064
	5.40		43.2	41.1	1,776		0.041	3,119	0.072
	5.70		45.6	43.5	1,984		0.046	3,682	0.085
Zone 2 (EURV)	5.95		47.6	45.5	2,166		0.050	4,201	0.096
	6.00		48.0	45.9	2,204		0.051	4,310	0.099
	6.30		50.4	48.3	2,435		0.056	5,006	0.115
	6.60		52.8	50.7	2,677		0.061	5,772	0.133
	6.90		55.2	53.1	2,933		0.067	6,613	0.152
	7.20		57.6	55.5	3,197		0.073	7,532	0.173
	7.50		60.0	57.9	3,474		0.080	8,533	0.196
	7.80		62.4	60.3	3,763		0.086	9,618	0.221
	8.10		64.8	62.7	4,063		0.093	10,792	0.248
	8.40		67.2	65.1	4,375		0.100	12,057	0.277
	8.70		69.6	67.5	4,699		0.108	13,418	0.308
	9.00		72.0	69.9	5,033		0.116	14,878	0.342
	9.30		74.4	72.3	5,380		0.124	16,439	0.377
Zone 3 (100-year)	9.91		79.3	77.2	6,119		0.140	19,944	0.458
	10.20		81.6	79.5	6,488		0.149	21,772	0.500
	10.50		84.0	81.9	6,880		0.158	23,777	0.546
	10.80		86.4	84.3	7,284		0.167	25,901	0.595
	11.10		88.8	86.7	7,700		0.177	28,148	0.646
	11.40		91.2	89.1	8,127		0.187	30,522	0.701
	11.70		93.6	91.5	8,565		0.197	33,026	0.758
	12.00		96.0	93.9	9,015		0.207	35,662	0.819
	12.30		98.4	96.3	9,477		0.218	38,436	0.882
	12.60		100.8	98.7	9,950		0.228	41,249	0.949
	12.90		103.2	101.1	10,434		0.240	44,407	1,019
	13.20		105.6	103.5	10,930		0.251	47,611	1,093
	13.50		108.0	105.9	11,438		0.263	50,966	1,170
	13.80		110.4	108.3	11,957		0.274	54,475	1,251
	14.10		112.8	110.7	12,488		0.287	58,142	1,335
	14.40		115.2	113.1	13,030		0.299	61,969	1,423
	14.70		117.6	115.5	13,594		0.312	65,961	1,514
	15.00		120.0	117.9	14,149		0.325	70,120	1,610
	15.30		122.4	120.3	14,726		0.338	74,451	1,709
	15.60		124.8	122.7	15,314		0.352	78,957	1,813
	15.90		127.2	125.1	15,914		0.365	83,641	1,920
	16.20		129.6	127.5	16,525		0.379	88,506	2,032
	16.50		132.0	129.9	17,148		0.394	93,557	2,148
	16.80		134.4	132.3	17,762		0.408	98,796	2,268
	17.10		136.8	134.7	18,428		0.423	104,228	2,393
	17.40		139.2	137.1	19,085		0.438	109,854	2,522
	17.70		141.6	139.5	19,754		0.453	115,680	2,656
	18.00		144.0	141.9	20,435		0.469	121,708	2,794
	18.30		146.4	144.3	21,127		0.485	127,942	2,937
	18.60		148.8	146.7	21,830		0.501	134,385	3,085
	18.90		151.2	149.1	22,545		0.518	141,041	3,238
	19.20		153.6	151.5	23,272		0.534	147,913	3,396
	19.50		156.0	153.9	24,000		0.551	155,000	3,558
	19.80		158.4	156.3	24,759		0.568	162,520	3,720
	20.10		160.8	158.7	25,520		0.586	169,862	3,889
	20.40		163.2	161.1	26,293		0.604	177,634	4,078
	20.70		165.6	163.5	27,077		0.622	185,639	4,262
	21.00		168.0	165.9	27,873		0.640	193,881	4,451
	21.30		170.4	168.3	28,680		0.658	202,363	4,646
	21.60		172.8	170.7	29,498		0.677	211,090	4,846
	21.90		175.2	173.1	30,328		0.696	220,064	5,052
	22.20		177.6	175.5	31,170		0.716	229,288	5,264
	22.50		180.0	177.9	32,023		0.735	238,767	5,481
	22.80		182.4	180.3	32,886		0.755	248,503	5,705
	23.10		184.8	182.7	33,764		0.775	258,501	5,934
	23.40		187.2	185.1	34,652		0.796	268,763	6,170
	23.70		189.6	187.5	35,551		0.816	279,293	6,412
	24.00		192.0	189.9	36,462		0.837	290,095	6,660
	24.30		194.4	192.3	37,385		0.858	301,172	6,914
	24.60		196.8	194.7	38,319		0.880	312,527	7,175
	24.90		199.2	197.1	39,264		0.901	324,164	7,442
	25.20		201.6	199.5	40,221		0.923	336,087	7,715
	25.50		204.0	201.9	41,189		0.946	348,296	7,996
	25.80		206.4	204.3	42,169		0.968	360,601	8,283
	26.10		208.8	206.7	43,151		0.991	373,600	8,571
	26.40		211.2	209.1	44,144		1.011	386,599	8,857
	26.70		213.6	211.5	45,138		1.032	400,100	9,185
	27.00		216.0	213.9	46,204		1.061	413,807	9,500

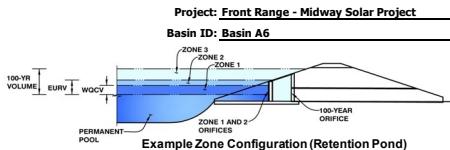
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	34.04 acres
Watershed Length =	1,618 ft
Watershed Length to Centroid =	625 ft
Watershed Slope =	0.018 ft/ft
Watershed Imperviousness =	4.80% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.099 acre-feet
Excess Urban Runoff Volume (EURV) =	0.128 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.208 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	0.743 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	1.381 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	2.781 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	3.874 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	5.286 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	8.761 acre-feet
Approximate 2-yr Detention Volume =	0.085 acre-feet
Approximate 5-yr Detention Volume =	0.295 acre-feet
Approximate 10-yr Detention Volume =	0.461 acre-feet
Approximate 25-yr Detention Volume =	0.607 acre-feet
Approximate 50-yr Detention Volume =	0.648 acre-feet
Approximate 100-yr Detention Volume =	1.012 acre-feet

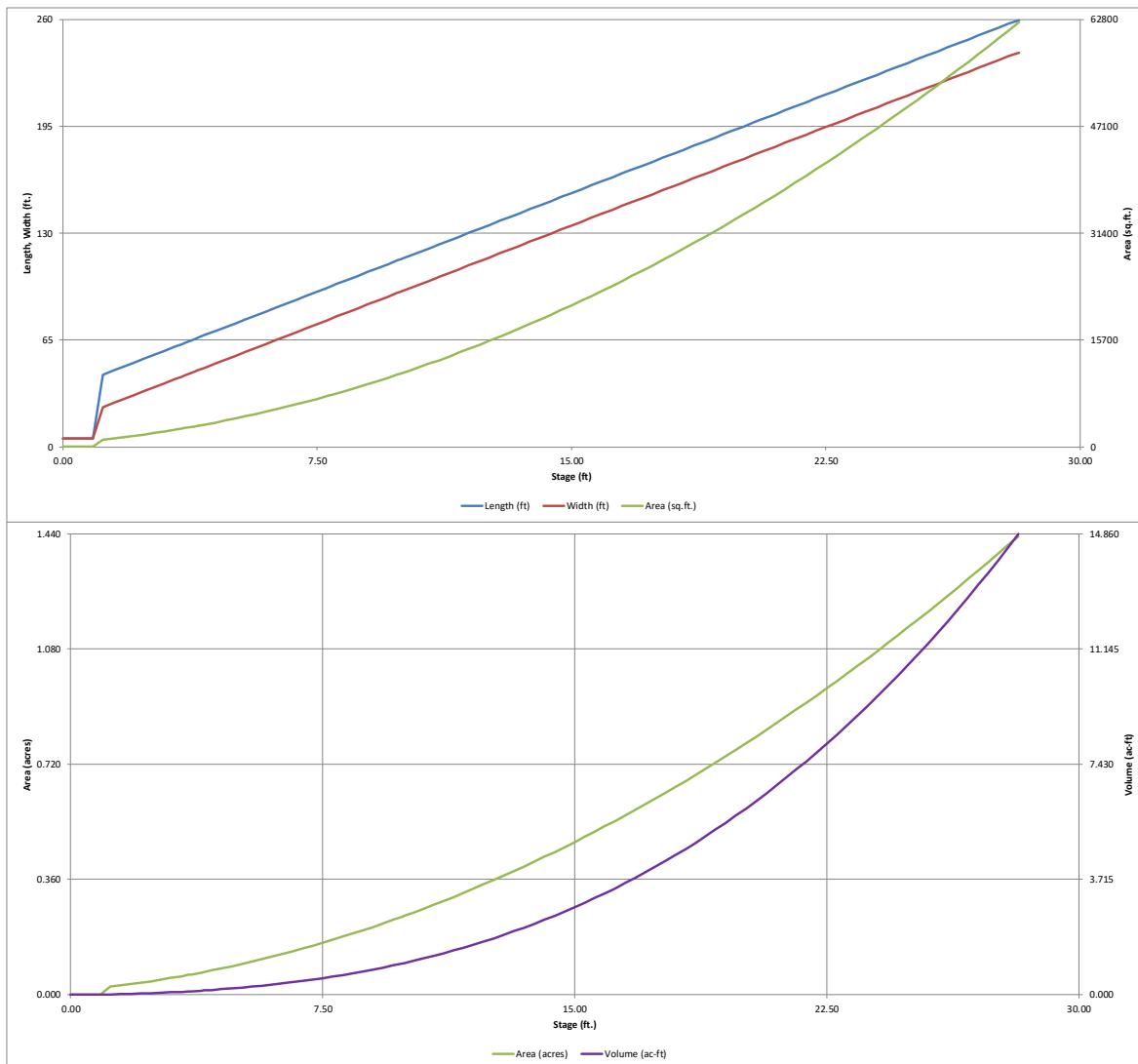
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.099 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.029 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.864 acre-feet
Total Detention Basin Volume =	1.012 acre-feet
Initial Surcharge Volume (ISV) =	13 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	26 ft ²
Surcharge Volume Length (L _{SV}) =	5.1 ft
Surcharge Volume Width (W _{SV}) =	5.1 ft
Depth of Basin Floor (H _{FLOOR}) =	0.19 ft
Length of Basin Floor (L _{FLOOR}) =	43.8 ft
Width of Basin Floor (W _{FLOOR}) =	24.1 ft
Area of Basin Floor (A _{FLOOR}) =	1,056 ft ²
Volume of Basin Floor (V _{FLOOR}) =	79 ft ³
Depth of Main Basin (H _{MAIN}) =	8.71 ft
Length of Main Basin (L _{MAIN}) =	113.5 ft
Width of Main Basin (W _{MAIN}) =	93.8 ft
Area of Main Basin (A _{MAIN}) =	10,643 ft ²
Volume of Main Basin (V _{MAIN}) =	43,698 ft ³
Calculated Total Basin Volume (V _{total}) =	1.006 acre-feet

Depth Increment =	0.30 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		5.1	5.1	26		0.001		
ISV	0.50		5.1	5.1	26		0.001	13	0.000
	0.60		5.1	5.1	26		0.001	15	0.000
	0.90		5.1	5.1	26		0.001	23	0.001
Floor	1.19		43.8	24.1	1,056		0.024	105	0.002
	1.20		43.9	24.2	1,061		0.024	116	0.003
	1.50		46.3	26.6	1,230		0.028	459	0.011
	1.80		48.7	29.0	1,411		0.032	855	0.020
	2.10		51.1	31.4	1,603		0.037	1,307	0.030
	2.40		53.5	33.8	1,807		0.041	1,818	0.042
	2.70		55.9	36.2	2,022		0.046	2,392	0.055
	3.00		58.3	38.6	2,249		0.052	3,032	0.070
	3.30		60.7	41.0	2,487		0.057	3,743	0.086
Zone 1 (WQCV)	3.52		62.5	42.7	2,669		0.061	4,310	0.099
	3.60		63.1	43.4	2,737		0.063	4,526	0.104
	3.90		65.5	45.8	2,998		0.069	5,386	0.124
Zone 2 (EURV)	3.97		66.1	46.3	3,061		0.070	5,598	0.129
	4.20		67.9	48.2	3,271		0.075	6,326	0.145
	4.50		70.3	50.6	3,555		0.082	7,349	0.169
	4.80		72.7	53.0	3,851		0.088	8,460	0.194
	5.10		75.1	55.4	4,159		0.095	9,661	0.222
	5.40		77.5	57.8	4,477		0.103	10,956	0.252
	5.70		79.9	60.2	4,800		0.110	12,349	0.283
	6.00		82.3	62.6	5,150		0.118	13,842	0.318
	6.30		84.7	65.0	5,503		0.126	15,440	0.354
	6.60		87.1	67.4	5,868		0.135	17,145	0.394
	6.90		89.5	69.8	6,245		0.143	18,962	0.435
	7.20		91.9	72.2	6,633		0.152	20,893	0.480
	7.50		94.3	74.6	7,032		0.161	22,943	0.527
	7.80		96.7	77.0	7,443		0.171	25,114	0.577
	8.10		99.1	79.4	7,866		0.181	27,410	0.629
	8.40		101.5	81.8	8,300		0.191	29,835	0.685
	8.70		103.9	84.2	8,746		0.201	32,391	0.744
	9.00		106.3	86.6	9,203		0.211	35,083	0.805
	9.30		108.7	89.0	9,672		0.222	37,914	0.870
Zone 3 (100-year)	9.91		111.1	91.4	10,152		0.233	40,888	0.939
	10.20		113.6	93.8	10,660		0.245	44,113	1.013
	10.50		115.9	96.2	11,147		0.256	47,275	1.085
	10.80		118.3	98.6	11,661		0.268	50,696	1.164
	11.10		120.7	101.0	12,188		0.280	54,273	1.246
	11.40		123.1	103.4	12,726		0.292	58,010	1.332
	11.70		125.5	105.8	13,275		0.305	61,909	1.421
	12.00		127.9	108.2	13,836		0.318	65,976	1.515
	12.30		130.3	110.6	14,408		0.331	70,212	1.612
	12.60		132.7	113.0	14,992		0.344	74,622	1.713
	12.90		135.1	115.4	15,587		0.358	79,208	1.818
	13.20		137.5	117.8	16,194		0.372	83,975	1.928
	13.50		139.9	120.2	16,813		0.386	88,926	2.041
	13.80		142.3	122.6	17,443		0.400	94,064	2.159
	14.10		144.7	125.0	18,084		0.415	99,393	2.282
	14.40		149.5	129.8	19,402		0.445	110,636	2.540
	14.70		151.9	132.2	20,078		0.461	116,557	2.676
	15.00		154.3	134.6	20,765		0.477	122,684	2.816
	15.30		156.7	137.0	21,464		0.493	129,018	2.962
	15.60		159.1	139.4	22,175		0.509	135,563	3.112
	15.90		161.5	141.8	22,897		0.526	142,324	3.267
	16.20		163.9	144.2	23,631		0.542	149,303	3.428
	16.50		166.3	146.6	24,376		0.560	156,503	3.593
	16.80		168.7	149.0	25,132		0.577	163,929	3.763
	17.10		171.1	151.4	25,901		0.595	171,584	3.939
	17.40		173.5	153.8	26,680		0.612	179,471	4.120
	17.70		175.9	156.2	27,471		0.631	187,593	4.307
	18.00		178.3	158.6	28,274		0.649	195,955	4.498
	18.30		180.7	161.0	29,088		0.668	204,559	4.696
	18.60		183.1	163.4	29,914		0.687	213,409	4.899
	18.90		185.5	165.8	30,752		0.706	222,508	5.108
	19.20		187.9	168.2	31,600		0.725	231,861	5.322
	19.50		190.3	170.6	32,463		0.743	241,270	5.543
	19.80		192.7	173.0	33,333		0.763	251,338	5.770
	20.10		195.1	175.4	34,216		0.785	261,470	6.003
	20.40		197.5	177.8	35,111		0.806	271,869	6.241
	20.70		199.9	180.2	36,017		0.827	282,538	6.486
	21.00		202.3	182.6	36,935		0.848	293,481	6.737
	21.30		204.7	184.0	37,866		0.869	304,200	6.995
	21.60		207.1	187.4	38,806		0.891	316,201	7.259
	21.90		209.5	189.8	39,758		0.913	327,985	7.530
	22.20		211.9	192.2	40,722		0.935	340,057	7.807
	22.50		214.3	194.6	41,699		0.957	352,420	8.090
	22.80		216.7	197.0	42,685		0.980	365,077	8.381
	23.10		219.1	199.4	43,683		1.003	378,032	8.678
	23.40		221.5	201.8	44,694		1.026	391,288	8.983
	23.70		223.9	204.2	45,715		1.049	404,849	9.294
	24.00		226.3	206.6	46,748		1.073	418,718	9.612
	24.30		228.7	209.0	47,793		1.097	432,899	9.938
	24.60		231.1	211.4	48,849		1.121	447,395	10.271
	24.90		233.5	213.8	49,917		1.146	462,210	10.611
	25.20		235.9	216.2	50,996		1.171	477,346	10.958
	25.50		238.3	218.6	52,087		1.196	492,809	11.313
	25.80		240.7	221.0	53,180		1.221	508,600	11.676
	26.10		243.1	223.4	54,283		1.247	524,723	12.045
	26.40		245.5	225.8	55,393		1.272	541,083	12.431
	26.70		247.9	228.2	56,565		1.299	557,981	12.809
	27.00		250.3	230.6	57,713				

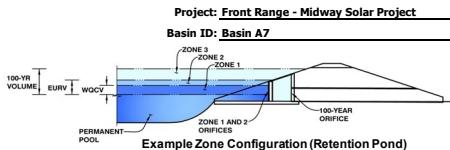
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	55.40 acres
Watershed Length =	2,469 ft
Watershed Length to Centroid =	96 ft
Watershed Slope =	0.024 ft/ft
Watershed Imperviousness =	4.60% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.154 acre-feet
Excess Urban Runoff Volume (EURV) =	0.199 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.332 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	1.203 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	2.241 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	4.525 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	6.307 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	8.610 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	14.276 acre-feet
Approximate 2-yr Detention Volume =	0.131 acre-feet
Approximate 5-yr Detention Volume =	0.470 acre-feet
Approximate 10-yr Detention Volume =	0.737 acre-feet
Approximate 25-yr Detention Volume =	0.969 acre-feet
Approximate 50-yr Detention Volume =	1.032 acre-feet
Approximate 100-yr Detention Volume =	1.617 acre-feet

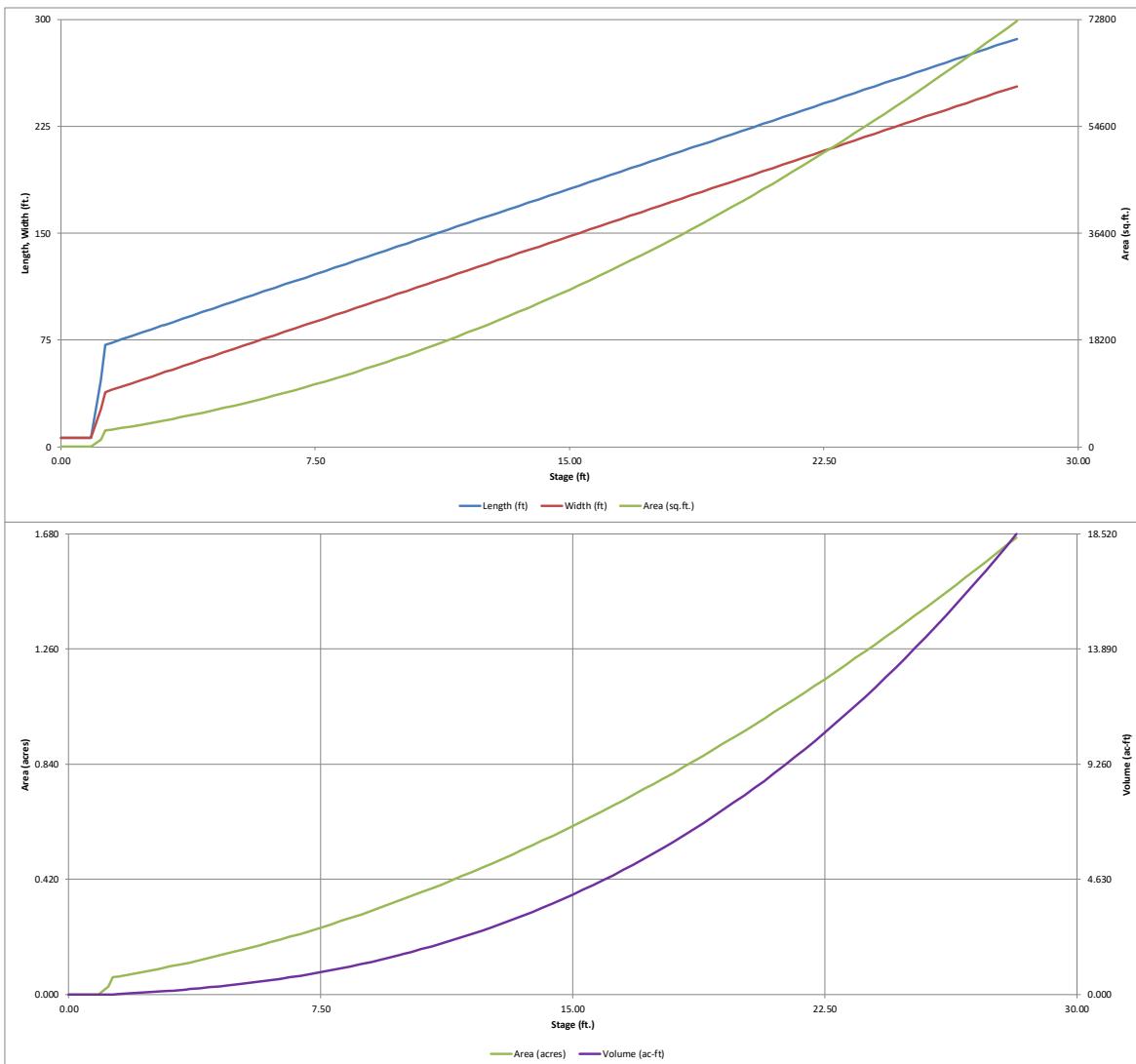
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.154 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.045 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.418 acre-feet
Total Detention Basin Volume =	1.617 acre-feet
Initial Surcharge Volume (ISV) =	20 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{TC}) =	0.50 ft
Slope of Trickle Channel (S _{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	40 ft ²
Surcharge Volume Length (L _{SV}) =	6.4 ft
Surcharge Volume Width (W _{SV}) =	6.4 ft
Depth of Basin Floor (H _{FLOOR}) =	0.32 ft
Length of Basin Floor (L _{FLOOR}) =	71.6 ft
Width of Basin Floor (W _{FLOOR}) =	38.4 ft
Area of Basin Floor (A _{FLOOR}) =	2,747 ft ²
Volume of Basin Floor (V _{FLOOR}) =	333 ft ³
Depth of Main Basin (H _{MAIN}) =	8.58 ft
Length of Main Basin (L _{MAIN}) =	140.3 ft
Width of Main Basin (W _{MAIN}) =	107.0 ft
Area of Main Basin (A _{MAIN}) =	15,008 ft ²
Volume of Main Basin (V _{MAIN}) =	69,146 ft ³
Calculated Total Basin Volume (V _{total}) =	1.596 acre-feet

Depth Increment =	0.30 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		6.4	6.4	40		0.001		
ISV	0.50		6.4	6.4	40		0.001	20	0.000
	0.60		6.4	6.4	40		0.001	24	0.001
	0.90		6.4	6.4	40		0.001	36	0.001
	1.20		47.2	26.4	1,243		0.029	141	0.003
Floor	1.32	71.6	38.4	2,747		0.063	375	0.009	
	1.50	73.1	39.8	2,908		0.067	684	0.020	
	1.80	75.5	42.2	3,184		0.073	1,797	0.041	
	2.10	77.9	44.6	3,473		0.080	2,796	0.064	
	2.40	80.3	47.0	3,772		0.087	3,882	0.089	
	2.70	82.7	49.4	4,083		0.094	5,060	0.116	
	3.00	85.1	51.8	4,406		0.101	6,333	0.145	
Zone 1 (WQCV)	3.09	85.8	52.5	4,505		0.103	6,734	0.155	
	3.30	87.5	54.2	4,740		0.109	7,705	0.177	
Zone 2 (EURV)	3.51	89.2	55.9	4,981		0.114	8,726	0.200	
	3.60	89.9	56.6	5,086		0.117	9,179	0.211	
	3.90	92.3	59.0	5,443		0.125	10,758	0.247	
	4.20	94.7	61.4	5,812		0.133	12,446	0.286	
	4.50	97.1	63.8	6,193		0.142	14,246	0.327	
	4.80	99.5	66.2	6,584		0.151	16,163	0.371	
	5.10	101.9	68.6	6,988		0.160	18,198	0.418	
	5.40	104.3	71.0	7,403		0.170	20,357	0.467	
	5.70	106.7	73.4	7,829		0.180	22,641	0.520	
	6.00	109.1	75.8	8,267		0.190	25,055	0.575	
	6.30	111.5	78.2	8,716		0.200	27,602	0.634	
	6.60	113.9	80.6	9,177		0.211	30,286	0.695	
	6.90	116.3	83.0	9,650		0.222	33,110	0.760	
	7.20	118.7	85.4	10,134		0.233	36,077	0.828	
	7.50	121.1	87.8	10,629		0.244	39,191	0.900	
	7.80	123.5	90.2	11,136		0.256	42,456	0.975	
	8.10	125.9	92.6	11,655		0.268	45,874	1.053	
	8.40	128.3	95.0	12,185		0.280	49,450	1.135	
	8.70	130.7	97.4	12,727		0.292	53,187	1.221	
	9.00	133.1	99.8	13,280		0.305	57,087	1.311	
	9.30	135.5	102.2	13,844		0.318	61,155	1.404	
Zone 3 (100-year)	9.95	140.7	107.4	15,107		0.347	70,562	1.620	
	10.20	142.7	109.4	15,607		0.358	74,401	1.708	
	10.50	145.1	111.8	16,218		0.372	79,175	1.818	
	10.80	147.5	114.2	16,840		0.387	84,133	1.931	
	11.10	149.9	116.6	17,474		0.401	89,280	2.050	
	11.40	152.3	119.0	18,119		0.416	94,619	2.172	
	11.70	154.7	121.4	18,776		0.431	100,153	2.299	
	12.00	157.1	123.8	19,445		0.446	105,886	2.431	
	12.30	159.5	126.2	20,124		0.462	111,821	2.567	
	12.60	161.9	128.6	20,816		0.478	117,962	2.708	
	12.90	164.3	131.0	21,519		0.494	124,311	2.854	
	13.20	166.7	133.4	22,233		0.510	130,874	3.004	
	13.50	169.1	135.8	22,959		0.527	137,652	3.160	
	13.80	171.5	138.2	23,696		0.544	144,650	3.321	
	14.10	173.9	140.6	24,445		0.561	151,871	3.486	
	14.40	176.3	143.0	25,206		0.579	159,319	3.657	
	14.70	178.7	145.4	25,978		0.596	166,996	3.834	
	15.00	181.1	147.8	26,761		0.614	174,907	4.015	
	15.30	183.5	150.2	27,556		0.633	183,054	4.202	
	15.60	185.9	152.6	28,363		0.651	191,442	4.395	
	15.90	188.3	155.0	29,181		0.670	200,073	4.593	
	16.20	190.7	157.4	30,011		0.689	208,951	4.797	
	16.50	193.1	159.8	30,852		0.708	218,081	5.006	
	16.80	195.5	162.2	31,704		0.728	227,464	5.222	
	17.10	197.9	164.6	32,569		0.748	237,104	5.443	
	17.40	200.3	167.0	33,444		0.768	247,006	5.670	
	17.70	202.7	169.4	34,331		0.788	257,172	5.904	
	18.00	205.1	171.8	35,230		0.809	267,606	6.143	
	18.30	207.5	174.2	36,140		0.830	278,311	6.389	
	18.60	209.9	176.6	37,062		0.851	289,291	6.641	
	18.90	212.3	179.0	37,995		0.872	300,550	6.900	
	19.20	214.7	181.4	38,940		0.891	312,090	7.165	
	19.50	217.1	183.8	39,897		0.910	323,630	7.430	
	19.80	219.5	186.2	40,864		0.928	336,020	7.714	
	20.10	221.9	188.6	41,844		0.961	348,435	7,999	
	20.40	224.3	191.0	42,835		0.983	361,136	8,291	
	20.70	226.7	193.4	43,837		1.006	374,137	8,589	
	21.00	229.1	195.8	44,851		1.030	387,440	8,894	
	21.30	231.5	198.2	45,876		1.053	401,048	9,207	
	21.60	233.9	200.6	46,913		1.077	414,567	9,526	
	21.90	236.3	203.0	47,962		1.101	429,198	9,853	
	22.20	238.7	205.4	49,022		1.125	443,745	10,187	
	22.50	241.1	207.8	50,093		1.150	458,612	10,528	
	22.80	243.5	210.2	51,176		1.175	473,802	10,877	
	23.10	245.9	212.6	52,271		1.200	489,319	11,233	
	23.40	248.3	215.0	53,377		1.225	505,166	11,597	
	23.70	250.7	217.4	54,495		1.251	521,346	11,968	
	24.00	253.1	219.8	55,624		1.277	537,864	12,348	
	24.30	255.5	222.2	56,764		1.303	554,721	12,735	
	24.60	257.9	224.6	57,917		1.330	571,923	13,130	
	24.90	260.3	227.0	59,086		1.356	589,473	13,532	
	25.20	262.7	229.4	60,255		1.383	607,373	13,943	
	25.50	265.1	231.8	61,422		1.411	625,627	14,362	
	25.80	267.5	234.2	62,600		1.438	644,239	14,790	
	26.10	269.9	236.6	63,780		1.466	663,111	15,222	
	26.40	272.3	239.0	65,971		1.494	683,559	15,659	
	26.70	274.7	241.4	66,304		1.522	702,3		

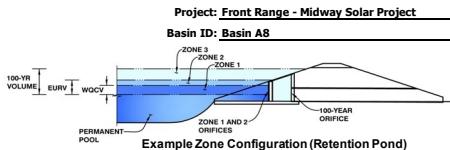
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	89.54 acres
Watershed Length =	3,408 ft
Watershed Length to Centroid =	1,713 ft
Watershed Slope =	0.024 ft/ft
Watershed Imperviousness =	3.80% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.209 acre-feet
Excess Urban Runoff Volume (EURV) =	0.262 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.492 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	1.886 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	3.559 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	7.253 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	10.129 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	13.856 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	23.011 acre-feet
Approximate 2-yr Detention Volume =	0.171 acre-feet
Approximate 5-yr Detention Volume =	0.688 acre-feet
Approximate 10-yr Detention Volume =	1.109 acre-feet
Approximate 25-yr Detention Volume =	1.436 acre-feet
Approximate 50-yr Detention Volume =	1.514 acre-feet
Approximate 100-yr Detention Volume =	2.410 acre-feet

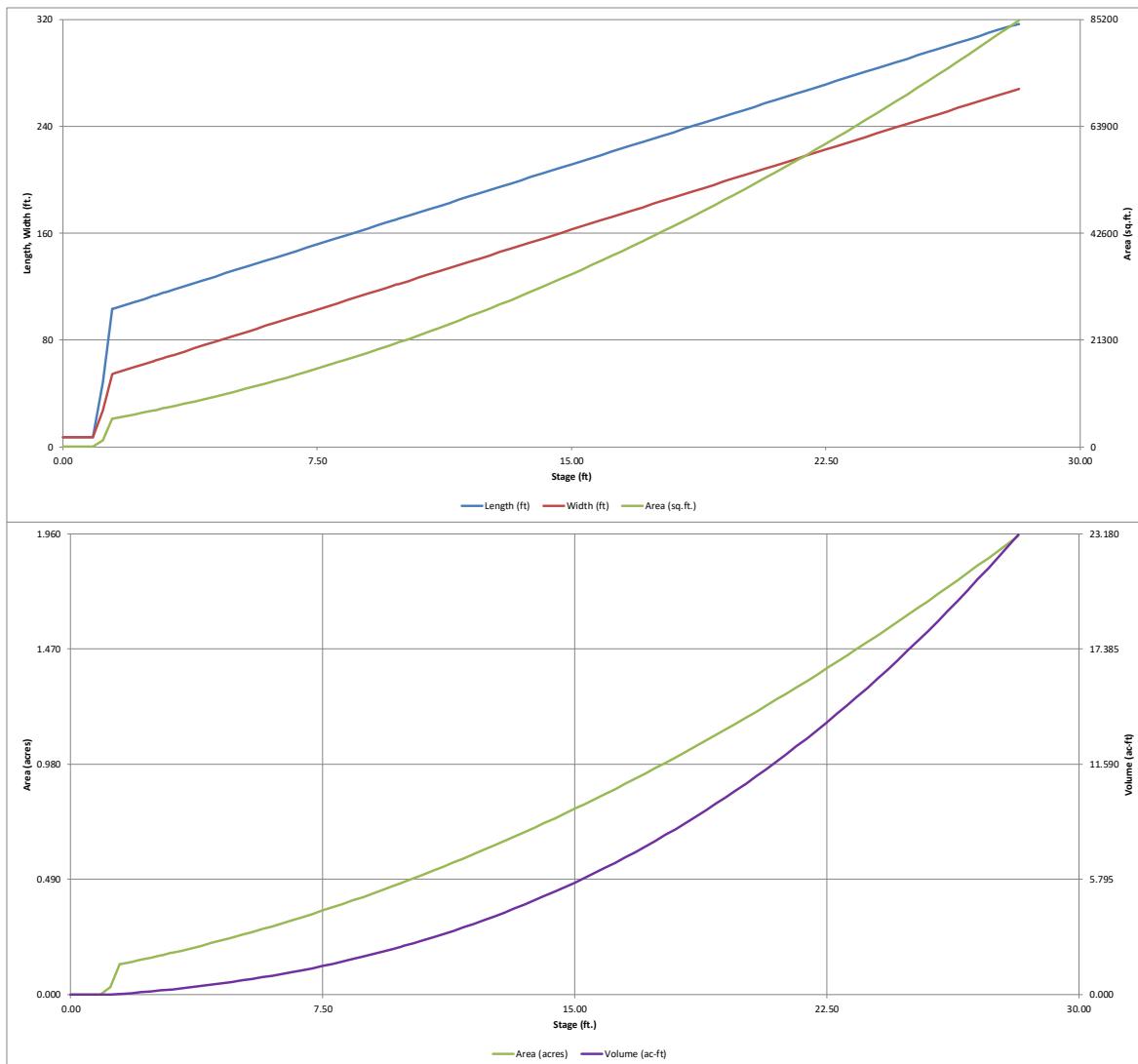
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.209 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.053 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	2.149 acre-feet
Total Detention Basin Volume =	2.410 acre-feet
Initial Surcharge Volume (ISV) =	27 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{ISV}) =	55 ft ²
Surcharge Volume Length (L _{ISV}) =	7.4 ft
Surcharge Volume Width (W _{ISV}) =	7.4 ft
Depth of Basin Floor (H _{FLOOR}) =	0.47 ft
Length of Basin Floor (L _{FLOOR}) =	103.3 ft
Width of Basin Floor (W _{FLOOR}) =	54.4 ft
Area of Basin Floor (A _{FLOOR}) =	5,616 ft ²
Volume of Basin Floor (V _{FLOOR}) =	975 ft ³
Depth of Main Basin (H _{MAIN}) =	8.43 ft
Length of Main Basin (L _{MAIN}) =	170.7 ft
Width of Main Basin (W _{MAIN}) =	121.8 ft
Area of Main Basin (A _{MAIN}) =	20,796 ft ²
Volume of Main Basin (V _{MAIN}) =	104,588 ft ³
Calculated Total Basin Volume (V _{total}) =	2.425 acre-feet

Depth Increment =	0.30 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		7.4	7.4	55		0.001		
ISV	0.50		7.4	7.4	55		0.001	27	0.001
	0.60		7.4	7.4	55		0.001	33	0.001
	0.90		7.4	7.4	55		0.001	49	0.001
	1.20		48.2	27.4	1,320		0.030	165	0.004
Floor	1.47	103.3	54.4	5,616		0.129	1,034	0.024	
	1.50	103.5	54.6	5,654		0.130	1,203	0.028	
	1.80	105.9	57.0	6,039		0.139	2,957	0.068	
	2.10	108.3	59.4	6,436		0.148	4,828	0.111	
	2.40	110.7	61.8	6,844		0.157	6,820	0.157	
	2.70	113.1	64.2	7,264		0.167	8,936	0.205	
Zone 1 (WQCV)	2.73	113.3	64.5	7,307		0.168	9,154	0.210	
	3.00	115.5	66.6	7,696		0.177	11,180	0.257	
Zone 2 (EURV)	3.03	115.7	66.9	7,739		0.178	11,411	0.262	
	3.30	117.9	69.0	8,139		0.187	13,554	0.311	
	3.60	120.3	71.4	8,593		0.197	16,064	0.369	
	3.90	122.7	73.8	9,059		0.208	18,711	0.430	
	4.20	125.1	76.2	9,536		0.219	21,500	0.494	
	4.50	127.5	78.6	10,025		0.230	24,434	0.561	
	4.80	129.9	81.0	10,526		0.242	27,517	0.632	
	5.10	132.3	83.4	11,038		0.253	30,751	0.706	
	5.40	134.7	85.8	11,561		0.265	34,140	0.784	
	5.70	137.1	88.2	12,096		0.278	37,689	0.865	
	6.00	139.5	90.6	12,643		0.290	41,399	0.950	
	6.30	141.9	93.0	13,201		0.303	45,276	1.039	
	6.60	144.3	95.4	13,770		0.316	49,321	1.132	
	6.90	146.7	97.8	14,352		0.329	53,539	1.229	
	7.20	149.1	100.2	14,944		0.343	57,933	1.330	
	7.50	151.5	102.6	15,548		0.357	62,507	1.435	
	7.80	153.9	105.0	16,164		0.371	67,263	1.544	
	8.10	156.3	107.4	16,791		0.385	72,206	1.658	
	8.40	158.7	109.8	17,430		0.400	77,339	1.775	
	8.70	161.1	112.2	18,088		0.415	82,665	1.898	
	9.00	163.5	114.6	18,742		0.430	88,188	2.025	
	9.30	165.9	117.0	19,415		0.446	93,912	2.156	
	9.60	168.3	119.4	20,100		0.461	99,839	2.292	
Zone 3 (100-year)	9.86	170.4	121.5	20,703		0.475	105,143	2.414	
	9.90	170.7	121.8	20,796		0.477	105,973	2.433	
	10.20	173.1	124.2	21,504		0.494	112,318	2.578	
	10.50	175.5	126.6	22,224		0.510	118,877	2.729	
	10.80	177.9	129.0	22,954		0.527	125,653	2.885	
	11.10	180.3	131.4	23,697		0.544	132,650	3.045	
	11.40	182.7	133.8	24,451		0.561	139,872	3.211	
	11.70	185.1	136.2	25,216		0.579	147,322	3.382	
	12.00	187.5	138.6	25,993		0.597	155,003	3.558	
	12.30	189.9	141.0	26,782		0.615	162,919	3.740	
	12.60	192.3	143.4	27,582		0.633	171,073	3.927	
	12.90	194.7	145.8	28,393		0.652	179,469	4.120	
	13.20	197.1	148.2	29,216		0.671	188,110	4.318	
	13.50	199.5	150.6	30,051		0.690	197,000	4.522	
	13.80	201.9	153.0	30,897		0.709	206,142	4.732	
	14.10	204.3	155.4	31,754		0.729	215,539	4.948	
	14.40	206.7	157.8	32,623		0.749	225,196	5.170	
	14.70	209.1	160.2	33,504		0.769	235,114	5.397	
	15.00	211.5	162.6	34,396		0.790	245,299	5.631	
	15.30	213.9	165.0	35,300		0.810	255,753	5.871	
	15.60	216.3	167.4	36,215		0.831	266,480	6.118	
	15.90	218.7	169.8	37,142		0.853	277,484	6.370	
	16.20	221.1	172.2	38,080		0.874	288,767	6.629	
	16.50	223.5	174.6	39,030		0.896	300,333	6.895	
	16.80	225.9	177.0	39,991		0.918	312,186	7.167	
	17.10	228.3	179.4	40,964		0.940	324,329	7.446	
	17.40	230.7	181.8	41,948		0.963	336,765	7.731	
	17.70	233.1	184.2	42,944		0.986	349,499	8.023	
	18.00	235.5	186.6	43,951		1.009	362,533	8.323	
	18.30	237.9	189.0	44,970		1.032	375,871	8.629	
	18.60	240.3	191.4	46,001		1.056	389,516	8.942	
	18.90	242.7	193.8	47,043		1.080	403,472	9.262	
	19.20	245.1	196.2	48,096		1.104	417,743	9.590	
	19.50	247.5	198.6	49,150		1.129	433,023	9.925	
	19.80	250.0	201.0	50,228		1.153	447,341	10.257	
	20.10	252.4	203.4	51,325		1.178	462,475	10.617	
	20.40	254.7	205.8	52,425		1.204	478,037	10.974	
	20.70	257.1	208.2	53,536		1.229	493,931	11.339	
	21.00	259.5	210.6	54,659		1.255	510,160	11.712	
	21.30	261.9	213.0	55,793		1.281	526,727	12.092	
	21.60	264.3	215.4	56,938		1.307	543,637	12.480	
	21.90	266.7	217.8	58,095		1.334	560,891	12.876	
	22.20	269.1	220.2	59,264		1.361	578,495	13.280	
	22.50	271.5	222.6	60,444		1.388	596,451	13.693	
	22.80	273.9	225.0	61,630		1.415	614,763	14.113	
	23.10	276.3	227.4	62,839		1.443	633,434	14.542	
	23.40	278.7	229.8	64,054		1.470	652,467	14.979	
	23.70	281.1	232.2	65,280		1.499	671,867	15.424	
	24.00	283.5	234.6	66,518		1.527	691,636	15.878	
	24.30	285.9	237.0	67,767		1.556	711,779	16.340	
	24.60	288.3	239.4	69,028		1.585	732,298	16.811	
	24.90	290.7	241.8	70,300		1.614	753,197	17.291	
	25.20	293.1	244.2	71,594		1.643	774,479	17.780	
	25.50	295.5	246.6	72,879		1.673	796,148	18.277	
	25.80	297.9	249.0	74,166		1.703	818,208	18.783	
	26.10	300.3	251.4	75,455	</td				

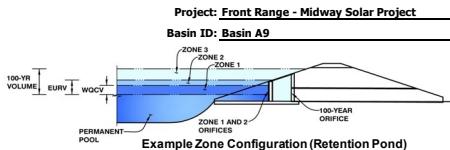
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	48.32 acres
Watershed Length =	2,463 ft
Watershed Length to Centroid =	1,017 ft
Watershed Slope =	0.032 ft/ft
Watershed Imperviousness =	4.50% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.132 acre-feet
Excess Urban Runoff Volume (EURV) =	0.170 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	0.286 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	1.045 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	1.950 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	3.941 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	5.494 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	7.503 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	12.442 acre-feet
Approximate 2-yr Detention Volume =	0.112 acre-feet
Approximate 5-yr Detention Volume =	0.405 acre-feet
Approximate 10-yr Detention Volume =	0.638 acre-feet
Approximate 25-yr Detention Volume =	0.837 acre-feet
Approximate 50-yr Detention Volume =	0.890 acre-feet
Approximate 100-yr Detention Volume =	1.397 acre-feet

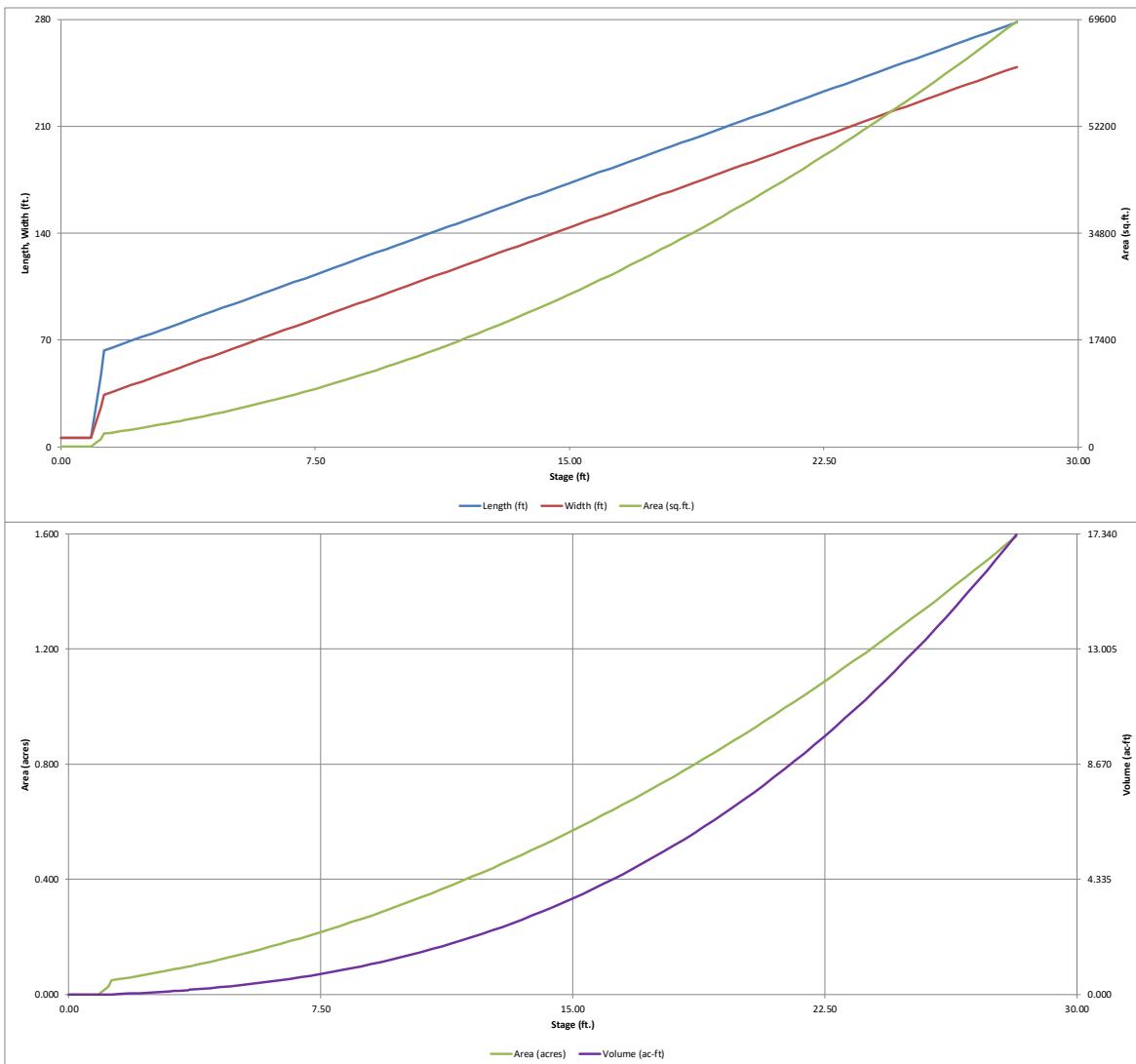
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.132 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.038 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.228 acre-feet
Total Detention Basin Volume =	1.397 acre-feet
Initial Surcharge Volume (ISV) =	17 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	34 ft ²
Surcharge Volume Length (L _{SV}) =	5.9 ft
Surcharge Volume Width (W _{SV}) =	5.9 ft
Depth of Basin Floor (H _{FLOOR}) =	0.28 ft
Length of Basin Floor (L _{FLOOR}) =	63.0 ft
Width of Basin Floor (W _{FLOOR}) =	33.9 ft
Area of Basin Floor (A _{FLOOR}) =	2,134 ft ²
Volume of Basin Floor (V _{FLOOR}) =	226 ft ³
Depth of Main Basin (H _{MAIN}) =	8.62 ft
Length of Main Basin (L _{MAIN}) =	132.0 ft
Width of Main Basin (W _{MAIN}) =	102.8 ft
Area of Main Basin (A _{MAIN}) =	13,569 ft ²
Volume of Main Basin (V _{MAIN}) =	60,580 ft ³
Calculated Total Basin Volume (V _{total}) =	1.397 acre-feet

Depth Increment =	0.30 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		5.9	5.9	34		0.001		
ISV	0.50		5.9	5.9	34		0.001	17	0.000
	0.60		5.9	5.9	34		0.001	21	0.000
	0.90		5.9	5.9	34		0.001	31	0.001
	1.20		46.7	25.9	1,209		0.028	131	0.003
Floor	1.28	63.0	33.9	2,134		0.049	263	0.006	
	1.50	64.8	35.6	2,307		0.053	752	0.017	
	1.80	67.2	38.0	2,554		0.059	1,481	0.034	
	2.10	69.6	40.4	2,812		0.065	2,285	0.052	
	2.40	72.0	42.8	3,082		0.071	3,169	0.073	
	2.70	74.4	45.2	3,363		0.077	4,136	0.095	
	3.00	76.8	47.6	3,656		0.084	5,188	0.119	
Zone 1 (WQCV)	3.16	78.0	48.9	3,817		0.088	5,786	0.133	
	3.30	79.2	50.0	3,960		0.091	6,330	0.145	
Zone 2 (EURV)	3.56	81.2	52.1	4,233		0.097	7,395	0.170	
	3.60	81.6	52.4	4,276		0.098	7,566	0.174	
	3.90	84.0	54.8	4,603		0.106	8,897	0.204	
	4.20	86.4	57.2	4,942		0.113	10,329	0.237	
	4.50	88.8	59.6	5,293		0.122	11,864	0.272	
	4.80	91.2	62.0	5,654		0.130	13,505	0.310	
	5.10	93.6	64.4	6,028		0.138	15,258	0.350	
	5.40	96.0	66.8	6,413		0.147	17,123	0.393	
	5.70	98.4	69.2	6,800		0.156	19,106	0.439	
	6.00	100.8	71.6	7,217		0.166	21,210	0.487	
	6.30	103.2	74.0	7,637		0.175	23,438	0.538	
	6.60	105.6	76.4	8,068		0.185	25,793	0.592	
	6.90	108.0	78.8	8,510		0.195	28,280	0.649	
	7.20	110.4	81.2	8,964		0.206	30,901	0.709	
	7.50	112.8	83.6	9,430		0.216	33,659	0.773	
	7.80	115.2	86.0	9,907		0.227	36,560	0.839	
	8.10	117.6	88.4	10,396		0.239	39,605	0.909	
	8.40	120.0	90.8	10,896		0.250	42,798	0.983	
	8.70	122.4	93.2	11,407		0.262	46,143	1.059	
	9.00	124.8	95.6	11,930		0.274	49,644	1.140	
	9.30	127.2	98.0	12,465		0.286	53,303	1.224	
Zone 3 (100-year)	9.89	131.9	102.8	13,550		0.311	60,975	1.400	
	9.90	132.0	102.8	13,569		0.312	61,111	1.403	
	10.20	134.4	105.2	14,138		0.325	65,266	1.498	
	10.50	136.8	107.6	14,719		0.338	69,595	1.598	
	10.80	139.2	110.0	15,311		0.352	74,099	1.701	
	11.10	141.6	112.4	15,915		0.365	78,783	1.809	
	11.40	144.0	114.8	16,531		0.379	83,649	1.920	
	11.70	146.4	117.2	17,157		0.394	88,702	2.036	
	12.00	148.8	119.6	17,796		0.409	93,945	2.157	
	12.30	151.2	122.0	18,446		0.423	99,381	2.281	
	12.60	153.6	124.4	19,107		0.439	105,013	2.411	
	12.90	156.0	126.8	19,780		0.454	110,846	2.545	
	13.20	158.4	129.2	20,464		0.470	116,883	2.683	
	13.50	160.8	131.6	21,160		0.486	123,126	2.827	
	13.80	163.2	134.0	21,868		0.502	129,580	2.975	
	14.10	165.6	136.4	22,587		0.519	136,248	3.128	
	14.40	168.0	138.8	23,317		0.535	143,133	3.286	
	14.70	170.4	141.2	24,059		0.552	150,239	3.449	
	15.00	172.8	143.6	24,813		0.570	157,570	3.617	
	15.30	175.2	146.0	25,578		0.587	165,128	3.791	
	15.60	177.6	148.4	26,355		0.605	172,918	3.970	
	15.90	180.0	150.8	27,143		0.623	180,942	4.154	
	16.20	182.4	153.2	27,942		0.641	189,205	4.344	
	16.50	184.8	155.6	28,754		0.660	197,709	4.539	
	16.80	187.2	158.0	29,576		0.679	206,458	4.740	
	17.10	189.6	160.4	30,411		0.698	215,456	4.946	
	17.40	192.0	162.8	31,256		0.718	224,706	5.159	
	17.70	194.4	165.2	32,113		0.737	234,211	5.377	
	18.00	196.8	167.6	32,982		0.757	243,975	5.601	
	18.30	199.2	170.0	33,863		0.777	254,001	5.831	
	18.60	201.6	172.4	34,754		0.796	264,294	6.067	
	18.90	204.0	174.8	35,658		0.815	274,855	6.310	
	20.64	207.4	177.2	36,573		0.840	285,889	6.559	
	20.65	207.5	177.3	37,490		0.841	290,000	6.614	
	21.12	218.0	182.0	39,437		0.882	308,190	7.075	
	20.10	213.6	184.4	39,386		0.904	319,863	7.343	
	20.49	216.0	186.8	40,347		0.926	331,823	7.618	
	20.70	218.4	189.2	41,320		0.949	344,072	7.889	
	21.00	220.8	191.6	42,304		0.971	356,616	8.187	
	21.30	223.2	194.0	43,299		0.994	369,456	8.482	
	21.60	225.6	196.4	44,306		1.017	382,596	8.783	
	21.90	228.0	198.8	45,325		1.041	396,040	9.092	
	22.20	230.4	201.2	46,355		1.064	409,792	9.408	
	22.50	232.8	203.6	47,389		1.088	423,854	9.730	
	22.80	235.2	206.0	48,449		1.112	438,231	10.060	
	23.10	237.6	208.4	49,514		1.137	452,925	10.398	
	23.40	240.0	210.8	50,590		1.161	467,940	10.742	
	23.70	242.4	213.2	51,678		1.186	483,280	11.095	
	24.00	244.8	215.6	52,777		1.212	498,948	11.454	
	24.30	247.2	218.0	53,887		1.237	514,947	11.822	
	24.60	249.6	220.4	55,014		1.263	531,282	12.197	
	24.90	252.0	222.8	56,143		1.289	547,954	12.579	
	25.20	254.4	225.2	57,289		1.315	564,569	12.970	
	25.50	256.8	227.6	58,445		1.342	582,529	13.368	
	25.80	259.2	230.0	59,610		1.369	600,637	13.775	
	26.10	261.6	232.4	60,783		1.385	618,900	14.190	
	26.40	264.0	234.8	61,958		1.423	635,514	14.613	
	26.70	266							

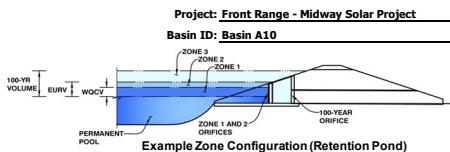
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Project: Front Range - Midway Solar Project

Basin ID: Basin A10

Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB
Watershed Area =	236.63 acres
Watershed Length =	7,526 ft
Watershed Length to Centroid =	4,519 ft
Watershed Slope =	0.019 ft/ft
Watershed Imperviousness =	4.30% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.619 acre-feet
Excess Urban Runoff Volume (EURV) =	0.791 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	1.375 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	5.086 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	9.522 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	19.293 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	26.909 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	36.763 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	60.991 acre-feet
Approximate 2-yr Detention Volume =	0.519 acre-feet
Approximate 5-yr Detention Volume =	1.935 acre-feet
Approximate 10-yr Detention Volume =	3.068 acre-feet
Approximate 25-yr Detention Volume =	4.012 acre-feet
Approximate 50-yr Detention Volume =	4.259 acre-feet
Approximate 100-yr Detention Volume =	6.711 acre-feet

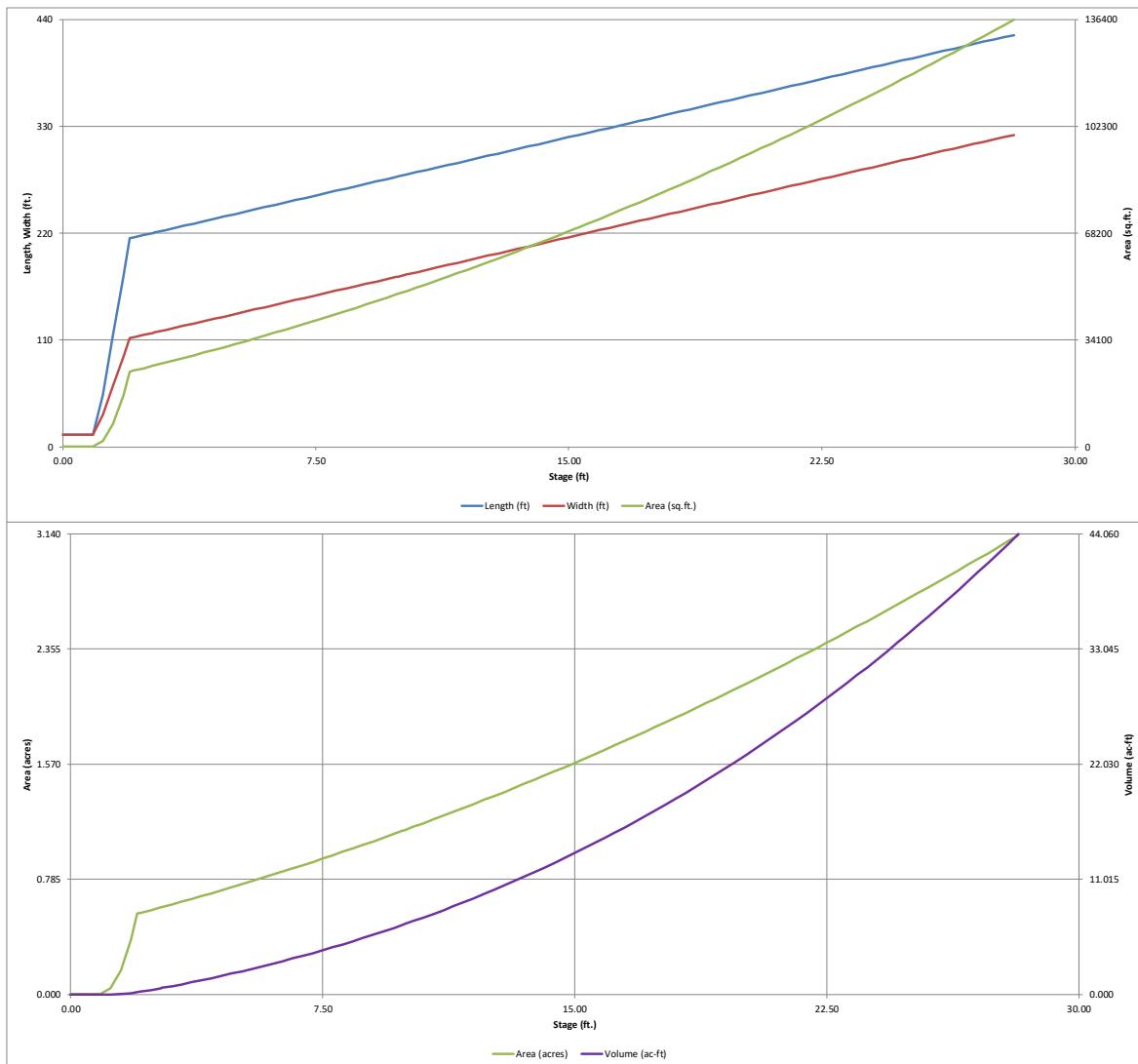
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.619 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.172 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	5.920 acre-feet
Total Detention Basin Volume =	6.711 acre-feet
Initial Surcharge Volume (ISV) =	81 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2
Initial Surcharge Area (A _{SV}) =	162 ft ²
Surcharge Volume Length (L _{SV}) =	12.7 ft
Surcharge Volume Width (W _{SV}) =	12.7 ft
Depth of Basin Floor (H _{FLOOR}) =	0.99 ft
Length of Basin Floor (L _{FLOOR}) =	214.7 ft
Width of Basin Floor (W _{FLOOR}) =	111.7 ft
Area of Basin Floor (A _{FLOOR}) =	23,985 ft ²
Volume of Basin Floor (V _{FLOOR}) =	8,619 ft ³
Depth of Main Basin (H _{MAIN}) =	7.91 ft
Length of Main Basin (L _{MAIN}) =	278.0 ft
Width of Main Basin (W _{MAIN}) =	175.0 ft
Area of Main Basin (A _{MAIN}) =	48,645 ft ²
Volume of Main Basin (V _{MAIN}) =	281,564 ft ³
Calculated Total Basin Volume (V _{total}) =	6.665 acre-feet

Depth Increment =	0.30 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		12.7	12.7	162		0.004		
ISV	0.50		12.7	12.7	162		0.004	81	0.002
	0.60		12.7	12.7	162		0.004	97	0.002
	0.90		12.7	12.7	162		0.004	146	0.003
	1.20		53.5	32.7	1,751		0.040	326	0.007
	1.50		114.7	62.7	7,196		0.165	1,576	0.036
	1.80		175.9	92.7	16,312		0.374	5,011	0.115
Floor	1.99		214.7	111.7	23,985		0.551	8,816	0.202
	2.10		215.6	112.6	24,273		0.557	11,470	0.263
	2.40		218.0	115.0	25,067		0.575	18,871	0.433
	2.70		220.4	117.4	25,871		0.594	26,511	0.609
Zone 1 (WQCV)	2.72		220.5	117.6	25,926		0.595	27,029	0.621
	3.00		222.8	119.8	26,688		0.613	34,395	0.790
Zone 2 (EURV)	3.01		222.8	119.9	26,715		0.613	34,662	0.796
	3.30		225.2	122.2	27,516		0.632	42,525	0.976
	3.60		227.6	124.6	28,355		0.651	50,905	1.169
	3.90		230.0	127.0	29,206		0.670	59,539	1.367
	4.20		232.4	129.4	30,069		0.690	68,430	1.571
	4.50		234.8	131.8	30,943		0.710	77,582	1.781
	4.80		237.2	134.2	31,828		0.731	86,997	1.997
	5.10		239.6	136.6	32,725		0.751	96,680	2.219
	5.40		242.0	139.0	33,634		0.772	106,633	2.448
	5.70		244.4	141.4	34,554		0.792	116,861	2.683
	6.00		246.8	143.8	35,489		0.815	127,367	2.924
	6.30		249.2	146.2	36,429		0.836	138,154	3.172
	6.60		251.6	148.6	37,383		0.858	149,225	3.426
	6.90		254.0	151.0	38,340		0.880	160,585	3.687
	7.20		256.4	153.4	39,327		0.903	172,236	3.954
	7.50		258.8	155.8	40,316		0.926	184,182	4.228
	7.80		261.2	158.2	41,317		0.949	196,427	4.509
	8.10		263.6	160.6	42,329		0.972	208,974	4.797
	8.40		266.0	163.0	43,353		0.995	221,826	5.092
	8.70		268.4	165.4	44,388		1.019	234,987	5.395
	9.00		270.8	167.8	45,435		1.043	248,460	5.704
	9.30		273.2	170.2	46,493		1.067	262,249	6.020
Zone 3 (100-year)	9.94		278.3	175.3	48,790		1.120	292,737	6.720
	10.20		280.4	177.4	49,738		1.142	305,545	7.014
	10.50		282.8	179.8	50,842		1.167	320,632	7.361
	10.80		285.2	182.2	51,958		1.193	336,051	7.715
	11.10		287.6	184.6	53,085		1.219	351,807	8.076
	11.40		290.0	187.0	54,224		1.245	367,904	8.446
	11.70		292.4	189.4	55,375		1.271	384,343	8.823
	12.00		294.8	191.8	56,537		1.298	401,130	9.209
	12.30		297.2	194.2	57,710		1.325	418,266	9.602
	12.60		299.6	196.6	58,895		1.352	435,757	10.004
	12.90		302.0	199.0	60,092		1.380	453,605	10.413
	13.20		304.4	201.4	61,300		1.407	471,813	10.831
	13.50		306.8	203.8	62,520		1.435	490,386	11.258
	13.80		309.2	206.2	63,751		1.464	509,526	11.693
	14.10		311.6	208.6	64,993		1.492	528,637	12.136
	14.40		314.0	211.0	66,247		1.521	548,323	12.588
	14.70		316.4	213.4	67,513		1.550	568,387	13.048
	15.00		318.8	215.8	68,790		1.579	588,832	13.518
	15.30		321.2	218.2	70,079		1.609	609,662	13.996
	15.60		323.6	220.6	71,379		1.639	630,881	14.483
	15.90		326.0	223.0	72,691		1.669	652,491	14.979
	16.20		328.4	225.4	74,014		1.699	674,497	15.484
	16.50		330.8	227.8	75,349		1.730	696,901	15.999
	16.80		333.2	230.2	76,695		1.761	719,707	16.522
	17.10		335.6	232.6	78,053		1.792	742,919	17.055
	17.40		338.0	235.0	79,423		1.823	766,540	17.597
	17.70		340.4	237.4	80,804		1.855	790,574	18.149
	18.00		342.8	239.8	82,196		1.887	815,024	18.710
	18.30		345.2	242.2	83,600		1.919	839,893	19.281
	18.60		347.6	244.6	85,015		1.952	865,185	19.862
	18.90		350.0	247.0	86,442		1.984	890,303	20.452
	19.20		352.4	249.4	87,881		2.012	917,051	21.053
	19.50		354.8	251.8	89,230		2.039	943,333	21.653
	19.80		357.2	254.2	90,792		2.084	970,651	22.283
	20.10		359.6	256.6	92,265		2.118	998,109	22.913
	20.40		362.0	259.0	93,750		2.152	1,026,011	23.554
	20.70		364.4	261.4	95,246		2.187	1,054,360	24.205
	21.00		366.8	263.8	96,754		2.221	1,083,160	24.866
	21.30		369.2	266.2	98,273		2.256	1,112,414	25.538
	21.60		371.6	268.6	99,803		2.291	1,142,125	26.220
	21.90		374.0	271.0	101,346		2.327	1,172,297	26.912
	22.20		376.4	273.4	102,899		2.362	1,202,933	27.616
	22.50		378.8	275.8	104,464		2.398	1,234,038	28.330
	22.80		381.2	278.2	106,041		2.434	1,265,613	29.054
	23.10		383.6	280.6	107,629		2.471	1,297,663	29.790
	23.40		386.0	283.0	109,229		2.508	1,330,192	30.537
	23.70		388.4	285.4	110,840		2.545	1,363,202	31.295
	24.00		390.8	287.8	112,463		2.582	1,396,697	32.064
	24.30		393.2	290.2	114,098		2.619	1,430,681	32.844
	24.60		395.6	292.6	115,743		2.657	1,465,157	33.635
	24.90		398.0	295.0	117,401		2.695	1,500,126	34.438
	25.20		400.4	297.4	119,070		2.733	1,535,599	35.252
	25.50		402.8	299.8	120,749		2.772	1,571,571	36.076
	25.80		405.2	302.2					

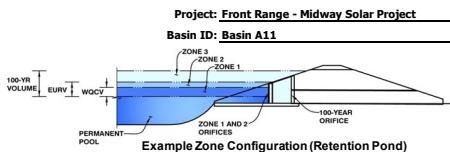
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



Watershed Information

Selected BMP Type =	EDB
Watershed Area =	220.54 acres
Watershed Length =	8,124 ft
Watershed Centroid to =	4,145 ft
Watershed Slope =	0.019 ft/ft
Watershed Imperviousness =	4.30% 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
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 CUPH' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	0.577 acre-feet
Excess Urban Runoff Volume (EURV) =	0.737 acre-feet
2-yr Runoff Volume (P1 = 1.01 in.) =	1.282 acre-feet
5-yr Runoff Volume (P1 = 1.3 in.) =	4.740 acre-feet
10-yr Runoff Volume (P1 = 1.57 in.) =	8.874 acre-feet
25-yr Runoff Volume (P1 = 2.01 in.) =	17.979 acre-feet
50-yr Runoff Volume (P1 = 2.4 in.) =	25.077 acre-feet
100-yr Runoff Volume (P1 = 2.82 in.) =	34.260 acre-feet
500-yr Runoff Volume (P1 = 3.98 in.) =	56.839 acre-feet
Approximate 2-yr Detention Volume =	0.484 acre-feet
Approximate 5-yr Detention Volume =	1.804 acre-feet
Approximate 10-yr Detention Volume =	2.859 acre-feet
Approximate 25-yr Detention Volume =	3.740 acre-feet
Approximate 50-yr Detention Volume =	3.970 acre-feet
Approximate 100-yr Detention Volume =	6.255 acre-feet

Define Zones and Basin Geometry

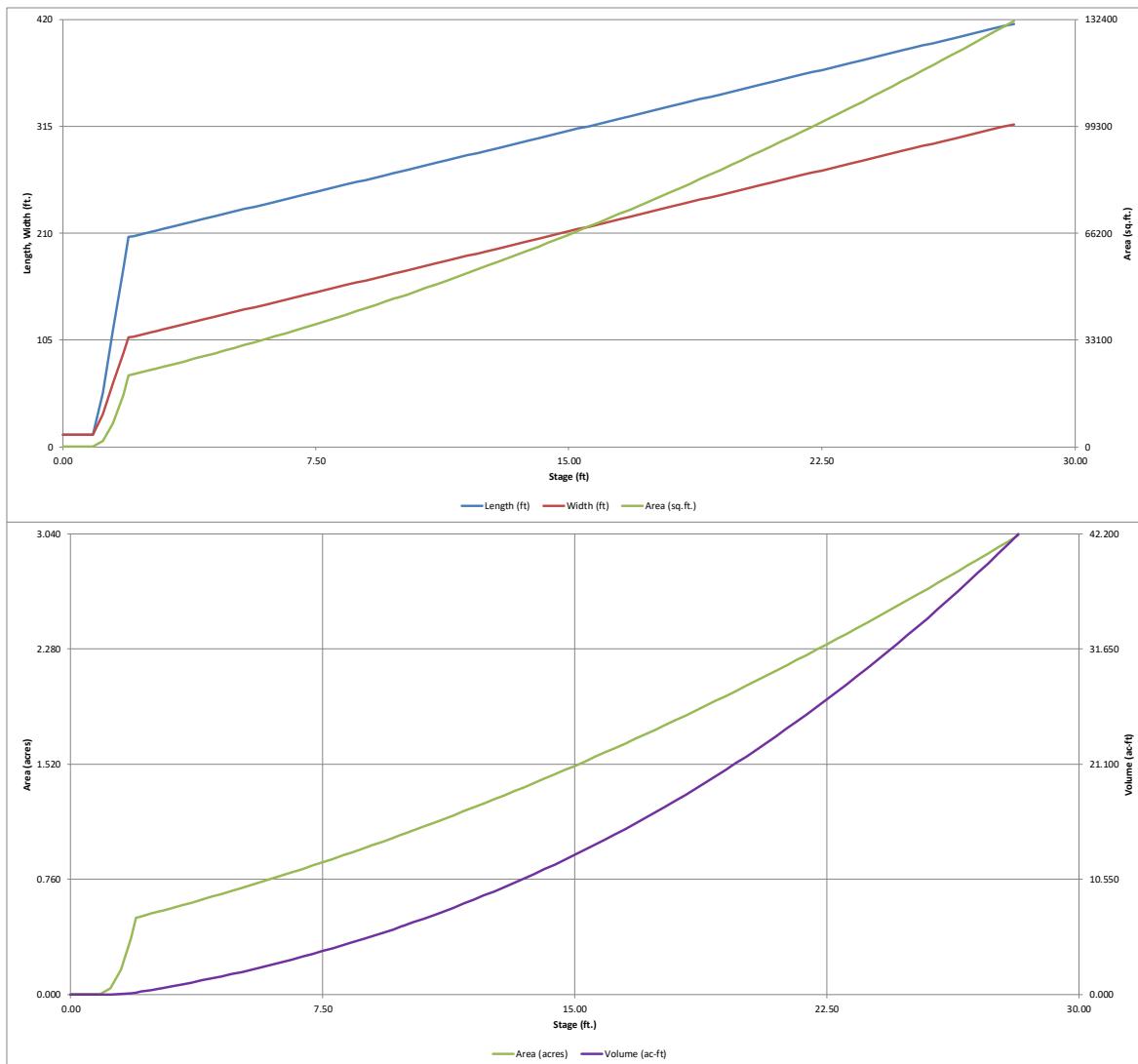
Zone 1 Volume (WQCV) =	0.577 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.160 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	5.518 acre-feet
Total Detention Basin Volume =	6.255 acre-feet
Initial Surcharge Volume (ISV) =	75 ft ³
Initial Surcharge Depth (ISD) =	0.50 ft
Total Available Detention Depth (H _{total}) =	9.90 ft
Depth of Trickle Channel (H _{trickle}) =	0.50 ft
Slope of Trickle Channel (S _{trickle}) =	0.005 ft/ft
Slopes of Main Basin Sides (S _{main}) =	4 H:V
Basin Length-to-Width Ratio (R _{LW}) =	2

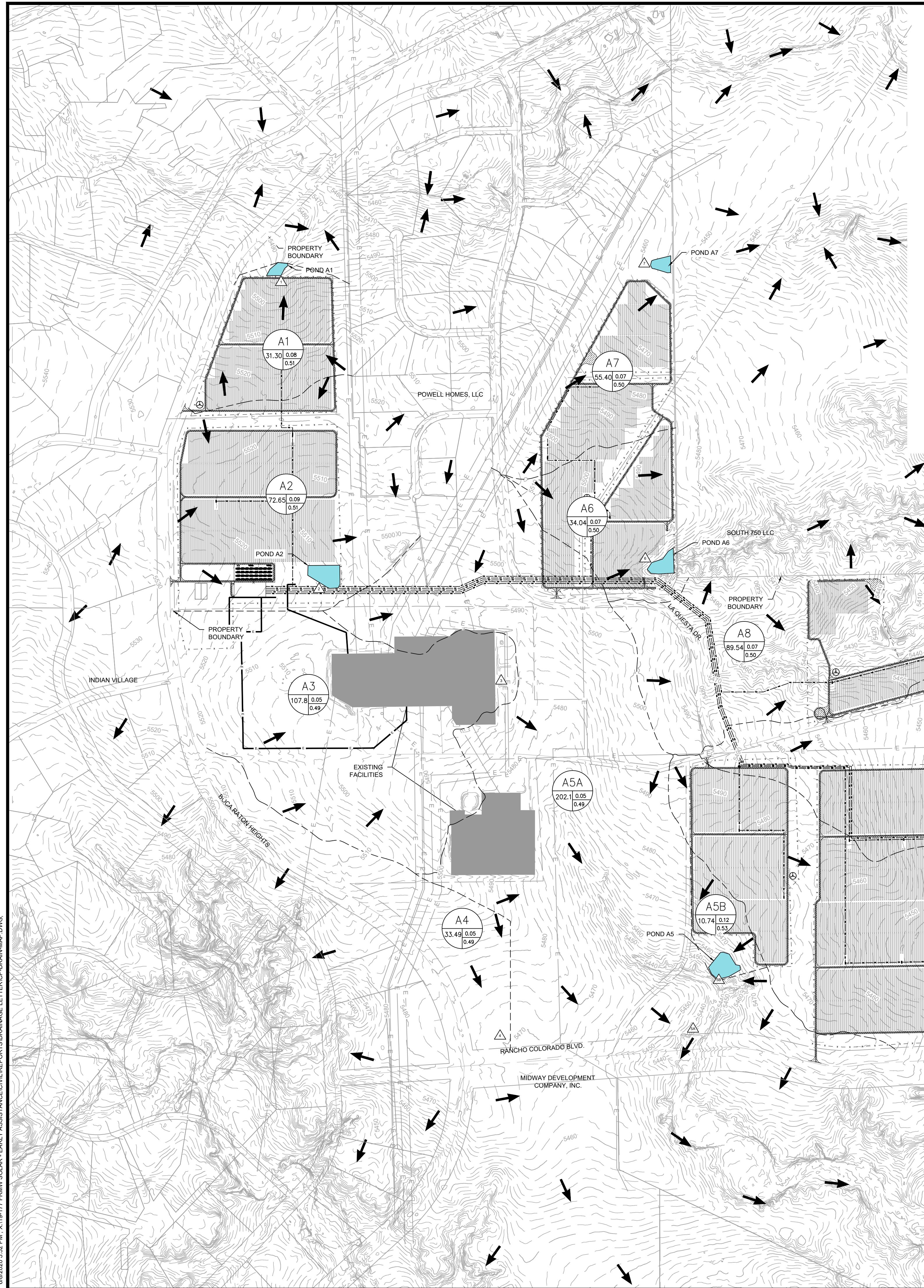
Initial Surcharge Area (A _{SV}) =	151 ft ²
Surcharge Volume Length (L _{SV}) =	12.3 ft
Surcharge Volume Width (W _{SV}) =	12.3 ft
Depth of Basin Floor (H _{FLOOR}) =	0.95 ft
Length of Basin Floor (L _{FLOOR}) =	206.1 ft
Width of Basin Floor (W _{FLOOR}) =	107.3 ft
Area of Basin Floor (A _{FLOOR}) =	22,109 ft ²
Volume of Basin Floor (V _{FLOOR}) =	7,627 ft ³
Depth of Main Basin (H _{MAIN}) =	7.95 ft
Length of Main Basin (L _{MAIN}) =	269.7 ft
Width of Main Basin (W _{MAIN}) =	170.9 ft
Area of Main Basin (A _{MAIN}) =	46,084 ft ²
Volume of Main Basin (V _{MAIN}) =	265,302 ft ³
Calculated Total Basin Volume (V _{total}) =	6.269 acre-feet

Depth Increment =	0.30	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			12.3	12.3	151		0.003		
ISV	0.50		12.3	12.3	151			0.003	75	0.002
	0.60		12.3	12.3	151			0.003	91	0.002
	0.90		12.3	12.3	151			0.003	136	0.003
	1.20		53.1	32.3	1,714			0.039	310	0.007
	1.50		114.3	62.3	7,118			0.163	1,543	0.035
	1.80		175.5	92.3	16,194			0.372	4,948	0.114
Floor	1.95		206.1	107.3	22,109			0.508	7,809	0.179
	2.10		207.3	108.5	22,487			0.516	11,154	0.256
	2.40		209.7	110.9	23,250			0.534	18,014	0.414
	2.70		212.1	113.3	24,026			0.552	25,105	0.576
Zone 1 (WQCV)	2.71		212.2	113.4	24,052			0.552	25,346	0.582
Zone 2 (EURV)	2.99		214.4	115.6	24,786			0.569	32,183	0.739
	3.00		214.5	115.7	24,812			0.570	32,431	0.745
	3.30		216.9	118.1	25,610			0.588	39,994	0.918
	3.60		219.3	120.5	26,420			0.607	47,798	1.097
	3.90		221.7	122.9	27,241			0.625	55,847	1.282
	4.20		224.1	125.3	28,074			0.644	64,144	1.473
	4.50		226.5	127.7	28,918			0.664	72,693	1.669
	4.80		228.9	130.1	29,774			0.684	81,496	1.871
	5.10		231.3	132.5	30,641			0.703	90,558	2.079
	5.40		233.7	134.9	31,520			0.724	99,882	2.293
	5.70		236.1	137.3	32,410			0.744	109,471	2.513
	6.00		238.5	139.7	33,312			0.765	119,329	2.739
	6.30		240.9	142.1	34,226			0.786	129,460	2.972
	6.60		243.3	144.5	35,150			0.807	139,866	3.211
	6.90		245.7	146.9	36,087			0.828	150,551	3.456
	7.20		248.1	149.3	37,035			0.850	161,519	3.708
	7.50		250.5	151.7	37,994			0.872	172,773	3.956
	7.80		252.9	154.1	38,966			0.895	184,317	4.231
	8.10		255.3	156.5	39,948			0.917	196,153	4.503
	8.40		257.7	158.9	40,942			0.940	208,287	4.782
	8.70		260.1	161.3	41,947			0.963	220,720	5.067
	9.00		262.5	163.7	42,964			0.986	233,456	5.359
	9.30		264.9	166.1	43,993			1.010	246,499	5.659
	9.60		267.3	168.5	45,033			1.034	259,853	5.965
Zone 3 (100-year)	9.88		269.5	170.7	46,014			1.056	272,599	6.258
	9.90		269.7	170.9	46,084			1.058	273,520	6.279
	10.20		272.1	173.3	47,148			1.082	287,505	6.600
	10.50		274.5	175.7	48,222			1.107	301,810	6.929
	10.80		276.9	178.1	49,308			1.132	316,439	7.264
	11.10		279.3	180.5	50,400			1.157	331,396	7.608
	11.40		281.7	182.9	51,515			1.183	346,684	7.959
	11.70		284.1	185.3	52,636			1.208	362,306	8.317
	12.00		286.5	187.7	53,768			1.234	378,267	8.684
	12.30		288.9	190.1	54,912			1.261	394,568	9.058
	12.60		291.3	192.5	56,067			1.287	411,215	9.440
	12.90		293.7	194.9	57,234			1.314	428,210	9.830
	13.20		296.1	197.3	58,412			1.341	445,557	10.229
	13.50		298.5	199.7	59,602			1.368	463,258	10.635
	13.80		300.9	202.1	60,804			1.396	481,319	11.050
	14.10		303.3	204.5	62,036			1.424	499,742	11.472
	14.40		305.7	206.9	63,241			1.452	518,530	11.904
	14.70		308.1	209.3	64,477			1.480	537,687	12.344
	15.00		310.5	211.7	65,724			1.509	557,217	12.792
	15.30		312.9	214.1	66,983			1.538	577,123	13.249
	15.60		315.3	216.5	68,254			1.567	597,408	13.715
	15.90		317.7	218.9	69,536			1.596	618,076	14.189
	16.20		320.1	221.3	70,829			1.626	639,131	14.672
	16.50		322.5	223.7	72,134			1.656	660,575	15.165
	16.80		324.9	226.1	73,451			1.686	682,413	15.566
	17.10		327.3	228.5	74,779			1.717	704,647	16.176
	17.40		329.7	230.9	76,118			1.747	727,281	16.596
	17.70		332.1	233.3	77,470			1.778	750,319	17.225
	18.00		334.5	235.7	78,832			1.810	773,764	17.763
	18.30		336.9	238.1	80,206			1.841	797,619	18.311
	18.60		339.3	240.5	81,592			1.873	821,889	18.868
	18.90		341.7	242.9	82,969			1.905	846,576	19.435
	19.20		344.1	245.3	84,388			1.936	871,884	20.011
	19.50		346.5	247.7	85,818			1.967	897,416	20.597
	19.80		348.9	250.1	87,250			2.003	923,176	21.193
	20.10		351.3	252.5	88,693			2.036	949,567	21.799
	20.40		353.7	254.9	90,148			2.070	976,393	22.415
	20.70		356.1	257.3	91,614			2.103	1,003,657	23.041
	21.00		358.5	259.7	93,092			2.137	1,031,363	23.677
	21.30		360.9	262.1	94,582			2.171	1,059,513	24.323
	21.60		363.3	264.5	96,082			2.206	1,088,113	24.980
	21.90		365.7	266.9	97,595			2.240	1,117,164	25.547
	22.20		368.1	269.3	99,119			2.275	1,146,671	26.324
	22.50		370.5	271.7	100,654			2.311	1,176,636	27.012
	22.80		372.9	274.1	102,201			2.346	1,207,064	27.710
	23.10		375.3	2						

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

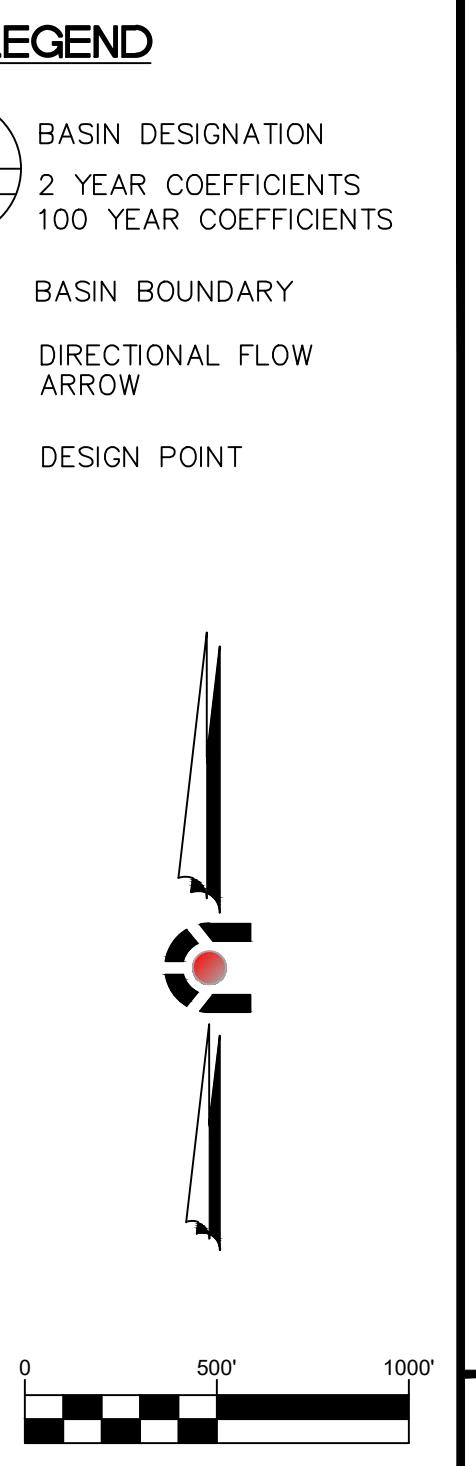
MHFD-Detention, Version 4.03 (May 2020)





RUNOFF SUMMARY TABLE			
DIRECT RUNOFF			
DESIGN POINT	BASIN	AREA (AC)	5-Year RUNOFF (CFS)
1	A-1	31.30	4.63
2	A-2	72.65	10.26
3	A-3	107.81	6.76
4	A-4	33.49	1.79
5B	A-5B	10.74	2.61
6	A-6	34.04	4.23
7	A-7	55.40	6.01
8	A-8	89.54	7.82
9	A-9	48.32	5.44
12	A-12	28.57	2.10
			43.67

Please also include in your table the runoff values of design points 5A, 10, and 11 shown on the drainage plan.



CORE
CONSULTANTS



CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU
DIG. GRID TO CALCULATE THE MARKING OF
UTILITY LOCATIONS. DO NOT MARK THE MARKING OF
UTILITIES SHOWN ON THIS DRAWING. THIS HAS BEEN POSED
FOR THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER,
THE REASONABLE DUTY OF CARE IS NOT TO THE
COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.



FRONT RANGE MIDWAY SOLAR PROJECT
EL PASO COUNTY, FOUNTAIN, CO
EXHIBIT
OVERALL DRAINAGE MAP

DESIGNED BY: DIB
DRAWN BY: DIB
CHECKED BY: DIB

JOB NO.
19-177

SHEET
I OF I

CIVIL ENGINEERING
DEVELOPMENT CONSULTING
NATURAL RESOURCES CONSULTING
LAND SURVEYING
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80220



**PRELIMINARY DRAINAGE REPORT
FOR
FRONT RANGE – MIDWAY SOLAR PROJECT
EL PASO COUNTY, CO
(WSEO 17-001)**

PREPARED FOR:

TRADEWIND ENERGY, INC.
FRONT RANGE – MIDWAY SOLAR
16105 W. 113TH STREET SUITE 105
LENEXA, KS 66219
PHONE: (913) 888-9463
CONTACT: SCOTT ZIEMETZ

PREPARED BY:

CORE CONSULTANTS, INC.
1950 W. LITTLETON BOULEVARD, SUITE 109
LITTLETON, CO 80120
PHONE: 303-703-4444
CONTACT: DAVID BACCI
CORE PROJECT NUMBER: 17-012

FEBRUARY 26, 2018

APPROVAL BLOCKS

I. 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.



David Bacci, P.E. #42104

Date

II. OWNER/DEVELOPER'S STATEMENT:

I, the developer, have read and will comply with all the requirements specified in this Drainage Report and Plan.

Dave Tadarola

Development Manager

III. EL PASO COUNTY STATEMENT:

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.

Jennifer Irvine P.E.,
County Engineer / ECM Administrator

Date

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I. GENERAL LOCATION AND DESCRIPTION

A. SITE LOCATION

This Final Drainage Report provides remediation for changes in the drainage patterns resulting from the development of the proposed Front Range – Midway Solar Project. The Project would consist of a 100 megawatt (MW) distributed generation photovoltaic solar facility that would encompass approximately 1,085 acres in El Paso County (EPC), Colorado. The Project is located west of Interstate-25 (I-25) approximately 20 miles south of downtown Colorado Springs on private and county owned lands. The Project is bound on the west by county lands and by disperse residential development to the northwest and southwest, by rangeland to the north, by a gravel pit to the east, and by the Midway Waste Management Landfill to the south. Other facilities in the near vicinity include the Pikes Peak International Raceway approximately 1.5 miles to the north and the Fort Carson Military Reservation approximately one mile to the west. The Mountain States Telephone compound is also located within the project area. Front Range - Midway Solar Project is located in Section 20, Township 17 South, Range 65 West of the 6th Principal Meridian, El Paso County, Colorado. A vicinity map for the site can be found in Appendix A.

B. DESCRIPTION OF PROPERTY

The project area is flat to gently rolling, at elevations ranging from approximately 5,360 to 5,520 feet. The site has naturally occurring slopes ranging from 2 to 10 percent and is covered with native grass and very few deciduous trees. Surface runoff is to the north, south and east. Runoff from the northern portion of the site flows north into two separate conveyances. After merging into one conveyance, these flows continue east under I25 through a series of bridges and eventually into Fountain Creek. Flows from the southeast portion of the site flow east under I25 through an existing box culvert and continue east into Fountain Creek. Flows from the southwest portion of the site flow south into Sand Creek then under I25 through a series of bridges and continue into Fountain Creek which flows to the south along the east side of I-25 to Pueblo where it joins the Arkansas River. The proposed improvements to the site consists of a 100 megawatt (MW) photovoltaic solar array, distribution poles, a meteorological station, inverters, site access roads, and other necessary ancillary features. The soils vary throughout the site and include mainly Wild Silt Loam, (Hydrologic soil group C), Fort Loam (Hydrologic soil group C), Kim Loam (Hydrologic soil group B) and Schamber Razor (Hydrologic soil group A). A soils map has been provided and can be found in Appendix A.

II. DRAINAGE BASINS AND SUB-BASINS

A. MAJOR DRAINAGE BASINS

The existing drainage patterns for the major basin will follow the historic patterns. Front Range – Midway Solar site will drain east and cross under I25 in 3 locations

eventually outfalling into Fountain Creek. Fountain Creek flows to the south along the east side of I-25 and is part of the Arkansas River basin

The site falls within Zone X, as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels 08041C1155F, 08041C1160F, 08041C1170F, and 08041C1165F. A copy of the FIRM map can be found in Appendix A.

B. MINOR DRAINAGE BASINS

Minor Drainage Basins for Front Range - Midway Solar Project have been delineated per the preliminary layout of the solar arrays. Layout of the arrays and access roads may change during the preliminary development of the site. Overall, the proposed drainage patterns for the sub-basins will follow the historic patterns prior to development. For sub-basins within the site, runoff will drain to the north, south and east.

Basin (A1) will flow north to a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff to the northeast into an east-flowing conveyance and through a series of bridges under I25 to Fountain Creek.

Basin (A2) will flow southeast to a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff overland to the northeast and into an east-flowing conveyance then through a series of bridges under I25 to Fountain Creek.

Basin (A3) will flow to the east and will be collected in an existing Extended Detention Basin. Flowrates or flow patterns within this basin will not be affected by this development.

Basin (A4) will flow to the south and eventually into Sand Creek. Flowrates or flow patterns within this basin will not be affected by this development.

Basin (A5) will flow southeast to a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff overland to the south into Sand Creek. Sand Creek crosses I25 through a series of bridges and flows into Fountain Creek.

Basin (A6) flows east into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff to the east through a series of bridges under I25 to Fountain Creek.

Basin (A7) flows northeast into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff to the east through a series of bridges under I25 to Fountain Creek.

Basin (A8) will flow to the northeast into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff to the east through a series of bridges under I25 to Fountain Creek.

Basin (A9) will flow to the northeast into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff overland to the east through a series of bridges under I25 to Fountain Creek.

Basin (A10) will flow to the east into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic flowrate to the southeast into a conveyance that continues east under I25 through an existing box culvert eventually flowing into Fountain Creek.

Basin (A11) will flow to the east into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic flowrate to the southeast into a conveyance that continues east under I25 through an existing box culvert eventually flowing into Fountain Creek.

Basin (A12) flows east into a proposed Extended Detention Basin. The outlet structure for this extended detention basin will release the historic runoff to the east through a series of bridges under I25 to Fountain Creek

The developed minor basins will include pole mounted solar arrays with native ground beneath and 3" thick gravel access roads constructed of ¾" gravel on top of 12" re-compacted soil. The development will slightly increase the imperviousness of the site due to the addition of gravel roads. Extended Detention Basins have been designed to mitigate the increase in runoff. A total of 9 extended detention basins will be designed during the construction document design phase. The extended detention basins will be privately owned and maintained.

III. DRAINAGE DESIGN CRITERIA

A. REGULATIONS

This Final Drainage Report is in accordance with El Paso County Drainage Criteria Manual and the *Urban Drainage and Flood Control District (UDFCD) Storm Drainage Criteria Manual*. These manuals were used as a basis of design for the site. All applicable tables, figures, and charts from the referenced reports and criteria manuals used in the drainage design of the site can be found in

Appendix B. The report will analyze the minor (5-year) and major (100-year) storm events.

B. DRAINAGE STUDIES, MASTER PLANS, AND SITE CONSTRAINTS

There are no previous drainage studies, master plans or site constraints for this development.

C. HYDROLOGY

A combination of the Rational Method and the Colorado Urban Hydrograph Procedure (CUHP) was used to determine the flow rates for various basins within the site. Basins Larger than 160 acres were evaluated using CUHP. The rational method was used for all other basins. The sub-basins were delineated based on the existing topography for the project. Flow rates for each basin can be found in Appendix A. Stormwater Management Model (SWMM) is typically used in conjunction with CUHP when the routing of extended detention basin s, channels and/or storm networks as necessary. Because this site is located at the top of a basin; each basin flows into its own extended detention basin or separate concentrated point. Because of this, no routing is required and SWMM was not used. The impervious panels are going to be pole mounted with the ground underneath them to remain vegetated. The gravel access roads will be constructed to slow surface flows and promote infiltration back into the ground. As a result, there will be very slight increase in runoff once the development is constructed.

The intensity-frequency curves used in the Rational Method calculations were taken from the El Paso County Drainage Criteria Manual. All drainage facilities were analyzed and designed for both the minor (5-year) and major (100-year) storm events. Time of concentration calculations were used to determine the rainfall intensity. The development of the site will slightly increase the imperviousness of the site; therefore, detention will be required in various locations for the development. These calculations also can be found in Appendix A.

D. HYDRAULICS

Hydraulic calculations for street and inlet capacity will not be necessary for this development.

E. WATER QUALITY ENHANCEMENT

Water quality measures within the extended detention basins will be required and will be designed during the construction design process. The design will employ the Four-Step process for selecting structural BMP's as described in the El Paso Drainage Criteria Manual.

IV. STORMWATER MANAGEMENT FACILITY DESIGN

A. STORMWATER CONVEYANCE FACILITIES

The general concept for the drainage design is to maintain the historic drainage patterns and release rates for the site. By doing this, it reduces the impact to the existing channels and ultimately Fountain Creek and Sand Creek. No public infrastructure is proposed within this site.

B. STORMWATER STORAGE FACILITIES

Extended Detention Basins for the site will be required. Basins A1-A2 and A5-A12 will have Extended Detention Basins within their respective basins. Extended Detention Basins will be designed per the El Paso County Drainage Criteria Manual and the *Urban Drainage and Flood Control District (UDFCD) Storm Drainage Criteria Manual*. Extended Detention Basin calculations can be found in Appendix A.

C. WATER QUALITY ENHANCEMENT BEST MANAGEMENT PRACTICES

Water quality measures within the extended detention basins will be required. Outlet structures, micro pools and essential components of the outlet structures will be designed per the El Paso County Drainage Criteria Manual and the *Urban Drainage and Flood Control District (UDFCD) Storm Drainage Criteria Manual*. Outlet structure calculations can be found in Appendix A.

D. FLOODPLAIN MODIFICATION

There will be no modification to the floodplain.

E. ADDITIONAL PERMITTING REQUIREMENTS

No additional permitting will be required for this site.

F. GENERAL

All applicable tables, figures, and charts from the referenced reports and criteria manuals used in the drainage design of the site can be found in Appendix B. The site is not going to be platted at this time therefore no drainage fees are due.

REFERENCES

- A. El Paso County Drainage Criteria Manual, Volumes 1 and 2.
- B. Drainage Criteria Manual, Volumes 1, 2, & 3, Urban Drainage and Flood Control District, June 2001, Revised June 2004.



FINAL DRAINAGE REPORT FOR
FRONT RANGE - MIDWAY SOLAR PROJECT
EL PASO COUNTY, COLORADO

APPENDIX A

HYDROLOGIC CALCULATIONS

VICINITY MAP

FIRM MAP

SOILS MAP

CIA CALCULATIONS

CUHP CALCULATIONS

EXTENDED DETENTION BASIN CALCULATIONS

DRAINAGE PLAN



PROJECT: FRONT RANGE - MIDWAY SOLAR
VICINITY MAP
DATE: 07/21/2017



CORE
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Littleton, CO 80120

4NF

APPROXIMATE SCALE IN FEET
 1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

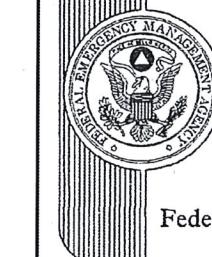
EL PASO COUNTY,
COLORADO AND
INCORPORATED AREAS

PANEL 1170 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS	080059	1170	F

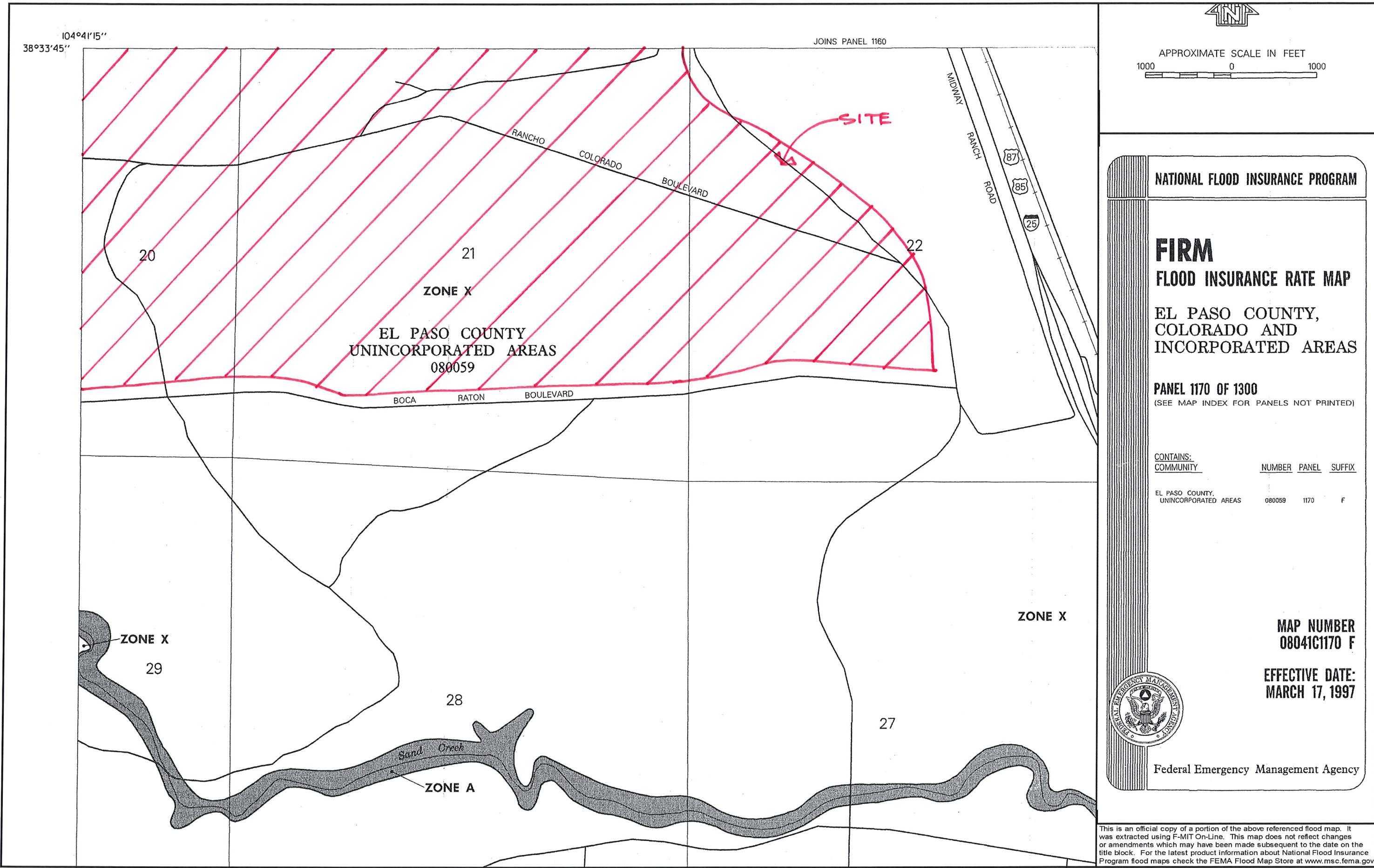
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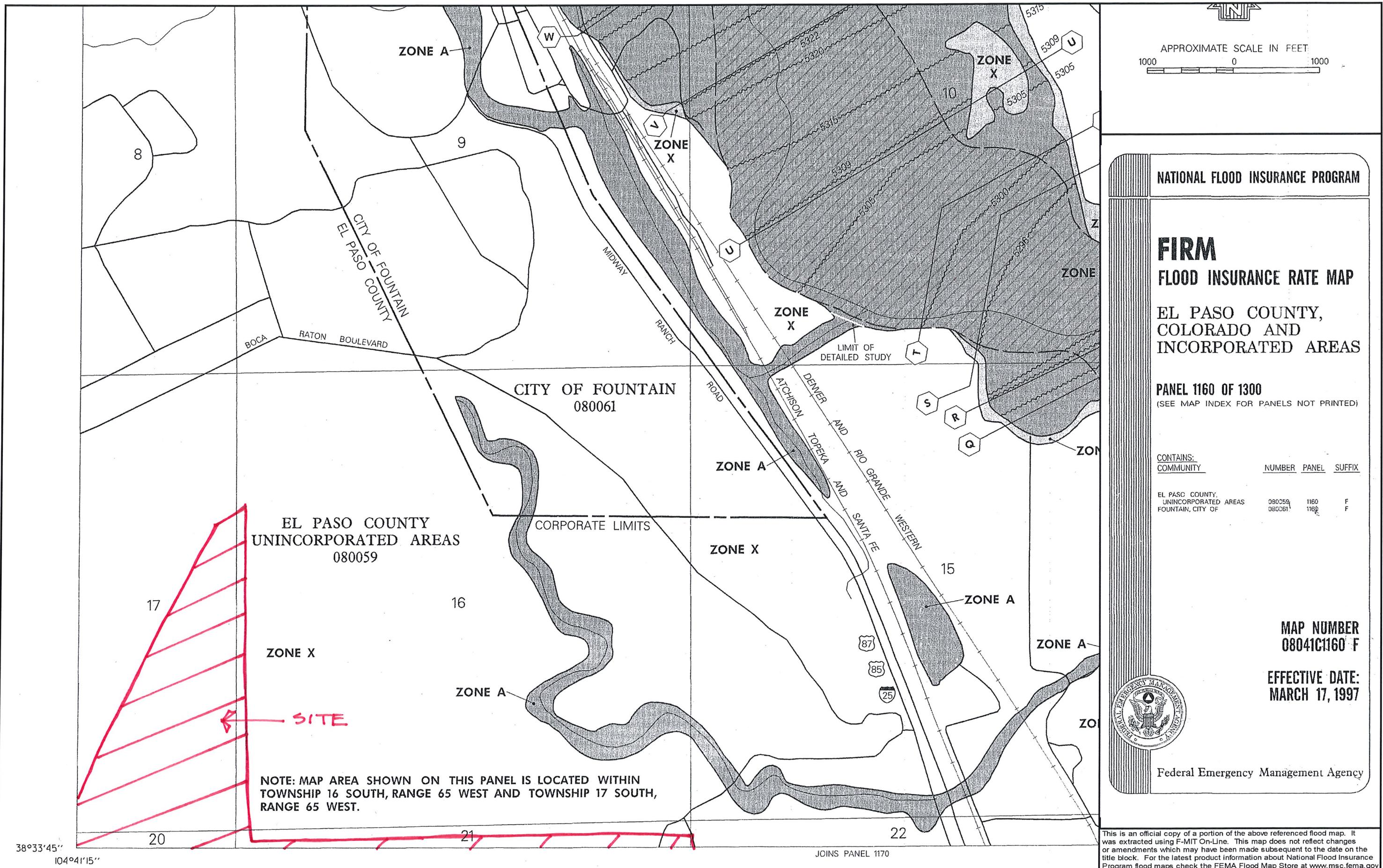
EFFECTIVE DATE:
MARCH 17, 1997

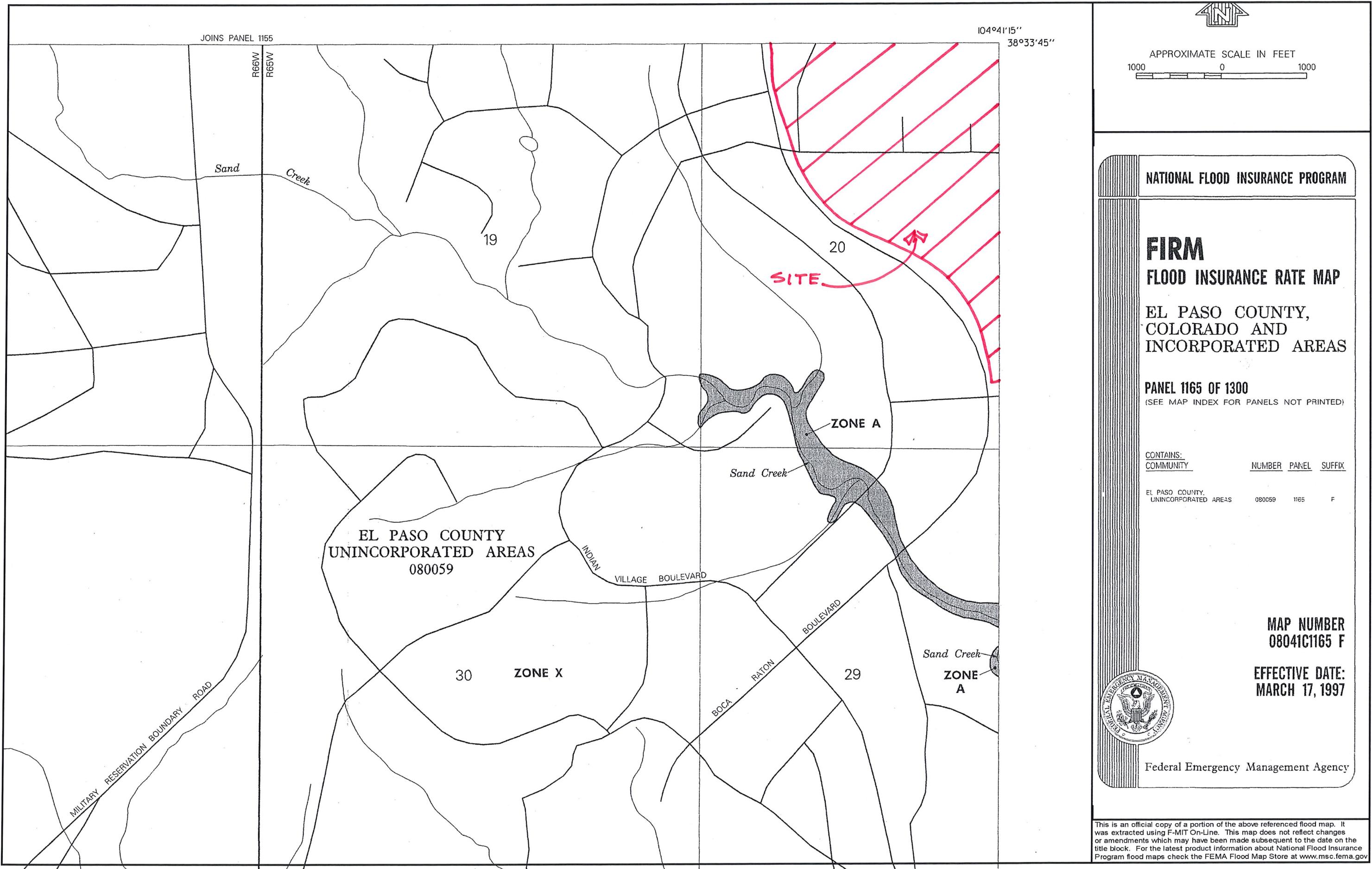


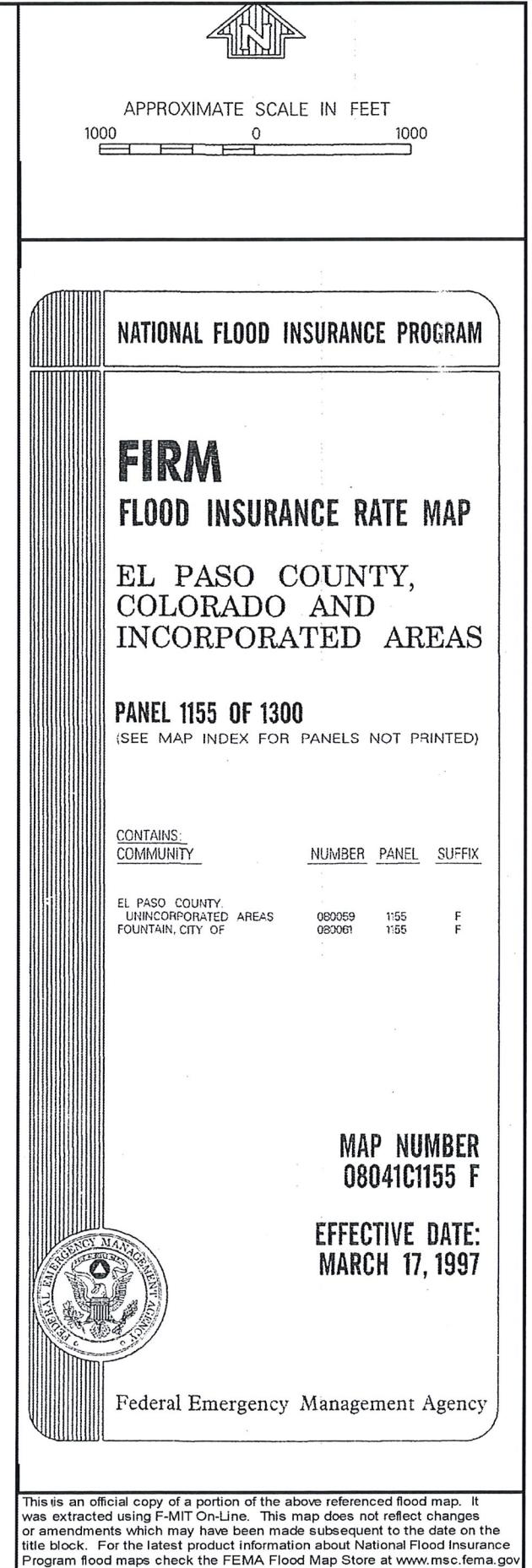
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msfc.fema.gov

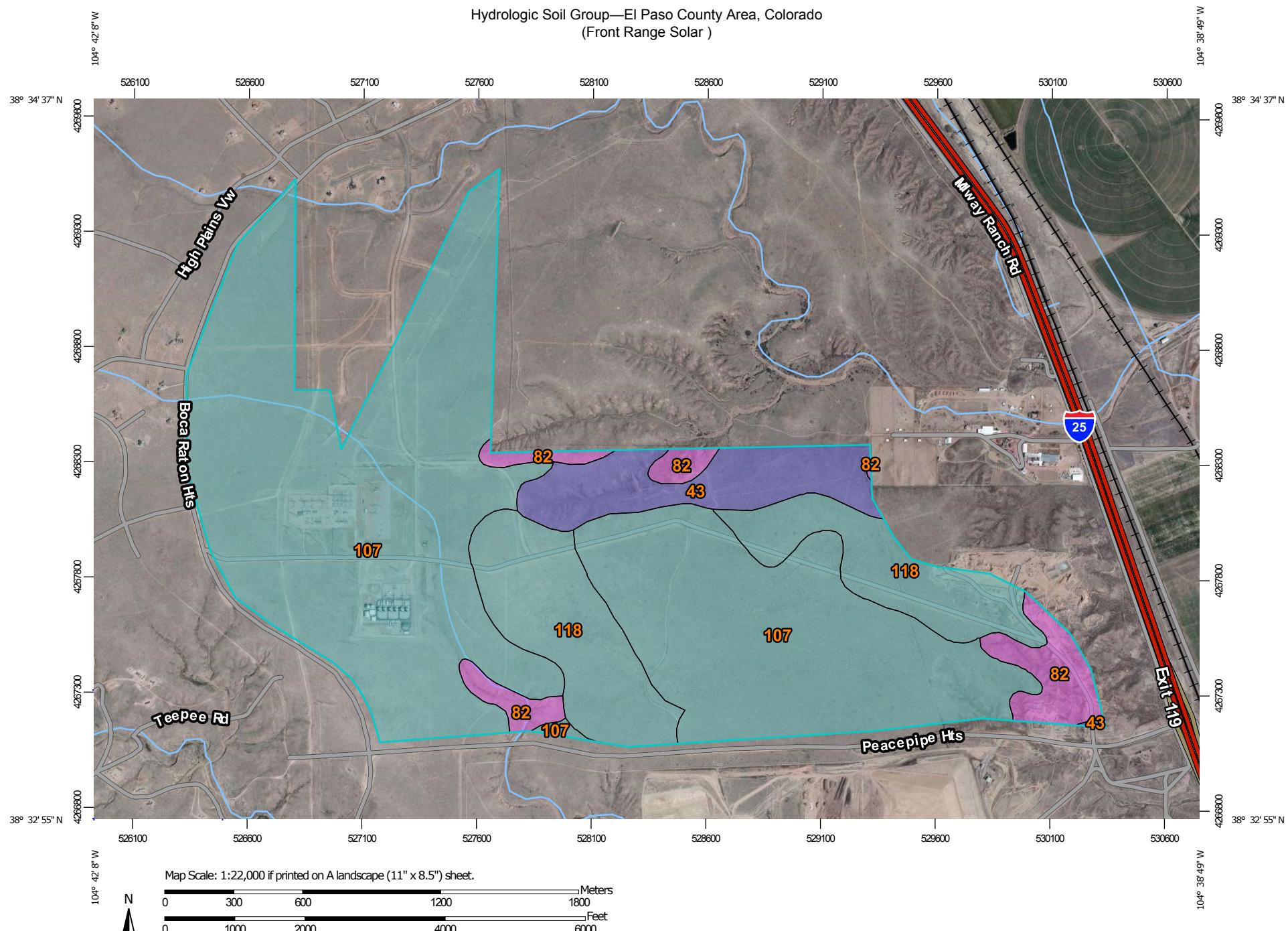








Hydrologic Soil Group—El Paso County Area, Colorado
(Front Range Solar)



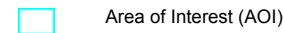
Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

6/9/2017
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Soils

Soil Rating Polygons

	A
	A/D
	B
	B/D
	C
	C/D
	D
	Not rated or not available

Soil Rating Lines

	A
	A/D
	B
	B/D
	C
	C/D
	D
	Not rated or not available

Soil Rating Points

	A
	A/D
	B
	B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 14, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 15, 2011—Sep 22, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — El Paso County Area, Colorado (CO625)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43	Kim loam, 1 to 8 percent slopes	B	88.1	7.4%
82	Schamber-Razor complex, 8 to 50 percent slopes	A	65.6	5.5%
107	Wilid silt loam, 0 to 3 percent slopes	C	841.7	70.5%
118	Fort loam, 1 to 5 percent slopes, cool	C	198.6	16.6%
Totals for Area of Interest			1,194.0	100.0%



Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FRONT RANGE - MIDWAY SOLAR

CORE Project #: 17-012

Prepared By: GMV

COMPOSITE BASIN - WEIGHTED "C" CALCULATIONS

REFERENCE UDFCD Vol.1 RUNOFF Table 6-3

Residential			(attached)			Lawns		Clay Soil		Historic
Single Family		Multi-Unit		Roof	Gravel Road	Substation	2-7% Slope	>7% Slope		
0.25 acres	3 DU's/Ac 3,000 sf 2 story	5 DU's/Ac 3,000 sf 2 story								
% Imperv.	45.00%	48.00%	63.00%	75.00%	90.00%	80.00%	40.00%	2.00%	2.00%	2.00%
BASIN	Area	Area	Area	Area	Area	Area	Area	Area	Area	Total Area
A1	0.00					1.47			27.87	29.34
A2	0.00					2.89	2.07		72.37	77.33
A3	0.00					0.00			106.70	106.70
A4	0.00					0.00			31.31	31.31
A6	0.00					1.77			46.21	47.98
A7	0.00					1.77			57.91	59.68
A8	0.00					1.76			86.05	87.81
A9	0.00					1.37			31.49	32.86
A12	0.00					0.57			10.40	10.97
TOTAL	0.00	0.00	0.00	0.00	0.00	19.62	2.07	0.00	0.00	913.76
										935.45
										3.7%

FRONT RANGE - MIDWAY SOLAR

CORE Project #: 17-012

Prepared By: GMV

COMPOSITE DEVELOPED BASIN -WEIGHTED "C" CALCULATIONS

-REFERENCE EL PASO COUNTY DRAINAGE CRITERIA MANUAL

$$C = \frac{\sum_{i=1}^n C_i A_i}{A_t}$$

Eq 5-2
El Paso County DCM

"C" Frequency				
10		100		
A&B	C&D	A&B	C&D	
0.15	0.25	0.2	0.3	Historic
0.8	0.8	0.85	0.85	Gravel
0.5	0.6	0.6	0.7	Substation

Basin ID	% Imperv.	<i>i</i>	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A1	5.9%	0.06	A	0.02	0.02	0.18	0.23	29.34	29.34	0.03	0.08	0.28	0.33
			B	0.03	0.04	0.18	0.23						
			C or D	0.03	0.08	0.28	0.33						
A2	5.9%	0.06	A	0.02	0.02	0.18	0.24	77.33	77.33	0.03	0.08	0.28	0.33
			B	0.03	0.04	0.18	0.24						
			C or D	0.03	0.08	0.28	0.33						
A3	2.0%	0.02	A	0.01	0.01	0.15	0.20	106.70	106.70	0.01	0.05	0.25	0.30
			B	0.01	0.01	0.15	0.20						
			C or D	0.01	0.05	0.25	0.30						
A4	2.0%	0.02	A	0.01	0.01	0.15	0.20	31.31	31.31	0.01	0.05	0.25	0.30
			B	0.01	0.01	0.15	0.20						
			C or D	0.01	0.05	0.25	0.30						
A6	4.9%	0.05	A	0.02	0.02	0.17	0.22	47.98	47.98	0.03	0.07	0.27	0.32
			B	0.02	0.03	0.17	0.22						
			C or D	0.03	0.07	0.27	0.32						

Basin ID	% Imperv.	<i>i</i>	Soil Type	Runoff Coefficients, C				Basin Area	Total Area	Weighted Runoff Coefficients, C			
				2-Year	5-Year	10-Year	100-Year			2-Year	5-Year	10-Year	100-Year
A7	4.3%	0.04	A	0.01	0.02	0.17	0.22	59.68	59.68	0.02	0.07	0.27	0.32
			B	0.02	0.03	0.17	0.22						
			C or D	0.02	0.07	0.27	0.32						
A8	3.6%	0.04	A	0.01	0.01	0.16	0.21	87.81	87.81	0.02	0.06	0.26	0.31
			B	0.02	0.02	0.16	0.21						
			C or D	0.02	0.06	0.26	0.31						
A9	5.3%	0.05	A	0.02	0.02	0.18	0.23	32.86	32.86	0.03	0.08	0.27	0.32
			B	0.03	0.03	0.18	0.23						
			C or D	0.03	0.08	0.27	0.32						
A12	6.1%	0.06	A	0.02	0.02	0.18	0.23	29.34	29.34	0.04	0.08	0.28	0.33
			B	0.03	0.04	0.18	0.23						
			C or D	0.04	0.08	0.28	0.33						

FRONT RANGE - MIDWAY SOLAR

CORE Project #: 17-012

$T_c = 1.87 (1.1 - C_{10})L^{0.5}s^{-0.33}$ (El Paso County DCM Vol. 1)

Prepared By: GMV

TIME OF CONCENTRATION CALCULATIONS

-REFERENCE UDFCD Vol.1 Section 2.4

NRCS Conveyance factors, K -REFERENCE UDFCD Vol.1 RUNOFF Table 6-2

SF-2	Heavy Meadow	2.50	Short Grass Pasture & Lawns	7.00	Grassed Waterway	15.00
	Tillage/field	5.00	Nearly Bare Ground	10.00	Paved Area & Shallow Gutter	20.00

SUB-BASIN DATA			INITIAL / OVERLAND TIME			TRAVEL TIME T(t)							T(c) CHECK (URBANIZED BASINS)			FINAL T(c)
DRAIN BASIN	AREA ac.	C(10)	Length ft.	Slope %	T(i) min	Length ft.	Slope %	Coeff.	Velocity fps	T(t) min.	COMP. T(c)	% IMPER- VIOUS	USDCM Eq . 6-5			
A1	29.34	0.28	300	1.0%	26.6	1009	2.8%	7.00	1.2	14.0	40.6	5.9%			40.6	
A2	77.33	0.28	300	1.3%	24.2	2086	0.7%	7.00	0.6	57.9	82.1	5.9%			82.1	
A3	106.70	0.25	300	2.0%	21.9	2874	1.5%	7.00	0.9	53.2	75.1	2.0%			75.1	
A4	31.31	0.25	300	1.7%	23.3	3634	1.2%	7.00	0.8	75.7	99.0	2.0%			99.0	
A6	47.98	0.27	300	1.3%	24.4	1578	1.8%	7.00	0.9	29.2	53.6	4.9%			53.6	
A7	59.68	0.27	300	2.7%	19.5	2169	2.2%	7.00	1.0	36.2	55.7	4.3%			55.7	
A8	87.81	0.26	300	1.7%	23.0	3108	1.9%	7.00	1.0	51.8	74.8	3.6%			74.8	
A9	32.86	0.27	300	2.7%	19.4	1597	3.6%	7.00	1.3	20.5	39.9	5.3%			39.9	
A12	10.97	0.28	300	2.3%	20.1	196	4.6%	7.00	1.5	2.2	22.3	6.1%			22.3	

FRONT RANGE - MIDWAY SOLAR

CORE Project #: 17-012

Prepared By: GMV

RATIONAL METHOD PEAK RUNOFF

10-YR STORM

SF-3

Rainfall Depth-Duration-Frequency (1-hr) = **1.55**

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATON				DIRECT RUNOFF				TOTAL RUNOFF				REMARKS
DESIGN POINT	DRAIN BASIN	AREA ac.	10yr RUNOFF COEFF	T(c) min	C x A	I in/hr	Q cfs	T(c) min	SUM C x A	I in/hr	Q cfs	
1	A1	29.34	0.28	40.6	8.14	2.02	16.5					
2	A2	77.33	0.28	82.1	21.65	1.26	27.3					
3	A3	106.70	0.25	75.1	26.68	1.34	35.8					
4	A4	31.31	0.25	99.0	7.83	1.11	8.7					
6	A6	47.98	0.27	53.6	12.97	1.69	21.9					
7	A7	59.68	0.27	55.7	15.89	1.65	26.2					
8	A8	87.81	0.26	74.8	22.92	1.35	30.9					
9	A9	32.86	0.27	39.9	8.97	2.04	18.3					
12	A12	10.97	0.28	22.3	3.06	2.88	8.8					

FRONT RANGE - MIDWAY SOLAR

CORE Project #: 17-012

Prepared By: GMV

RATIONAL METHOD PEAK RUNOFF

100-YR STORM

SF-3

Rainfall Depth-Duration-Frequency (1-hr) = **2.58**

-REFERENCE UDFCD Vol.1 EQ 5-1 & EQ 6-1

BASIN INFORMATON				DIRECT RUNOFF				TOTAL RUNOFF				REMARKS
DESIGN POINT	DRAIN BASIN	AREA ac.	100yr RUNOFF COEFF	T(c) min	C x A	I in/hr	Q cfs	T(c) min	SUM C x A	I in/hr	Q cfs	
1	A1	29.34	0.33	40.6	9.61	3.37	32.3					
2	A2	77.33	0.33	82.1	25.62	2.10	53.8					
3	A3	106.70	0.30	75.1	32.01	2.24	71.6					
4	A4	31.31	0.30	99.0	9.39	1.84	17.3					
6	A6	47.98	0.32	53.6	15.37	2.81	43.2					
7	A7	59.68	0.32	55.7	18.88	2.74	51.7					
8	A8	87.81	0.31	74.8	27.31	2.24	61.2					
9	A9	32.86	0.32	39.9	10.61	3.40	36.1					
12	A12	10.97	0.33	22.3	3.61	4.79	17.3					

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0) - Existing 2 Yr.

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5	Existing 2 Yr	0.157	0.255	58.4	12.93	30.3	9.14	21.6	160	722,867	0.05	38,675	50.0	8	38,680	0.04
A10	Existing 2 Yr	0.157	0.277	81.7	18.91	42.5	13.36	31.5	151	955,935	0.05	51,145	65.0	8	51,135	0.03
A11	Existing 2 Yr	0.157	0.264	78.6	17.46	40.9	12.34	29.1	134	813,146	0.05	43,505	60.0	7	43,502	0.03

Summary of CUHP Input Parameters (Version 2.0.0) - Existing 2 Yr.

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in.hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con'ct Imperv. Fraction	Receiv. Perv. Fraction	
A5	A5	2	0.311	0.479	1.072	0.014	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.53
A10	A10	2	0.411	0.856	1.692	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.53
A11	A11	2	0.350	0.785	1.525	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.53

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0) - Existing 100 Yr

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5	Existing 100 Yr	0.156	0.253	58.3	12.85	30.3	9.08	21.4	160	722,867	1.84	1,329,393	60.0	243	1,329,567	1.22
A10	Existing 100 Yr	0.156	0.276	81.7	18.79	42.5	13.28	31.3	151	955,935	1.84	1,758,017	70.0	250	1,757,673	0.95
A11	Existing 100 Yr	0.156	0.263	78.6	17.35	40.9	12.26	28.9	134	813,146	1.84	1,495,420	70.0	219	1,495,317	0.98

Summary of CUHP Input Parameters (Version 2.0.0) - Existing 100 Yr.

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in.hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con'ct Imperv. Fraction	Receiv. Perv. Fraction	
A5	A5	100	0.311	0.479	1.072	0.014	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81
A10	A10	100	0.411	0.856	1.692	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81
A11	A11	100	0.350	0.785	1.525	0.019	2.0	0.35	0.05	3.00	0.50	0.0018	0.00	0.04	0.02	1.81

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0) - Proposed 2 Yr.

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A5	Proposed 2 Yr.	0.154	0.250	58.3	12.70	30.3	8.98	21.2	160	722,867	0.06	44,815	50.0	9	44,822	0.05
A10	Proposed 2 Yr.	0.153	0.270	81.6	18.43	42.4	13.02	30.7	151	955,935	0.07	62,244	60.0	9	62,228	0.04
A11	Proposed 2 Yr.	0.152	0.256	78.5	16.96	40.8	11.99	28.3	134	813,146	0.07	54,219	60.0	8	54,216	0.04

Summary of CUHP Input Parameters (Version 2.0.0) - Proposed 2 Yr.

Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
								Pervious (inches)	Imperv. (inches)	Initial Rate (in./hr.)	Final Rate (in.hr.)	Decay Coeff. (1/sec.)	DCIA Level	Dir. Con'ct Imperv. Fraction	Receiv. Perv. Fraction	
A5	A5	2	0.311	0.479	1.072	0.014	3.1	0.35	0.05	3.00	0.50	0.0018	0.00	0.06	0.03	2.38
A10	A10	2	0.411	0.856	1.692	0.019	3.5	0.35	0.05	3.00	0.50	0.0018	0.00	0.07	0.04	2.70
A11	A11	2	0.350	0.785	1.525	0.019	3.7	0.35	0.05	3.00	0.50	0.0018	0.00	0.07	0.04	2.85

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0) - Proposed 100 Yr.

Catchment Name/ID	User Comment for Catchment	Unit Hydrograph Parameters and Results								Excess Precip.		Storm Hydrograph				
		CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f.)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
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Catchment Name/ID	SWMM Node/ID	Raingage Name/ID	Area (sq.mi.)	Dist. to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperv.	Depression Storage		Horton's Infiltration Parameters			DCIA Level and Fractions			Percent Eff. Imperv.
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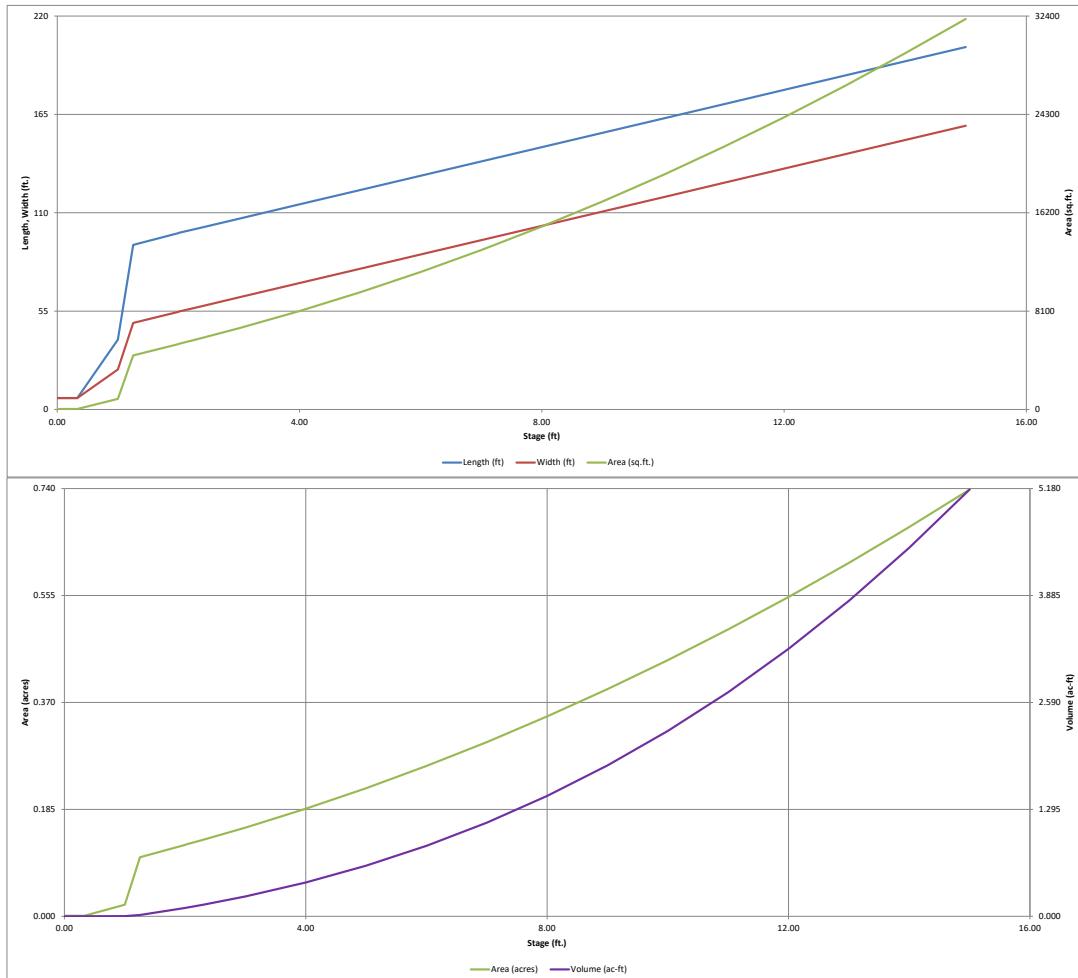
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

<p>Example Zone Configuration (Retention Pond)</p>																																																																																																																																																																																																																			
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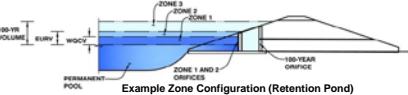
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



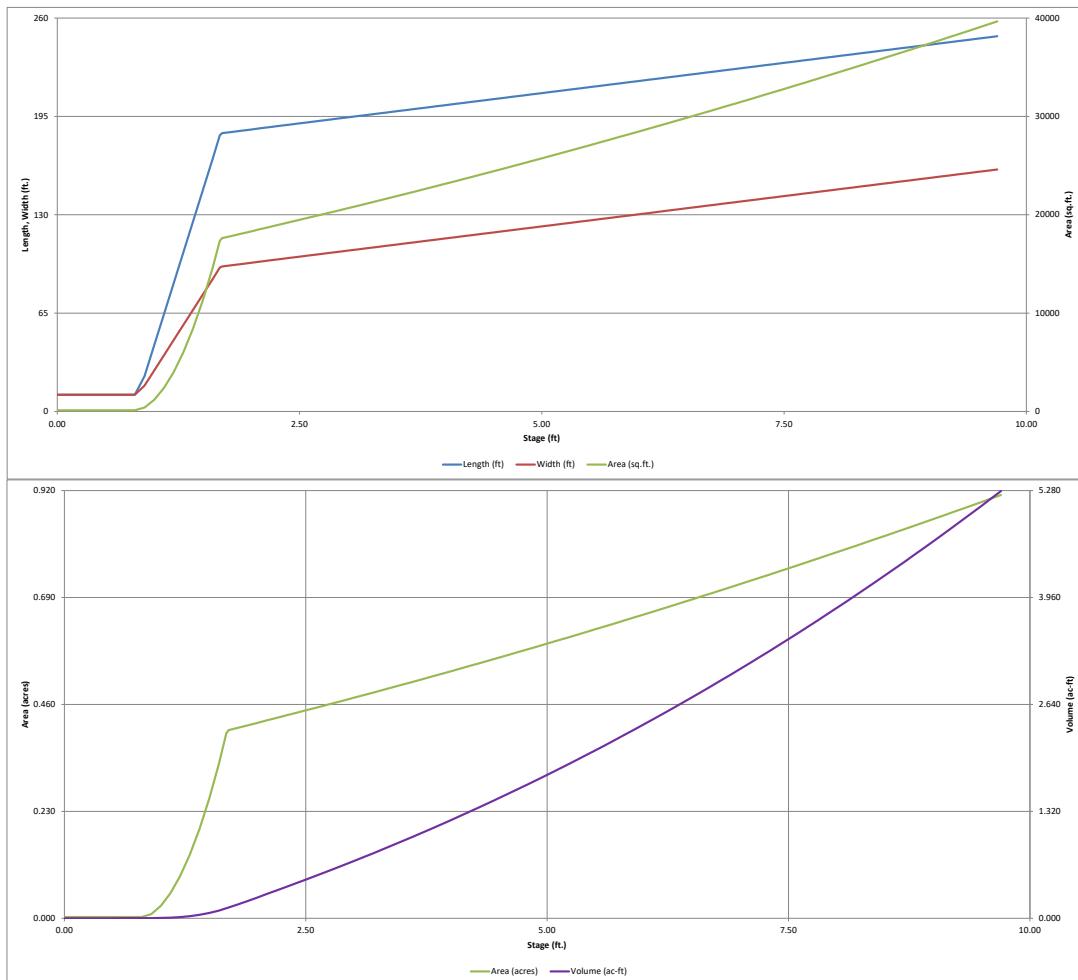
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

<p style="margin: 0;">Project: Front Range - Midway Solar</p> <p style="margin: 0;">Basin ID: A2</p>  <p style="margin: 0;">Example Zone Configuration (Retention Pond)</p>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Depth of Main Basin (H _{main}) =	4.32 ft																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Width of Main Basin (W _{main}) =	130.3 ft																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Area of Main Basin (A _{main}) =	28,462 ft ²																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Volume of Main Basin (V _{main}) =	98,625 ft ³																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Calculated Total Basin Volume (V _{total}) =	2.391 acre-feet																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Depth Increment =</th> <th>0.1 ft</th> <th>Stage - Storage (ft)</th> <th>Optional Override Stage (ft)</th> <th>Length (ft)</th> <th>Width (ft)</th> <th>Area (ft²)</th> <th>Optional Override Area (ft²)</th> <th>Area (acre)</th> <th>Volume (ft³)</th> <th>Volume (ac-ft)</th> </tr> </thead> <tbody> <tr> <td>Top of Micropool</td> <td>0.00</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td></td> <td></td> </tr> <tr> <td>ISV</td> <td>0.33</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>39</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.40</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>48</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.50</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>60</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.60</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>72</td> <td>0.002</td> </tr> <tr> <td></td> <td>0.70</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>84</td> <td>0.002</td> </tr> <tr> <td></td> <td>0.80</td> <td>11.0</td> <td>11.0</td> <td>122</td> <td></td> <td></td> <td></td> <td>0.003</td> <td>96</td> <td>0.002</td> </tr> <tr> <td></td> <td>0.90</td> <td>23.3</td> <td>17.0</td> <td>397</td> <td></td> <td></td> <td></td> <td>0.009</td> <td>116</td> <td>0.003</td> </tr> <tr> <td></td> <td>1.00</td> <td>43.7</td> <td>27.0</td> <td>1,182</td> <td></td> <td></td> <td></td> <td>0.027</td> <td>192</td> <td>0.004</td> </tr> <tr> <td></td> <td>1.10</td> <td>64.1</td> <td>37.0</td> <td>2,374</td> <td></td> <td></td> <td></td> <td>0.055</td> <td>366</td> <td>0.008</td> </tr> <tr> <td></td> <td>1.20</td> <td>84.5</td> <td>47.0</td> <td>3,975</td> <td></td> <td></td> <td></td> <td>0.091</td> <td>680</td> <td>0.016</td> </tr> <tr> <td></td> <td>1.30</td> <td>104.9</td> <td>57.0</td> <td>5,984</td> <td></td> <td></td> <td></td> <td>0.137</td> <td>1,175</td> <td>0.027</td> </tr> <tr> <td></td> <td>1.40</td> <td>125.3</td> <td>67.0</td> <td>8,400</td> <td></td> <td></td> <td></td> <td>0.193</td> <td>1,890</td> <td>0.043</td> </tr> <tr> <td></td> <td>1.50</td> <td>145.7</td> <td>77.0</td> <td>11,225</td> <td></td> <td></td> <td></td> <td>0.258</td> <td>2,868</td> <td>0.066</td> </tr> <tr> <td></td> <td>1.60</td> <td>166.1</td> <td>87.0</td> <td>14,457</td> <td></td> <td></td> <td></td> <td>0.332</td> <td>4,149</td> <td>0.095</td> </tr> <tr> <td></td> <td>1.70</td> <td>186.5</td> <td>97.4</td> <td>18,077</td> <td></td> <td></td> <td></td> <td>0.415</td> <td>9,340</td> <td>0.214</td> </tr> <tr> <td></td> <td>1.80</td> <td>206.9</td> <td>107.8</td> <td>21,936</td> <td></td> <td></td> <td></td> <td>0.497</td> <td>16,444</td> <td>0.389</td> </tr> <tr> <td></td> <td>1.90</td> <td>227.3</td> <td>118.2</td> <td>25,984</td> <td></td> <td></td> <td></td> <td>0.580</td> <td>24,665</td> <td>0.428</td> </tr> <tr> <td></td> <td>2.00</td> <td>247.7</td> <td>128.6</td> <td>30,132</td> <td></td> <td></td> <td></td> <td>0.662</td> <td>32,057</td> <td>0.467</td> </tr> <tr> <td></td> <td>2.10</td> <td>268.1</td> <td>139.0</td> <td>34,380</td> <td></td> <td></td> <td></td> <td>0.744</td> <td>39,549</td> <td>0.506</td> </tr> <tr> <td></td> <td>2.20</td> <td>288.5</td> <td>149.4</td> <td>38,628</td> <td></td> <td></td> <td></td> <td>0.826</td> <td>47,041</td> <td>0.545</td> </tr> <tr> <td></td> <td>2.30</td> <td>308.9</td> <td>160.8</td> <td>42,976</td> <td></td> <td></td> <td></td> <td>0.908</td> <td>54,533</td> <td>0.584</td> </tr> <tr> <td></td> <td>2.40</td> <td>329.3</td> <td>171.2</td> <td>47,324</td> <td></td> <td></td> <td></td> <td>0.990</td> <td>62,025</td> <td>0.623</td> </tr> <tr> <td></td> <td>2.50</td> <td>349.7</td> <td>181.6</td> <td>51,672</td> <td></td> <td></td> <td></td> <td>0.972</td> <td>69,517</td> <td>0.662</td> </tr> <tr> <td></td> <td>2.60</td> <td>370.1</td> <td>192.0</td> <td>56,020</td> <td></td> <td></td> <td></td> <td>0.954</td> <td>77,009</td> <td>0.701</td> </tr> <tr> <td></td> <td>2.70</td> <td>390.5</td> <td>202.4</td> <td>60,368</td> <td></td> <td></td> <td></td> <td>0.936</td> <td>84,491</td> <td>0.740</td> </tr> <tr> <td></td> <td>2.80</td> <td>410.9</td> <td>212.8</td> <td>64,716</td> <td></td> <td></td> <td></td> <td>0.918</td> <td>91,983</td> <td>0.779</td> </tr> <tr> <td></td> <td>2.90</td> <td>431.3</td> <td>223.2</td> <td>69,064</td> <td></td> <td></td> <td></td> <td>0.900</td> <td>99,475</td> <td>0.818</td> </tr> <tr> <td></td> <td>3.00</td> <td>451.7</td> <td>233.6</td> <td>73,412</td> <td></td> <td></td> <td></td> <td>0.882</td> <td>106,967</td> <td>0.857</td> </tr> <tr> <td></td> <td>3.10</td> <td>472.1</td> <td>244.0</td> <td>77,760</td> <td></td> <td></td> <td></td> <td>0.864</td> <td>114,459</td> <td>0.896</td> </tr> <tr> <td></td> <td>3.20</td> <td>492.5</td> <td>254.4</td> <td>82,108</td> <td></td> <td></td> <td></td> <td>0.846</td> <td>121,951</td> <td>0.935</td> </tr> <tr> <td></td> <td>3.30</td> <td>512.9</td> <td>264.8</td> <td>86,456</td> <td></td> <td></td> <td></td> <td>0.828</td> <td>129,443</td> <td>0.974</td> </tr> <tr> <td></td> <td>3.40</td> <td>533.3</td> <td>275.2</td> <td>90,804</td> <td></td> <td></td> <td></td> <td>0.810</td> <td>136,935</td> <td>1.013</td> </tr> <tr> <td></td> <td>3.50</td> <td>553.7</td> <td>285.6</td> <td>95,152</td> <td></td> <td></td> <td></td> <td>0.792</td> <td>144,427</td> <td>1.052</td> </tr> <tr> <td></td> <td>3.60</td> <td>574.1</td> <td>296.0</td> <td>99,500</td> <td></td> <td></td> <td></td> <td>0.774</td> <td>151,919</td> <td>1.091</td> </tr> <tr> <td></td> <td>3.70</td> <td>594.5</td> <td>306.4</td> <td>103,848</td> <td></td> <td></td> <td></td> <td>0.756</td> <td>159,411</td> <td>1.130</td> </tr> <tr> <td></td> <td>3.80</td> <td>614.9</td> <td>316.8</td> <td>108,196</td> <td></td> <td></td> <td></td> <td>0.738</td> <td>166,903</td> <td>1.169</td> </tr> <tr> <td></td> <td>3.90</td> <td>635.3</td> <td>327.2</td> <td>112,544</td> <td></td> <td></td> <td></td> <td>0.720</td> <td>174,395</td> <td>1.208</td> </tr> <tr> <td></td> <td>4.00</td> <td>655.7</td> <td>337.6</td> <td>116,892</td> <td></td> <td></td> <td></td> <td>0.702</td> <td>181,887</td> <td>1.247</td> </tr> <tr> <td></td> <td>4.10</td> <td>676.1</td> <td>348.0</td> <td>121,240</td> <td></td> <td></td> <td></td> <td>0.684</td> <td>189,379</td> <td>1.286</td> </tr> <tr> <td></td> <td>4.20</td> <td>696.5</td> <td>358.4</td> <td>125,588</td> <td></td> <td></td> <td></td> <td>0.666</td> <td>196,871</td> <td>1.325</td> </tr> <tr> <td></td> <td>4.30</td> <td>716.9</td> <td>368.8</td> <td>130,936</td> <td></td> <td></td> <td></td> <td>0.648</td> <td>204,363</td> <td>1.364</td> </tr> <tr> <td></td> <td>4.40</td> <td>737.3</td> <td>379.2</td> <td>136,284</td> <td></td> <td></td> <td></td> <td>0.630</td> <td>211,855</td> <td>1.403</td> </tr> <tr> <td></td> <td>4.50</td> <td>757.7</td> <td>389.6</td> <td>141,632</td> <td></td> <td></td> <td></td> <td>0.612</td> <td>219,347</td> <td>1.442</td> </tr> <tr> <td></td> <td>4.60</td> <td>778.1</td> <td>390.0</td> <td>146,980</td> <td></td> <td></td> <td></td> <td>0.594</td> <td>226,839</td> <td>1.481</td> </tr> <tr> <td></td> <td>4.70</td> <td>798.5</td> <td>400.4</td> <td>152,328</td> <td></td> <td></td> <td></td> <td>0.576</td> <td>234,331</td> <td>1.520</td> </tr> <tr> <td></td> <td>4.80</td> <td>818.9</td> <td>410.8</td> <td>157,676</td> <td></td> <td></td> <td></td> <td>0.558</td> <td>241,823</td> <td>1.559</td> </tr> <tr> <td></td> <td>4.90</td> <td>839.3</td> <td>421.2</td> <td>163,024</td> <td></td> <td></td> <td></td> <td>0.540</td> <td>249,315</td> <td>1.598</td> </tr> <tr> <td></td> <td>5.00</td> <td>859.7</td> <td>431.6</td> <td>168,372</td> <td></td> <td></td> <td></td> <td>0.522</td> <td>256,807</td> <td>1.637</td> </tr> <tr> <td></td> <td>5.10</td> <td>880.1</td> <td>442.0</td> <td>173,720</td> <td></td> <td></td> <td></td> <td>0.504</td> <td>264,299</td> <td>1.676</td> </tr> <tr> <td></td> <td>5.20</td> <td>900.5</td> <td>452.4</td> <td>179,068</td> <td></td> <td></td> <td></td> <td>0.486</td> <td>271,791</td> <td>1.715</td> </tr> <tr> <td></td> <td>5.30</td> <td>920.9</td> <td>462.8</td> <td>184,416</td> <td></td> <td></td> <td></td> <td>0.468</td> <td>279,283</td> <td>1.754</td> </tr> <tr> <td></td> <td>5.40</td> <td>941.3</td> <td>473.2</td> <td>189,764</td> <td></td> <td></td> <td></td> <td>0.450</td> <td>286,775</td> <td>1.793</td> </tr> <tr> <td></td> <td>5.50</td> <td>961.7</td> <td>483.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.432</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>5.60</td> <td>982.1</td> <td>494.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.414</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>5.70</td> <td>1002.5</td> <td>504.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.396</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>5.80</td> <td>1022.9</td> <td>514.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.378</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>5.90</td> <td>1043.3</td> <td>525.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.360</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.00</td> <td>1063.7</td> <td>535.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.342</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.10</td> <td>1084.1</td> <td>546.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.324</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.20</td> <td>1104.5</td> <td>556.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.306</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.30</td> <td>1124.9</td> <td>566.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.288</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.40</td> <td>1145.3</td> <td>577.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.270</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.50</td> <td>1165.7</td> <td>587.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.252</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.60</td> <td>1186.1</td> <td>598.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.234</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.70</td> <td>1206.5</td> <td>608.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.216</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.80</td> <td>1226.9</td> <td>618.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.198</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>6.90</td> <td>1247.3</td> <td>629.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.180</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.00</td> <td>1267.7</td> <td>639.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.162</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.10</td> <td>1288.1</td> <td>650.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.144</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.20</td> <td>1308.5</td> <td>660.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.126</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.30</td> <td>1328.9</td> <td>670.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.108</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.40</td> <td>1349.3</td> <td>681.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.090</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.50</td> <td>1369.7</td> <td>691.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.072</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.60</td> <td>1390.1</td> <td>702.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.054</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.70</td> <td>1410.5</td> <td>712.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.036</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.80</td> <td>1430.9</td> <td>722.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.018</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>7.90</td> <td>1451.3</td> <td>733.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.00</td> <td>1471.7</td> <td>743.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.10</td> <td>1492.1</td> <td>754.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.20</td> <td>1512.5</td> <td>764.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.30</td> <td>1532.9</td> <td>774.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.40</td> <td>1553.3</td> <td>785.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.50</td> <td>1573.7</td> <td>795.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.60</td> <td>1594.1</td> <td>806.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.70</td> <td>1614.5</td> <td>816.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.80</td> <td>1634.9</td> <td>826.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>8.90</td> <td>1655.3</td> <td>837.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.00</td> <td>1675.7</td> <td>847.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.10</td> <td>1696.1</td> <td>858.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.20</td> <td>1716.5</td> <td>868.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.30</td> <td>1736.9</td> <td>878.8</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.40</td> <td>1757.3</td> <td>889.2</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.50</td> <td>1777.7</td> <td>899.6</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.60</td> <td>1798.1</td> <td>910.0</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.832</td> </tr> <tr> <td></td> <td>9.70</td> <td>1818.5</td> <td>919.4</td> <td>195,112</td> <td></td> <td></td> <td></td> <td>0.000</td> <td>294,267</td> <td>1.</td></tr></tbody></table>									Depth Increment =	0.1 ft	Stage - Storage (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	11.0	122				0.003			ISV	0.33	11.0	11.0	122				0.003	39	0.001		0.40	11.0	11.0	122				0.003	48	0.001		0.50	11.0	11.0	122				0.003	60	0.001		0.60	11.0	11.0	122				0.003	72	0.002		0.70	11.0	11.0	122				0.003	84	0.002		0.80	11.0	11.0	122				0.003	96	0.002		0.90	23.3	17.0	397				0.009	116	0.003		1.00	43.7	27.0	1,182				0.027	192	0.004		1.10	64.1	37.0	2,374				0.055	366	0.008		1.20	84.5	47.0	3,975				0.091	680	0.016		1.30	104.9	57.0	5,984				0.137	1,175	0.027		1.40	125.3	67.0	8,400				0.193	1,890	0.043		1.50	145.7	77.0	11,225				0.258	2,868	0.066		1.60	166.1	87.0	14,457				0.332	4,149	0.095		1.70	186.5	97.4	18,077				0.415	9,340	0.214		1.80	206.9	107.8	21,936				0.497	16,444	0.389		1.90	227.3	118.2	25,984				0.580	24,665	0.428		2.00	247.7	128.6	30,132				0.662	32,057	0.467		2.10	268.1	139.0	34,380				0.744	39,549	0.506		2.20	288.5	149.4	38,628				0.826	47,041	0.545		2.30	308.9	160.8	42,976				0.908	54,533	0.584		2.40	329.3	171.2	47,324				0.990	62,025	0.623		2.50	349.7	181.6	51,672				0.972	69,517	0.662		2.60	370.1	192.0	56,020				0.954	77,009	0.701		2.70	390.5	202.4	60,368				0.936	84,491	0.740		2.80	410.9	212.8	64,716				0.918	91,983	0.779		2.90	431.3	223.2	69,064				0.900	99,475	0.818		3.00	451.7	233.6	73,412				0.882	106,967	0.857		3.10	472.1	244.0	77,760				0.864	114,459	0.896		3.20	492.5	254.4	82,108				0.846	121,951	0.935		3.30	512.9	264.8	86,456				0.828	129,443	0.974		3.40	533.3	275.2	90,804				0.810	136,935	1.013		3.50	553.7	285.6	95,152				0.792	144,427	1.052		3.60	574.1	296.0	99,500				0.774	151,919	1.091		3.70	594.5	306.4	103,848				0.756	159,411	1.130		3.80	614.9	316.8	108,196				0.738	166,903	1.169		3.90	635.3	327.2	112,544				0.720	174,395	1.208		4.00	655.7	337.6	116,892				0.702	181,887	1.247		4.10	676.1	348.0	121,240				0.684	189,379	1.286		4.20	696.5	358.4	125,588				0.666	196,871	1.325		4.30	716.9	368.8	130,936				0.648	204,363	1.364		4.40	737.3	379.2	136,284				0.630	211,855	1.403		4.50	757.7	389.6	141,632				0.612	219,347	1.442		4.60	778.1	390.0	146,980				0.594	226,839	1.481		4.70	798.5	400.4	152,328				0.576	234,331	1.520		4.80	818.9	410.8	157,676				0.558	241,823	1.559		4.90	839.3	421.2	163,024				0.540	249,315	1.598		5.00	859.7	431.6	168,372				0.522	256,807	1.637		5.10	880.1	442.0	173,720				0.504	264,299	1.676		5.20	900.5	452.4	179,068				0.486	271,791	1.715		5.30	920.9	462.8	184,416				0.468	279,283	1.754		5.40	941.3	473.2	189,764				0.450	286,775	1.793		5.50	961.7	483.6	195,112				0.432	294,267	1.832		5.60	982.1	494.0	195,112				0.414	294,267	1.832		5.70	1002.5	504.4	195,112				0.396	294,267	1.832		5.80	1022.9	514.8	195,112				0.378	294,267	1.832		5.90	1043.3	525.2	195,112				0.360	294,267	1.832		6.00	1063.7	535.6	195,112				0.342	294,267	1.832		6.10	1084.1	546.0	195,112				0.324	294,267	1.832		6.20	1104.5	556.4	195,112				0.306	294,267	1.832		6.30	1124.9	566.8	195,112				0.288	294,267	1.832		6.40	1145.3	577.2	195,112				0.270	294,267	1.832		6.50	1165.7	587.6	195,112				0.252	294,267	1.832		6.60	1186.1	598.0	195,112				0.234	294,267	1.832		6.70	1206.5	608.4	195,112				0.216	294,267	1.832		6.80	1226.9	618.8	195,112				0.198	294,267	1.832		6.90	1247.3	629.2	195,112				0.180	294,267	1.832		7.00	1267.7	639.6	195,112				0.162	294,267	1.832		7.10	1288.1	650.0	195,112				0.144	294,267	1.832		7.20	1308.5	660.4	195,112				0.126	294,267	1.832		7.30	1328.9	670.8	195,112				0.108	294,267	1.832		7.40	1349.3	681.2	195,112				0.090	294,267	1.832		7.50	1369.7	691.6	195,112				0.072	294,267	1.832		7.60	1390.1	702.0	195,112				0.054	294,267	1.832		7.70	1410.5	712.4	195,112				0.036	294,267	1.832		7.80	1430.9	722.8	195,112				0.018	294,267	1.832		7.90	1451.3	733.2	195,112				0.000	294,267	1.832		8.00	1471.7	743.6	195,112				0.000	294,267	1.832		8.10	1492.1	754.0	195,112				0.000	294,267	1.832		8.20	1512.5	764.4	195,112				0.000	294,267	1.832		8.30	1532.9	774.8	195,112				0.000	294,267	1.832		8.40	1553.3	785.2	195,112				0.000	294,267	1.832		8.50	1573.7	795.6	195,112				0.000	294,267	1.832		8.60	1594.1	806.0	195,112				0.000	294,267	1.832		8.70	1614.5	816.4	195,112				0.000	294,267	1.832		8.80	1634.9	826.8	195,112				0.000	294,267	1.832		8.90	1655.3	837.2	195,112				0.000	294,267	1.832		9.00	1675.7	847.6	195,112				0.000	294,267	1.832		9.10	1696.1	858.0	195,112				0.000	294,267	1.832		9.20	1716.5	868.4	195,112				0.000	294,267	1.832		9.30	1736.9	878.8	195,112				0.000	294,267	1.832		9.40	1757.3	889.2	195,112				0.000	294,267	1.832		9.50	1777.7	899.6	195,112				0.000	294,267	1.832		9.60	1798.1	910.0	195,112				0.000	294,267	1.832		9.70	1818.5	919.4	195,112				0.000	294,267	1.
Depth Increment =	0.1 ft	Stage - Storage (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)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	0.70	11.0	11.0	122				0.003	84	0.002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	1.20	84.5	47.0	3,975				0.091	680	0.016																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.30	104.9	57.0	5,984				0.137	1,175	0.027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.40	125.3	67.0	8,400				0.193	1,890	0.043																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.50	145.7	77.0	11,225				0.258	2,868	0.066																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.60	166.1	87.0	14,457				0.332	4,149	0.095																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.70	186.5	97.4	18,077				0.415	9,340	0.214																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.80	206.9	107.8	21,936				0.497	16,444	0.389																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	1.90	227.3	118.2	25,984				0.580	24,665	0.428																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	2.10	268.1	139.0	34,380				0.744	39,549	0.506																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.20	288.5	149.4	38,628				0.826	47,041	0.545																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.30	308.9	160.8	42,976				0.908	54,533	0.584																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.40	329.3	171.2	47,324				0.990	62,025	0.623																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.50	349.7	181.6	51,672				0.972	69,517	0.662																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.60	370.1	192.0	56,020				0.954	77,009	0.701																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.70	390.5	202.4	60,368				0.936	84,491	0.740																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.80	410.9	212.8	64,716				0.918	91,983	0.779																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	2.90	431.3	223.2	69,064				0.900	99,475	0.818																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.00	451.7	233.6	73,412				0.882	106,967	0.857																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.10	472.1	244.0	77,760				0.864	114,459	0.896																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.20	492.5	254.4	82,108				0.846	121,951	0.935																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.30	512.9	264.8	86,456				0.828	129,443	0.974																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.40	533.3	275.2	90,804				0.810	136,935	1.013																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.50	553.7	285.6	95,152				0.792	144,427	1.052																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.60	574.1	296.0	99,500				0.774	151,919	1.091																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.70	594.5	306.4	103,848				0.756	159,411	1.130																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.80	614.9	316.8	108,196				0.738	166,903	1.169																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	3.90	635.3	327.2	112,544				0.720	174,395	1.208																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	4.10	676.1	348.0	121,240				0.684	189,379	1.286																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	4.20	696.5	358.4	125,588				0.666	196,871	1.325																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	4.50	757.7	389.6	141,632				0.612	219,347	1.442																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	4.60	778.1	390.0	146,980				0.594	226,839	1.481																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	4.80	818.9	410.8	157,676				0.558	241,823	1.559																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	5.30	920.9	462.8	184,416				0.468	279,283	1.754																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	5.40	941.3	473.2	189,764				0.450	286,775	1.793																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	5.50	961.7	483.6	195,112				0.432	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	5.60	982.1	494.0	195,112				0.414	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	5.70	1002.5	504.4	195,112				0.396	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	5.80	1022.9	514.8	195,112				0.378	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	6.00	1063.7	535.6	195,112				0.342	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	6.30	1124.9	566.8	195,112				0.288	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	6.60	1186.1	598.0	195,112				0.234	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	6.70	1206.5	608.4	195,112				0.216	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	6.80	1226.9	618.8	195,112				0.198	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	6.90	1247.3	629.2	195,112				0.180	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.00	1267.7	639.6	195,112				0.162	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.10	1288.1	650.0	195,112				0.144	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.20	1308.5	660.4	195,112				0.126	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.30	1328.9	670.8	195,112				0.108	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.40	1349.3	681.2	195,112				0.090	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.50	1369.7	691.6	195,112				0.072	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.60	1390.1	702.0	195,112				0.054	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.70	1410.5	712.4	195,112				0.036	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.80	1430.9	722.8	195,112				0.018	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	7.90	1451.3	733.2	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	8.00	1471.7	743.6	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	8.10	1492.1	754.0	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	8.20	1512.5	764.4	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	8.30	1532.9	774.8	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	8.60	1594.1	806.0	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	8.80	1634.9	826.8	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	9.00	1675.7	847.6	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	9.30	1736.9	878.8	195,112				0.000	294,267	1.832																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	9.70	1818.5	919.4	195,112				0.000	294,267	1.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

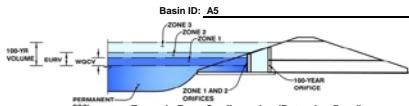
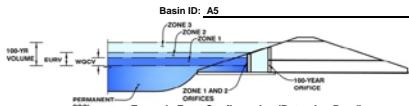
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



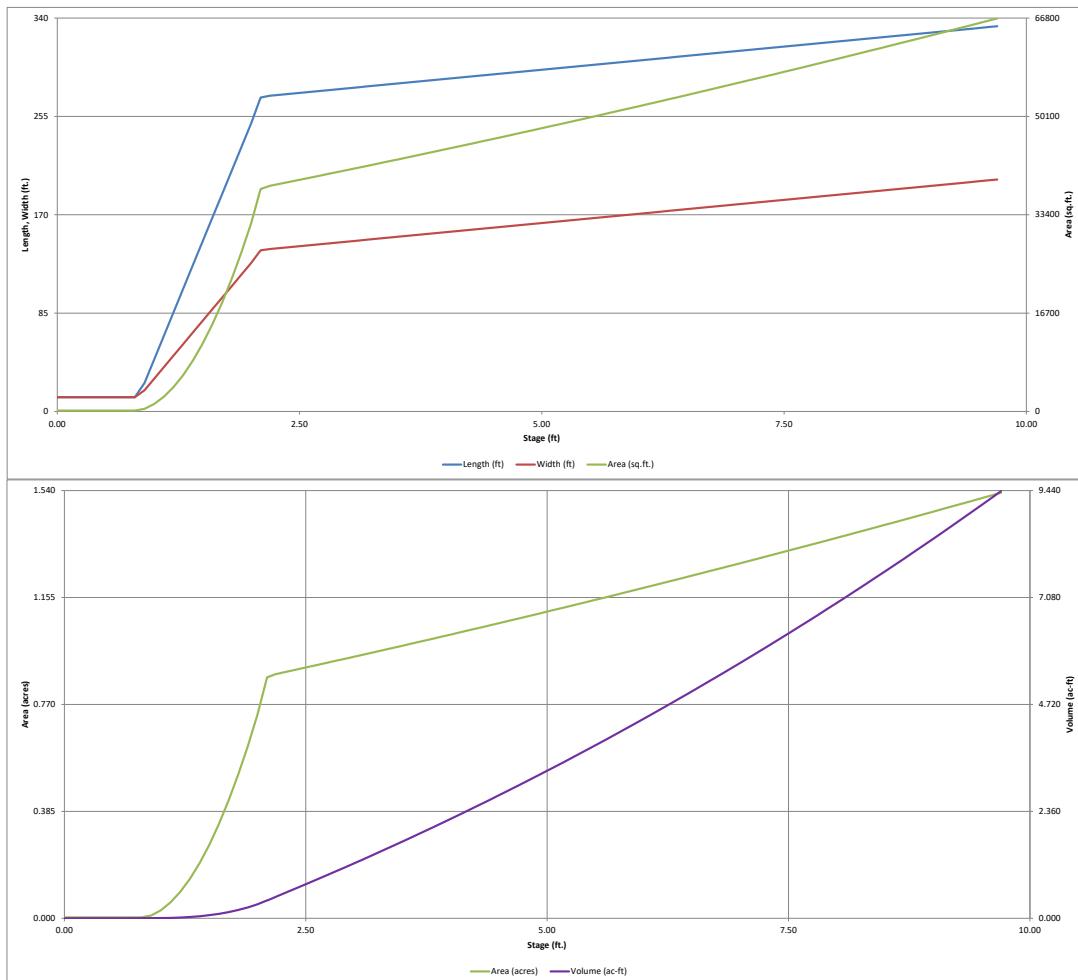
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UD-Detention, Version 3.07 (February 2017)

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<td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group B =</td> <td style="text-align: center;">0.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Groups C/D =</td> <td style="text-align: center;">100.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Desired WQCV Drain Time =</td> <td style="text-align: center;">40.0</td> <td>hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Location for 1-hr Rainfall Depths =</td> <td colspan="8">User Input</td> </tr> <tr> <td>Water Quality Capture Volume (WQCV) =</td> <td style="text-align: center;">0.383</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excess Urban Runoff Volume (EURV) =</td> <td style="text-align: center;">0.468</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2-yr Runoff Volume (P1 = 1.19 in.) =</td> <td style="text-align: center;">0.381</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5-yr Runoff Volume (P1 = 1.5 in.) =</td> <td style="text-align: center;">1.655</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>50-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>100-yr Runoff Volume (P1 = 0.52 in.) =</td> <td style="text-align: center;">24.208</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 2-yr Detention Volume =</td> <td style="text-align: center;">0.355</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 5-yr Detention Volume =</td> <td style="text-align: center;">1.604</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 10-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 25-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 50-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 100-yr Detention Volume =</td> <td style="text-align: center;">4.400</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									Selected BMP Type =	EDB								Watershed Area =	199.14	acres							Watershed Length =	4,884	ft							Watershed Slope =	0.014	ft/ft							Watershed Imperviousness =	3.10%	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) =	0.383	acre-feet							Excess Urban Runoff Volume (EURV) =	0.468	acre-feet							2-yr Runoff Volume (P1 = 1.19 in.) =	0.381	acre-feet							5-yr Runoff Volume (P1 = 1.5 in.) =	1.655	acre-feet							10-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							50-yr Runoff Volume (P1 = 0 in.) 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style="text-align: center;">152</td> <td></td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">59</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.50</td> <td></td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">152</td> <td></td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">74</td> <td style="text-align: center;">0.002</td> </tr> <tr> <td></td> <td style="text-align: center;">0.60</td> <td></td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">152</td> <td></td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">89</td> <td style="text-align: center;">0.002</td> </tr> <tr> <td></td> <td style="text-align: center;">0.70</td> <td></td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">12.3</td> 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center;">28.3</td> <td style="text-align: center;">1,273</td> <td></td> <td style="text-align: center;">0.029</td> <td style="text-align: center;">226</td> <td style="text-align: center;">0.005</td> </tr> <tr> <td></td> <td style="text-align: center;">1.10</td> <td></td> <td style="text-align: center;">65.4</td> <td style="text-align: center;">38.3</td> <td style="text-align: center;">2,504</td> <td></td> <td style="text-align: center;">0.057</td> <td style="text-align: center;">411</td> <td style="text-align: center;">0.009</td> </tr> <tr> <td></td> <td style="text-align: center;">1.20</td> <td></td> <td style="text-align: center;">85.8</td> <td style="text-align: center;">48.3</td> <td style="text-align: center;">4,143</td> <td></td> <td style="text-align: center;">0.095</td> <td style="text-align: center;">740</td> <td style="text-align: center;">0.017</td> </tr> <tr> <td></td> <td style="text-align: center;">1.30</td> <td></td> <td style="text-align: center;">106.2</td> <td style="text-align: center;">58.3</td> <td style="text-align: center;">6,190</td> <td></td> <td style="text-align: center;">0.142</td> <td style="text-align: center;">1,253</td> <td style="text-align: center;">0.029</td> </tr> <tr> <td></td> <td style="text-align: center;">1.40</td> <td></td> <td style="text-align: center;">126.6</td> <td style="text-align: center;">68.3</td> <td style="text-align: center;">8,645</td> <td></td> <td style="text-align: center;">0.198</td> <td style="text-align: center;">1,992</td> <td style="text-align: center;">0.046</td> </tr> <tr> <td></td> <td style="text-align: center;">1.50</td> <td></td> <td style="text-align: center;">147.0</td> <td style="text-align: center;">78.3</td> <td style="text-align: center;">11,508</td> <td></td> <td style="text-align: center;">0.264</td> <td style="text-align: center;">2,996</td> <td style="text-align: center;">0.069</td> </tr> <tr> <td></td> <td style="text-align: center;">1.60</td> <td></td> <td style="text-align: center;">167.4</td> <td style="text-align: center;">88.3</td> <td style="text-align: center;">14,779</td> <td></td> <td style="text-align: center;">0.339</td> <td style="text-align: center;">4,307</td> <td style="text-align: center;">0.099</td> </tr> <tr> <td></td> <td style="text-align: center;">1.70</td> <td></td> <td style="text-align: center;">187.8</td> <td style="text-align: center;">98.3</td> <td style="text-align: center;">18,458</td> <td></td> <td style="text-align: center;">0.424</td> <td style="text-align: center;">5,965</td> <td style="text-align: center;">0.137</td> </tr> <tr> <td></td> <td style="text-align: center;">1.80</td> <td></td> <td style="text-align: center;">208.2</td> <td style="text-align: center;">108.3</td> <td style="text-align: center;">22,545</td> <td></td> <td style="text-align: center;">0.518</td> <td style="text-align: center;">8,012</td> <td style="text-align: center;">0.184</td> </tr> <tr> <td></td> <td style="text-align: center;">1.90</td> <td></td> <td style="text-align: center;">228.6</td> <td style="text-align: center;">118.3</td> <td style="text-align: center;">27,040</td> <td></td> <td style="text-align: center;">0.621</td> <td style="text-align: center;">10,488</td> <td style="text-align: center;">0.241</td> </tr> <tr> <td></td> <td style="text-align: center;">2.00</td> <td></td> <td style="text-align: center;">249.0</td> <td style="text-align: center;">128.3</td> <td style="text-align: center;">31,943</td> <td></td> <td style="text-align: center;">0.733</td> <td style="text-align: center;">13,434</td> <td style="text-align: center;">0.308</td> </tr> <tr> <td></td> <td style="text-align: center;">2.10</td> <td></td> <td style="text-align: center;">269.4</td> <td style="text-align: center;">138.3</td> <td style="text-align: center;">37,254</td> <td></td> <td style="text-align: center;">0.855</td> <td style="text-align: center;">16,890</td> <td style="text-align: center;">0.388</td> </tr> <tr> <td></td> <td style="text-align: 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<td></td> <td style="text-align: center;">1,260</td> <td style="text-align: center;">234,497</td> <td style="text-align: center;">5,383</td> </tr> <tr> <td></td> <td style="text-align: center;">6.90</td> <td></td> <td style="text-align: center;">310.5</td> <td style="text-align: center;">178.1</td> <td style="text-align: center;">55,294</td> <td></td> <td style="text-align: center;">1,269</td> <td style="text-align: center;">240,007</td> <td style="text-align: center;">5,510</td> </tr> <tr> <td></td> <td style="text-align: center;">7.00</td> <td></td> <td style="text-align: center;">311.3</td> <td style="text-align: center;">178.9</td> <td style="text-align: center;">55,686</td> <td></td> <td style="text-align: center;">1,278</td> <td style="text-align: center;">245,556</td> <td style="text-align: center;">5,637</td> </tr> <tr> <td></td> <td style="text-align: center;">7.10</td> <td></td> <td style="text-align: center;">312.1</td> <td style="text-align: center;">179.7</td> <td style="text-align: center;">56,079</td> <td></td> <td style="text-align: center;">1,287</td> <td style="text-align: center;">251,144</td> <td style="text-align: center;">5,765</td> </</tr></table>									Stage - Storage Description	0.1 ft								Top of Micropool	0.00		12.3	12.3	152		0.003		ISV	0.33		12.3	12.3	152		0.003	49	0.001		0.40		12.3	12.3	152		0.003	59	0.001		0.50		12.3	12.3	152		0.003	74	0.002		0.60		12.3	12.3	152		0.003	89	0.002		0.70		12.3	12.3	152		0.003	105	0.002		0.80		12.3	12.3	152		0.003	120	0.003		0.90		24.6	18.3	450		0.010	143	0.003		1.00		45.0	28.3	1,273		0.029	226	0.005		1.10		65.4	38.3	2,504		0.057	411	0.009		1.20		85.8	48.3	4,143		0.095	740	0.017		1.30		106.2	58.3	6,190		0.142	1,253	0.029		1.40		126.6	68.3	8,645		0.198	1,992	0.046		1.50		147.0	78.3	11,508		0.264	2,996	0.069		1.60		167.4	88.3	14,779		0.339	4,307	0.099		1.70		187.8	98.3	18,458		0.424	5,965	0.137		1.80		208.2	108.3	22,545		0.518	8,012	0.184		1.90		228.6	118.3	27,040		0.621	10,488	0.241		2.00		249.0	128.3	31,943		0.733	13,434	0.308		2.10		269.4	138.3	37,254		0.855	16,890	0.388		2.20		279.8	148.3	42,808		0.868	17,266	0.396		2.30		290.2	158.3	48,361		0.895	28,815	0.662		2.40		274.5	162.1	39,001		0.903	32,732	0.751		2.50		275.3	142.9	39,335		0.903				2.60		276.1	143.7	39,670		0.911	36,682	0.842		2.70		276.9	144.5	40,006		0.918	40,666	0.934		2.80		277.7	145.3	40,344		0.926	44,684	1,026		2.90		278.5	146.1	40,683		0.934	48,735	1,119		3.00		279.3	146.9	41,023		0.942	52,820	1,213		3.10		280.1	147.7	41,365		0.950	56,940	1,307		3.20		280.9	148.5	41,708		0.957	61,093	1,403		3.30		281.7	149.3	42,052		0.965	65,281	1,499		3.40		282.5	150.1	42,398		0.973	69,504	1,596		3.50		283.3	150.9	42,744		0.981	73,761	1,693		3.60		284.1	151.7	43,092		0.989	78,053	1,792		3.70		284.9	152.5	43,442		0.997	82,379	1,891		3.80		285.7	153.3	43,792		1,005	86,741	1,991		3.90		286.5	154.1	44,144		1,013	91,138	2,092		4.00		287.3	154.9	44,497		1,022	95,570	2,194		4.10		288.1	155.7	44,851		1,030	100,037	2,297		4.20		288.9	156.5	45,207		1,038	104,540	2,400		4.30		289.7	157.3	45,564		1,046	109,079	2,504		4.40		290.5	158.1	45,922		1,054	113,653	2,609		4.50		291.3	158.9	46,282		1,062	118,263	2,715		4.60		292.1	159.7	46,643		1,071	122,910	2,822		4.70		292.9	160.5	47,005		1,079	127,592	2,929		4.80		293.7	161.3	47,368		1,087	132,311	3,037		4.90		294.5	162.1	47,733		1,096	137,068	3,147		5.00		295.3	162.9	48,099		1,104	141,857	3,257		5.10		296.1	163.7	48,466		1,113	146,685	3,367		5.20		296.9	164.5	48,834		1,121	151,550	3,479		5.30		297.7	165.3	49,192		1,130	156,452	3,582		5.40		298.5	166.1	49,575		1,138	161,391	3,705		5.50		299.3	166.9	49,947		1,147	166,367	3,819		5.60		300.1	167.7	50,321		1,155	171,381	3,934		5.70		300.9	168.5	50,696		1,164	176,432	4,050		5.80		301.7	169.3	51,072		1,172	181,520	4,167		5.90		302.5	169.9	51,444		1,181	186,626	4,285		6.00		303.3	170.5	51,828		1,190	191,810	4,403		6.10		304.1	171.1	52,208		1,199	197,012	4,523		6.20		304.9	172.5	52,589		1,207	202,252	4,643		6.30		305.7	173.3	52,972		1,216	207,530	4,764		6.40		306.5	174.1	53,356		1,225	212,846	4,886		6.50		307.3	174.9	53,741		1,234	218,201	5,009		6.60		308.1	175.7	54,127		1,243	223,544	5,127		6.70		308.9	176.5	54,515		1,251	229,026	5,258		6.80		309.7	177.3	54,894		1,260	234,497	5,383		6.90		310.5	178.1	55,294		1,269	240,007	5,510		7.00		311.3	178.9	55,686		1,278	245,556	5,637		7.10		312.1	179.7	56,079		1,287	251,144	5,765
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	1.60		167.4	88.3	14,779		0.339	4,307	0.099																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	1.80		208.2	108.3	22,545		0.518	8,012	0.184																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.90		228.6	118.3	27,040		0.621	10,488	0.241																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.00		249.0	128.3	31,943		0.733	13,434	0.308																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.10		269.4	138.3	37,254		0.855	16,890	0.388																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	2.70		276.9	144.5	40,006		0.918	40,666	0.934																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.80		277.7	145.3	40,344		0.926	44,684	1,026																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	3.10		280.1	147.7	41,365		0.950	56,940	1,307																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	4.50		291.3	158.9	46,282		1,062	118,263	2,715																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.60		292.1	159.7	46,643		1,071	122,910	2,822																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.70		292.9	160.5	47,005		1,079	127,592	2,929																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.80		293.7	161.3	47,368		1,087	132,311	3,037																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.90		294.5	162.1	47,733		1,096	137,068	3,147																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.00		295.3	162.9	48,099		1,104	141,857	3,257																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.10		296.1	163.7	48,466		1,113	146,685	3,367																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.20		296.9	164.5	48,834		1,121	151,550	3,479																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.30		297.7	165.3	49,192		1,130	156,452	3,582																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.40		298.5	166.1	49,575		1,138	161,391	3,705																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.50		299.3	166.9	49,947		1,147	166,367	3,819																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.60		300.1	167.7	50,321		1,155	171,381	3,934																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.70		300.9	168.5	50,696		1,164	176,432	4,050																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.80		301.7	169.3	51,072		1,172	181,520	4,167																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.90		302.5	169.9	51,444		1,181	186,626	4,285																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.00		303.3	170.5	51,828		1,190	191,810	4,403																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.10		304.1	171.1	52,208		1,199	197,012	4,523																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.20		304.9	172.5	52,589		1,207	202,252	4,643																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.30		305.7	173.3	52,972		1,216	207,530	4,764																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.40		306.5	174.1	53,356		1,225	212,846	4,886																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.50		307.3	174.9	53,741		1,234	218,201	5,009																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.60		308.1	175.7	54,127		1,243	223,544	5,127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.70		308.9	176.5	54,515		1,251	229,026	5,258																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.80		309.7	177.3	54,894		1,260	234,497	5,383																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.90		310.5	178.1	55,294		1,269	240,007	5,510																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	7.00		311.3	178.9	55,686		1,278	245,556	5,637																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	7.10		312.1	179.7	56,079		1,287	251,144	5,765																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

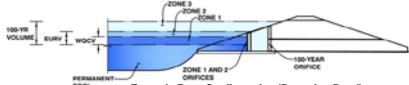
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

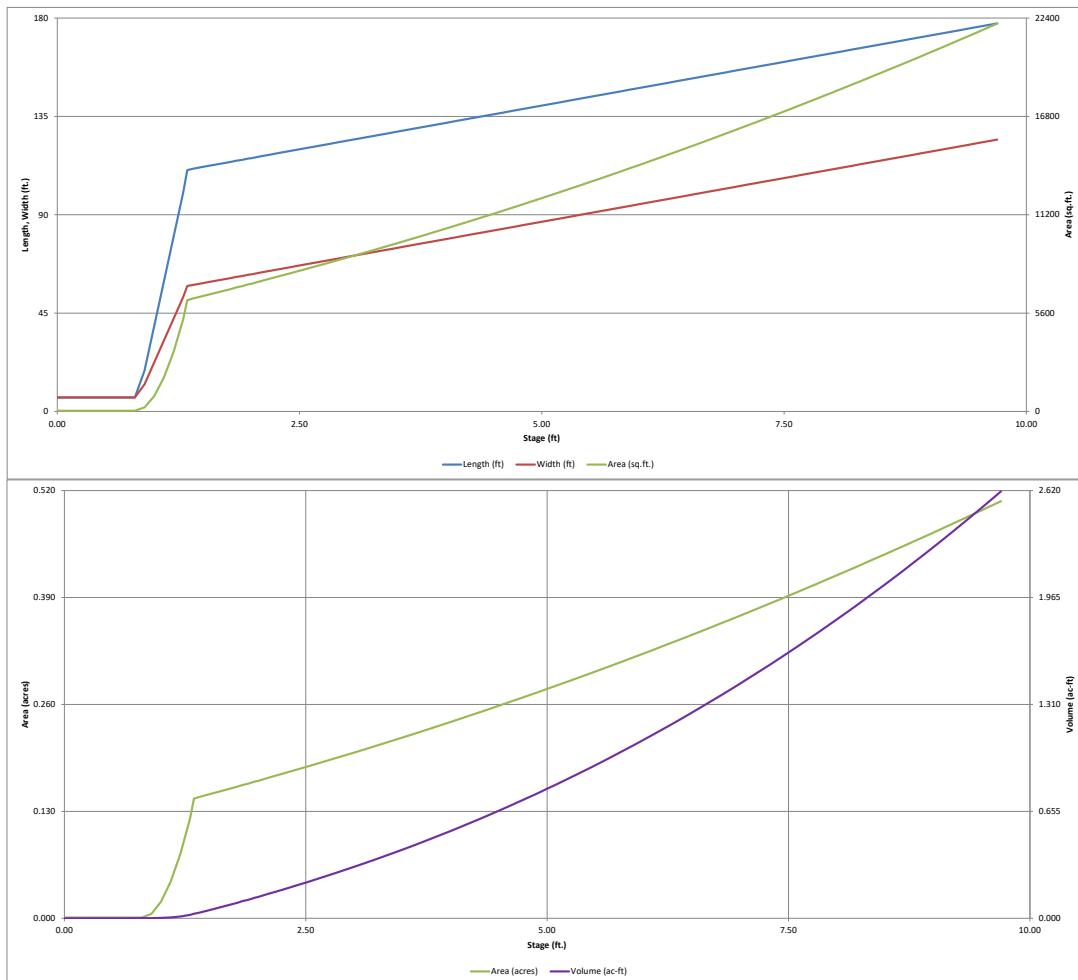
<p style="margin: 0;">Project: <u>Front Range - Midway Solar</u></p> <p style="margin: 0;">Basin ID: <u>A6</u></p>  <p style="margin: 0;">Example Zone Configuration (Retention Pond)</p>																																																																																																																																																																																																																																
<p>Required Volume Calculation</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Selected BMP Type =</td> <td style="width: 15%; text-align: right;">EDB</td> <td style="width: 15%;"></td> </tr> <tr> <td>Watershed Area =</td> <td>47.98</td> <td>acres</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Length =</td> <td>1,777</td> <td>ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Slope =</td> <td>0.014</td> <td>ft/ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Imperviousness =</td> <td>3.50%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group A =</td> <td>5.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group B =</td> <td>0.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Groups C/D =</td> <td>95.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Desired WQCV Drain Time =</td> <td>40.0</td> <td>hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Location for 1-hr Rainfall Depths =</td> <td colspan="7">User Input</td> <td></td> </tr> <tr> <td>Water Quality Capture Volume (WQCV) =</td> <td>0.103</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excess Urban Runoff Volume (EURV) =</td> <td>0.127</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2-yr Runoff Volume (P1 = 1.19 in.) =</td> <td>0.103</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5-yr Runoff Volume (P1 = 1.5 in.) =</td> <td>0.405</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>50-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>100-yr Runoff Volume (P1 = 0.52 in.) =</td> <td>5.636</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 2-yr Detention Volume =</td> <td>0.096</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 5-yr Detention Volume =</td> <td>0.392</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 10-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 25-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 50-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 100-yr Detention Volume =</td> <td>1.092</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									Selected BMP Type =	EDB								Watershed Area =	47.98	acres							Watershed Length =	1,777	ft							Watershed Slope =	0.014	ft/ft							Watershed Imperviousness =	3.50%	percent							Percentage Hydrologic Soil Group A =	5.0%	percent							Percentage Hydrologic Soil Group B =	0.0%	percent							Percentage Hydrologic Soil Groups C/D =	95.0%	percent							Desired WQCV Drain Time =	40.0	hours							Location for 1-hr Rainfall Depths =	User Input								Water Quality Capture Volume (WQCV) =	0.103	acre-feet							Excess Urban Runoff Volume (EURV) =	0.127	acre-feet							2-yr Runoff Volume (P1 = 1.19 in.) =	0.103	acre-feet							5-yr Runoff Volume (P1 = 1.5 in.) =	0.405	acre-feet							10-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							50-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							100-yr Runoff Volume (P1 = 0.52 in.) =	5.636	acre-feet							Approximate 2-yr Detention Volume =	0.096	acre-feet							Approximate 5-yr Detention Volume =	0.392	acre-feet							Approximate 10-yr Detention Volume =	0.000	acre-feet							Approximate 25-yr Detention Volume =	0.000	acre-feet							Approximate 50-yr Detention Volume =	0.000	acre-feet							Approximate 100-yr Detention Volume =	1.092	acre-feet						
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Optional User Override	
	1-hr Precipitation
1.19	inches
1.50	inches
1.60	inches
1.70	inches
1.80	inches
2.52	inches

Depth Increment =	Stage (ft)	Optional Override Stage (ft)	ft			Optional Override Area (ft ²)	Area (acre)	Volume (ft ³)	Volume (ac-ft)
			Length (ft)	Width (ft)	Area (ft ²)				
Top of Micropool	0.00		6.4	6.4	41	0.001			
ISV	0.33		6.4	6.4	41	0.001	13	0.000	
	0.40		6.4	6.4	41	0.001	16	0.000	
	0.50		6.4	6.4	41	0.001	20	0.000	
	0.60		6.4	6.4	41	0.001	24	0.001	
	0.70		6.4	6.4	41	0.001	28	0.001	
	0.80		6.4	6.4	41	0.001	32	0.001	
	0.90		18.6	12.4	231	0.005	41	0.001	
	1.00		39.0	22.4	875	0.020	93	0.002	
	1.10		59.4	32.4	1,926	0.044	230	0.005	
	1.20		79.8	42.4	3,385	0.078	492	0.011	
	1.30		100.2	52.4	5,253	0.121	921	0.021	
	1.34		110.4	57.4	6,340	0.146	1,210	0.028	
Floor	1.40		111.1	57.9	6,433	0.148	1,530	0.035	
	1.50		111.9	58.7	6,568	0.151	2,180	0.050	
	1.60		112.7	59.5	6,706	0.154	2,844	0.065	
	1.70		113.5	60.3	6,844	0.157	3,521	0.081	
	1.80		114.3	61.1	6,984	0.160	4,212	0.097	
Zone 1 (WQCV)	1.84		114.7	61.5	7,054	0.162	4,563	0.105	
	1.90		115.1	61.9	7,125	0.164	4,918	0.113	
Zone 2 (EURV)	1.98		115.8	62.6	7,253	0.166	5,565	0.128	
	2.00		115.9	62.7	7,267	0.167	5,637	0.129	
	2.10		116.8	63.6	7,425	0.170	6,445	0.148	
	2.20		117.6	64.4	7,570	0.174	7,195	0.165	
	2.30		118.4	65.2	7,716	0.177	7,959	0.183	
	2.40		119.2	66.0	7,863	0.181	8,738	0.201	
	2.50		120.0	66.8	8,012	0.184	9,532	0.219	
	2.60		120.8	67.6	8,162	0.187	10,341	0.237	
	2.70		121.6	68.4	8,313	0.191	11,165	0.256	
	2.80		122.4	69.2	8,466	0.194	12,004	0.276	
	2.90		123.2	70.0	8,620	0.198	12,858	0.295	
	3.00		124.0	70.8	8,775	0.201	13,728	0.315	
	3.10		124.8	71.6	8,924	0.205	14,613	0.335	
	3.20		125.6	72.4	9,089	0.209	15,514	0.356	
	3.30		126.4	73.2	9,248	0.212	16,431	0.377	
	3.40		127.2	74.0	9,409	0.216	17,364	0.399	
	3.50		128.0	74.8	9,570	0.220	18,313	0.420	
	3.60		128.8	75.6	9,733	0.223	19,278	0.443	
	3.70		129.6	76.4	9,897	0.227	20,259	0.465	
	3.80		130.4	77.2	10,062	0.231	21,257	0.488	
	3.90		131.2	78.0	10,229	0.235	22,272	0.511	
	4.00		132.0	78.8	10,397	0.239	23,303	0.535	
	4.10		132.8	79.6	10,566	0.243	24,351	0.559	
	4.20		133.6	80.4	10,737	0.246	25,416	0.583	
	4.30		134.4	81.2	10,909	0.250	26,499	0.608	
	4.40		135.2	82.0	11,082	0.254	27,598	0.634	
	4.50		136.0	82.8	11,256	0.258	28,715	0.659	
	4.60		136.8	83.6	11,432	0.262	29,849	0.685	
	4.70		137.6	84.4	11,609	0.266	31,001	0.712	
	4.80		138.4	85.2	11,787	0.271	32,171	0.739	
	4.90		139.2	86.0	11,966	0.275	33,359	0.766	
	5.00		140.0	86.8	12,147	0.279	34,564	0.793	
	5.10		140.8	87.6	12,329	0.283	35,788	0.822	
	5.20		141.6	88.4	12,512	0.287	37,030	0.850	
	5.30		142.4	89.2	12,697	0.291	38,291	0.879	
	5.40		143.2	90.0	12,883	0.296	39,570	0.908	
	5.50		144.0	90.8	13,070	0.300	40,867	0.938	
	5.60		144.8	91.6	13,259	0.304	42,184	0.968	
	5.70		145.6	92.4	13,448	0.309	43,519	0.999	
	5.80		146.4	93.2	13,639	0.313	44,874	1.030	
	5.90		147.2	94.0	13,831	0.316	46,241	1.062	
Zone 3 (100-year)	6.00		148.0	94.8	14,025	0.322	47,640	1.094	
	6.10		148.8	95.6	14,220	0.326	49,052	1.126	
	6.20		149.6	96.4	14,416	0.331	50,484	1.159	
	6.30		150.4	97.2	14,613	0.335	51,935	1.192	
	6.40		151.2	98.0	14,812	0.340	53,407	1.226	
	6.50		152.0	98.8	15,012	0.345	54,988	1.260	
	6.60		152.8	99.6	15,213	0.350	56,578	1.294	
	6.70		153.6	100.4	15,416	0.354	57,941	1.330	
	6.80		154.4	101.2	15,620	0.359	59,492	1.366	
	6.90		155.2	102.0	15,825	0.363	61,065	1.402	
	7.00		156.0	102.8	16,031	0.368	62,657	1.438	
	7.10		156.8	103.6	16,239	0.373	64,271	1.475	
	7.20		157.6	104.4	16,446	0.378	65,896	1.513	
	7.30		158.4	105.2	16,653	0.382	67,560	1.551	
	7.40		159.2	106.0	16,860	0.387	69,237	1.589	
	7.50		160.0	106.8	17,082	0.392	70,934	1.628	
	7.60		160.8	107.6	17,296	0.397	72,653	1.668	
	7.70		161.6	108.4	17,511	0.402	74,394	1.708	
	7.80		162.4	109.2	17,726	0.407	76,146	1.748	
	7.90		163.2	110.0	17,946	0.412	77,939	1.789	
	8.00		164.0	110.8	18,165	0.417	79,745	1.831	
	8.10		164.8	111.6	18,386	0.422	81,572	1.873	
	8.20		165.6	112.4	18,607	0.427	83,422	1.915	
	8.30		166.4	113.2	18,830	0.432	85,294	1.958	
	8.40		167.2	114.0	19,055	0.437	87,166	2.002	
	8.50		168.0	114.8	19,280	0.443	89,046	2.046	
	8.60		168.8	115.6	19,507	0.448	91,044	2.090	
	8.70		169.6	116.4	19,735	0.453	93,006	2.135	
	8.80		170.4	117.2	19,964	0.458	94,991	2.181	
	8.90		171.2	118.0	20,195	0.464	96,999	2.227	
	9.00		172.0	118.8	20,420	0.469	99,000	2.273	
	9.10		172.8	119.6	20,649	0.474	101,004	2.311	
	9.20		173.6	120.4	20,895	0.480	103,162	2.368	
	9.30		174.4	121.2	21,131	0.485	105,263	2.417	
	9.40		175.2	122.0	21,368	0.491	107,388	2.465	
	9.50		176.0	122.8	21,606	0.496	109,537	2.515	
	9.60		176.8	123.6	21,846	0.502	111,710	2.565	
	9.70</								

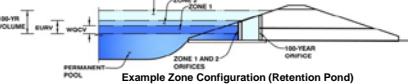
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



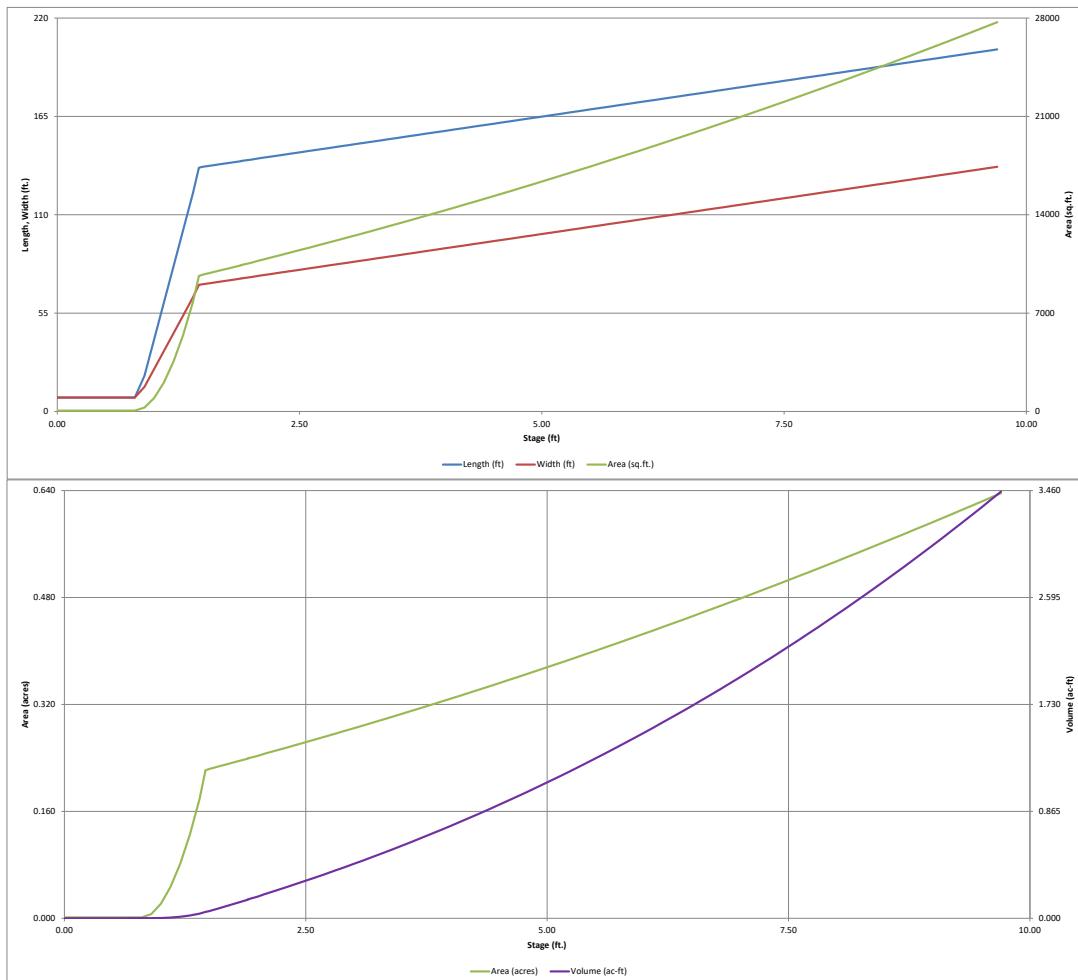
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

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Project: Front Range - Midway Solar Basin ID: A7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Depth Increment =</th> <th style="text-align: center;">0.1 ft</th> <th colspan="7"></th> </tr> <tr> <th style="text-align: left;">Stage - Storage Description</th> <th style="text-align: center;">Stage (ft)</th> <th style="text-align: center;">Optional Override Stage (ft)</th> <th style="text-align: center;">Length (ft)</th> <th style="text-align: center;">Width (ft)</th> <th style="text-align: center;">Area (ft²)</th> <th style="text-align: center;">Optional Override Area (ft²)</th> <th style="text-align: center;">Area (acre)</th> <th style="text-align: center;">Volume (ft³)</th> <th style="text-align: center;">Volume (ac-ft)</th> </tr> </thead> <tbody> <tr> <td>Top of Micropool</td> <td style="text-align: center;">0.00</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td></td> <td></td> </tr> <tr> <td>ISV</td> <td style="text-align: center;">0.33</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">19</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td></td> <td style="text-align: center;">0.40</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">24</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.50</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">30</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.60</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">36</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.70</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">42</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.80</td> <td></td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">61</td> <td></td> <td style="text-align: center;">0.001</td> <td style="text-align: center;">48</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">0.90</td> <td></td> <td style="text-align: center;">20.0</td> <td style="text-align: center;">13.8</td> <td style="text-align: center;">276</td> <td></td> <td style="text-align: center;">0.006</td> <td style="text-align: center;">60</td> <td style="text-align: center;">0.001</td> </tr> <tr> <td></td> <td style="text-align: center;">1.00</td> <td></td> <td style="text-align: center;">40.4</td> <td style="text-align: center;">23.8</td> <td style="text-align: center;">961</td> <td></td> <td style="text-align: center;">0.022</td> <td style="text-align: center;">118</td> <td style="text-align: center;">0.003</td> </tr> <tr> <td></td> <td style="text-align: center;">1.10</td> <td></td> <td style="text-align: center;">60.8</td> <td style="text-align: center;">33.8</td> <td style="text-align: center;">2,054</td> <td></td> <td style="text-align: center;">0.047</td> <td style="text-align: center;">265</td> <td style="text-align: center;">0.006</td> </tr> <tr> <td></td> <td style="text-align: center;">1.20</td> <td></td> <td style="text-align: center;">81.2</td> <td style="text-align: center;">43.8</td> <td style="text-align: center;">3,556</td> <td></td> <td style="text-align: center;">0.082</td> <td style="text-align: center;">543</td> <td style="text-align: center;">0.012</td> </tr> <tr> <td></td> <td style="text-align: center;">1.30</td> <td></td> <td style="text-align: center;">101.6</td> <td style="text-align: center;">53.8</td> <td style="text-align: center;">5,465</td> <td></td> <td style="text-align: center;">0.125</td> <td style="text-align: center;">990</td> <td style="text-align: center;">0.023</td> </tr> <tr> <td></td> <td style="text-align: center;">1.40</td> <td></td> <td style="text-align: center;">122.0</td> <td style="text-align: center;">63.8</td> <td style="text-align: center;">7,782</td> <td></td> <td style="text-align: center;">0.179</td> <td style="text-align: center;">1,649</td> <td style="text-align: center;">0.038</td> </tr> <tr> <td></td> <td style="text-align: center;">1.50</td> <td></td> <td style="text-align: center;">136.3</td> <td style="text-align: center;">70.8</td> <td style="text-align: center;">9,647</td> <td></td> <td style="text-align: center;">0.221</td> <td style="text-align: center;">2,258</td> <td style="text-align: center;">0.052</td> </tr> <tr> <td></td> <td style="text-align: center;">1.60</td> <td></td> <td style="text-align: center;">136.8</td> <td style="text-align: center;">71.1</td> <td style="text-align: center;">9,734</td> <td></td> <td style="text-align: center;">0.223</td> <td style="text-align: center;">2,549</td> <td style="text-align: center;">0.059</td> </tr> <tr> <td></td> <td style="text-align: center;">1.70</td> <td></td> <td style="text-align: center;">138.4</td> <td style="text-align: center;">72.7</td> <td style="text-align: center;">10,069</td> <td></td> <td style="text-align: center;">0.231</td> <td style="text-align: center;">4,529</td> <td style="text-align: center;">0.104</td> </tr> <tr> <td></td> <td style="text-align: center;">1.80</td> <td></td> <td style="text-align: center;">139.2</td> <td style="text-align: center;">73.5</td> <td style="text-align: center;">10,239</td> <td></td> <td style="text-align: center;">0.235</td> <td style="text-align: center;">5,545</td> <td style="text-align: center;">0.127</td> </tr> <tr> <td></td> <td style="text-align: center;">1.90</td> <td></td> <td style="text-align: center;">140.0</td> <td style="text-align: center;">74.3</td> <td style="text-align: center;">10,410</td> <td></td> <td style="text-align: center;">0.239</td> <td style="text-align: center;">6,577</td> <td style="text-align: center;">0.151</td> </tr> <tr> <td></td> <td style="text-align: center;">2.00</td> <td></td> <td style="text-align: center;">140.8</td> <td style="text-align: center;">75.1</td> <td style="text-align: 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<td style="text-align: center;">11,124</td> <td></td> <td style="text-align: center;">0.255</td> <td style="text-align: center;">10,991</td> <td style="text-align: center;">0.252</td> </tr> <tr> <td></td> <td style="text-align: center;">2.40</td> <td></td> <td style="text-align: center;">144.1</td> <td style="text-align: center;">78.4</td> <td style="text-align: center;">11,301</td> <td></td> <td style="text-align: center;">0.259</td> <td style="text-align: center;">12,112</td> <td style="text-align: center;">0.278</td> </tr> <tr> <td></td> <td style="text-align: center;">2.50</td> <td></td> <td style="text-align: center;">144.9</td> <td style="text-align: center;">79.2</td> <td style="text-align: center;">11,480</td> <td></td> <td style="text-align: center;">0.264</td> <td style="text-align: center;">13,251</td> <td style="text-align: center;">0.304</td> </tr> <tr> <td></td> <td style="text-align: center;">2.60</td> <td></td> <td style="text-align: center;">145.7</td> <td style="text-align: center;">80.0</td> <td style="text-align: center;">11,660</td> <td></td> <td style="text-align: center;">0.268</td> <td style="text-align: center;">14,408</td> <td style="text-align: center;">0.331</td> </tr> <tr> <td></td> <td style="text-align: center;">2.70</td> <td></td> <td style="text-align: center;">146.5</td> <td style="text-align: center;">80.8</td> <td style="text-align: center;">11,841</td> <td></td> <td style="text-align: center;">0.272</td> <td style="text-align: center;">15,583</td> <td style="text-align: center;">0.358</td> </tr> <tr> <td></td> <td style="text-align: center;">2.80</td> <td></td> <td style="text-align: center;">147.3</td> <td style="text-align: center;">81.6</td> <td style="text-align: center;">12,023</td> <td></td> <td style="text-align: center;">0.276</td> <td style="text-align: center;">16,776</td> <td style="text-align: center;">0.385</td> </tr> <tr> <td></td> <td style="text-align: center;">2.90</td> <td></td> <td 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center;">3.20</td> <td></td> <td style="text-align: center;">150.5</td> <td style="text-align: center;">84.8</td> <td style="text-align: center;">12,766</td> <td></td> <td style="text-align: center;">0.293</td> <td style="text-align: center;">21,733</td> <td style="text-align: center;">0.499</td> </tr> <tr> <td></td> <td style="text-align: center;">3.30</td> <td></td> <td style="text-align: center;">151.3</td> <td style="text-align: center;">85.6</td> <td style="text-align: center;">12,955</td> <td></td> <td style="text-align: center;">0.297</td> <td style="text-align: center;">23,019</td> <td style="text-align: center;">0.528</td> </tr> <tr> <td></td> <td style="text-align: center;">3.40</td> <td></td> <td style="text-align: center;">152.1</td> <td style="text-align: center;">86.4</td> <td style="text-align: center;">13,145</td> <td></td> <td style="text-align: center;">0.302</td> <td style="text-align: center;">24,324</td> <td style="text-align: center;">0.558</td> </tr> <tr> <td></td> <td style="text-align: center;">3.50</td> <td></td> <td style="text-align: center;">152.9</td> <td style="text-align: center;">87.2</td> <td style="text-align: center;">13,337</td> <td></td> <td style="text-align: center;">0.306</td> <td style="text-align: center;">25,648</td> <td style="text-align: center;">0.589</td> </tr> <tr> <td></td> <td style="text-align: center;">3.60</td> <td></td> <td style="text-align: center;">153.7</td> <td style="text-align: center;">88.0</td> <td style="text-align: center;">13,529</td> <td></td> <td style="text-align: center;">0.311</td> <td style="text-align: center;">26,992</td> <td style="text-align: center;">0.620</td> </tr> <tr> <td></td> <td style="text-align: center;">3.70</td> <td></td> <td style="text-align: center;">154.5</td> <td style="text-align: center;">88.8</td> <td style="text-align: center;">13,723</td> <td></td> <td style="text-align: center;">0.315</td> <td style="text-align: center;">28,354</td> <td style="text-align: center;">0.651</td> </tr> <tr> <td></td> <td style="text-align: center;">3.80</td> <td></td> <td style="text-align: center;">155.3</td> <td style="text-align: center;">89.6</td> <td style="text-align: center;">13,919</td> <td></td> <td style="text-align: center;">0.320</td> <td style="text-align: center;">29,736</td> <td style="text-align: center;">0.683</td> </tr> <tr> <td></td> <td style="text-align: center;">3.90</td> <td></td> <td style="text-align: center;">156.1</td> <td style="text-align: center;">90.4</td> <td style="text-align: center;">14,115</td> <td></td> <td style="text-align: center;">0.324</td> <td style="text-align: center;">31,138</td> <td style="text-align: center;">0.715</td> </tr> <tr> <td></td> <td style="text-align: center;">4.00</td> <td></td> <td style="text-align: center;">156.9</td> <td style="text-align: center;">91.2</td> <td style="text-align: center;">14,313</td> <td></td> <td style="text-align: center;">0.329</td> <td style="text-align: center;">32,560</td> <td style="text-align: center;">0.747</td> </tr> <tr> <td></td> <td style="text-align: center;">4.10</td> <td></td> <td style="text-align: center;">157.7</td> <td style="text-align: center;">92.0</td> <td style="text-align: center;">14,512</td> <td></td> <td style="text-align: center;">0.333</td> <td style="text-align: center;">34,001</td> <td style="text-align: center;">0.781</td> </tr> <tr> <td></td> <td style="text-align: center;">4.20</td> <td></td> <td style="text-align: center;">158.5</td> <td style="text-align: center;">92.8</td> <td style="text-align: center;">14,713</td> <td></td> <td style="text-align: center;">0.338</td> <td style="text-align: center;">35,462</td> <td style="text-align: center;">0.814</td> </tr> <tr> <td></td> <td style="text-align: center;">4.30</td> <td></td> <td style="text-align: center;">159.3</td> <td style="text-align: center;">93.6</td> <td style="text-align: center;">14,914</td> <td></td> <td style="text-align: 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<td></td> <td style="text-align: center;">0.356</td> <td style="text-align: center;">41,509</td> <td style="text-align: center;">0.953</td> </tr> <tr> <td></td> <td style="text-align: center;">4.70</td> <td></td> <td style="text-align: center;">162.5</td> <td style="text-align: center;">96.8</td> <td style="text-align: center;">15,734</td> <td></td> <td style="text-align: center;">0.361</td> <td style="text-align: center;">43,072</td> <td style="text-align: center;">0.989</td> </tr> <tr> <td></td> <td style="text-align: center;">4.80</td> <td></td> <td style="text-align: center;">163.3</td> <td style="text-align: center;">97.6</td> <td style="text-align: center;">15,942</td> <td></td> <td style="text-align: center;">0.366</td> <td style="text-align: center;">44,656</td> <td style="text-align: center;">1.025</td> </tr> <tr> <td></td> <td style="text-align: center;">4.90</td> <td></td> <td style="text-align: center;">164.1</td> <td style="text-align: center;">98.4</td> <td style="text-align: center;">16,151</td> <td></td> <td style="text-align: center;">0.371</td> <td style="text-align: center;">46,261</td> <td style="text-align: center;">1.062</td> </tr> <tr> <td></td> <td style="text-align: center;">5.00</td> <td></td> <td style="text-align: center;">164.9</td> <td style="text-align: center;">99.2</td> <td style="text-align: center;">16,362</td> <td></td> <td style="text-align: center;">0.376</td> <td style="text-align: center;">47,887</td> <td style="text-align: center;">1.099</td> </tr> <tr> <td></td> <td style="text-align: center;">5.10</td> <td></td> <td style="text-align: center;">165.7</td> <td style="text-align: center;">100.0</td> <td style="text-align: center;">16,574</td> <td></td> <td style="text-align: center;">0.380</td> <td style="text-align: center;">49,533</td> <td style="text-align: center;">1.137</td> </tr> <tr> <td></td> <td style="text-align: center;">5.20</td> <td></td> <td style="text-align: center;">166.5</td> <td style="text-align: center;">100.8</td> <td style="text-align: center;">16,787</td> <td></td> <td style="text-align: center;">0.385</td> <td style="text-align: center;">51,201</td> <td style="text-align: center;">1.175</td> </tr> <tr> <td></td> <td style="text-align: center;">5.30</td> <td></td> <td style="text-align: center;">167.3</td> <td style="text-align: center;">101.6</td> <td style="text-align: center;">16,992</td> <td></td> <td style="text-align: center;">0.390</td> <td style="text-align: center;">52,891</td> <td style="text-align: center;">1.214</td> </tr> <tr> <td></td> <td style="text-align: center;">5.40</td> <td></td> <td style="text-align: center;">168.1</td> <td style="text-align: center;">102.4</td> <td style="text-align: center;">17,218</td> <td></td> <td style="text-align: center;">0.395</td> <td style="text-align: center;">54,602</td> <td style="text-align: center;">1.253</td> </tr> <tr> <td></td> <td style="text-align: center;">5.50</td> <td></td> <td style="text-align: center;">168.9</td> <td style="text-align: center;">103.2</td> <td style="text-align: center;">17,435</td> <td></td> <td style="text-align: center;">0.400</td> <td style="text-align: center;">56,334</td> <td style="text-align: center;">1.293</td> </tr> <tr> <td></td> <td style="text-align: center;">5.60</td> <td></td> <td style="text-align: center;">169.7</td> <td style="text-align: center;">104.0</td> <td style="text-align: center;">17,653</td> <td></td> <td style="text-align: center;">0.405</td> <td style="text-align: center;">58,089</td> <td style="text-align: center;">1.344</td> </tr> <tr> <td></td> <td style="text-align: center;">5.70</td> <td></td> <td style="text-align: center;">170.5</td> <td style="text-align: center;">104.8</td> <td style="text-align: center;">17,873</td> <td></td> <td style="text-align: center;">0.410</td> <td style="text-align: center;">59,865</td> <td style="text-align: center;">1.374</td> </tr> <tr> <td></td> <td style="text-align: center;">5.80</td> <td></td> <td style="text-align: center;">171.3</td> <td style="text-align: center;">105.6</td> <td style="text-align: center;">18,093</td> <td></td> <td style="text-align: center;">0.415</td> <td style="text-align: center;">61,683</td> <td style="text-align: center;">1.416</td> </tr> <tr> <td></td> <td style="text-align: center;">5.90</td> <td></td> <td style="text-align: center;">172.1</td> <td style="text-align: center;">106.4</td> <td style="text-align: center;">18,315</td> <td></td> <td style="text-align: center;">0.420</td> <td style="text-align: center;">63,544</td> <td style="text-align: center;">1.457</td> </tr> <tr> <td></td> <td style="text-align: center;">6.00</td> <td></td> <td style="text-align: center;">172.9</td> <td style="text-align: center;">107.2</td> <td style="text-align: center;">18,539</td> <td></td> <td style="text-align: center;">0.426</td> <td style="text-align: center;">65,326</td> <td style="text-align: center;">1.500</td> </tr> <tr> <td></td> <td style="text-align: center;">6.10</td> <td></td> <td style="text-align: center;">173.7</td> <td style="text-align: center;">108.0</td> <td style="text-align: center;">18,764</td> <td></td> <td style="text-align: center;">0.431</td> <td style="text-align: center;">67,192</td> <td style="text-align: center;">1.543</td> </tr> <tr> <td></td> <td style="text-align: center;">6.20</td> <td></td> <td style="text-align: center;">174.5</td> <td style="text-align: center;">108.8</td> <td style="text-align: center;">18,990</td> <td></td> <td style="text-align: center;">0.436</td> <td style="text-align: center;">69,079</td> <td style="text-align: center;">1.586</td> </tr> <tr> <td></td> <td style="text-align: center;">6.30</td> <td></td> <td style="text-align: center;">175.3</td> <td style="text-align: center;">109.6</td> <td style="text-align: center;">19,217</td> <td></td> <td style="text-align: center;">0.441</td> <td style="text-align: center;">70,990</td> <td style="text-align: center;">1.630</td> </tr> <tr> <td></td> <td style="text-align: center;">6.40</td> <td></td> <td style="text-align: center;">176.1</td> <td style="text-align: center;">110.4</td> <td style="text-align: center;">19,446</td> <td></td> <td style="text-align: center;">0.446</td> <td style="text-align: center;">72,923</td> <td style="text-align: center;">1.674</td> </tr> <tr> <td></td> <td style="text-align: center;">6.50</td> <td></td> <td style="text-align: center;">176.9</td> <td style="text-align: center;">111.2</td> <td style="text-align: center;">19,676</td> <td></td> <td style="text-align: center;">0.452</td> <td style="text-align: center;">74,879</td> <td style="text-align: center;">1.719</td> </tr> <tr> <td></td> <td style="text-align: center;">6.60</td> <td></td> <td style="text-align: center;">177.7</td> <td style="text-align: center;">112.0</td> <td style="text-align: center;">19,907</td> <td></td> <td style="text-align: center;">0.457</td> <td style="text-align: center;">76,860</td> <td style="text-align: center;">1.810</td> </tr> <tr> <td></td> <td style="text-align: center;">6.80</td> <td></td> <td style="text-align: center;">179.3</td> <td style="text-align: center;">113.6</td> <td style="text-align: center;">20,373</td> <td></td> <td style="text-align: center;">0.468</td> <td style="text-align: center;">78,836</td> <td style="text-align: center;">1.857</td> </tr> <tr> <td></td> <td style="text-align: center;">6.90</td> <td></td> <td style="text-align: center;">180.1</td> <td style="text-align: center;">114.4</td> <td style="text-align: center;">20,608</td> <td></td> <td style="text-align: center;">0.473</td> <td style="text-align: center;">80,835</td> <td style="text-align: center;">1.904</td> </tr> <tr> <td></td> <td style="text-align: center;">7.00</td> <td></td> <td style="text-align: center;">180.9</td> <td style="text-align: center;">115.2</td> <td style="text-align: center;">20,844</td> <td></td> <td style="text-align: center;">0.479</td> <td style="text-align: center;">82,835</td> <td style="text-align: center;">1.951</td> </tr> <tr> <td></td> <td style="text-align: center;">7.10</td> <td></td> <td style="text-align: center;">181.7</td> <td style="text-align: center;">116.0</td> <td style="text-align: center;">21,082</td> <td></td> <td style="text-align: center;">0.484</td> <td style="text-align: center;">84,844</td> <td style="text-align: center;">2.000</td> </tr> <tr> <td></td> <td style="text-align: center;">7.20</td> <td></td> <td style="text-align: center;">182.5</td> <td style="text-align: center;">116.8</td> <td style="text-align: center;">21,320</td> <td></td> <td style="text-align: center;">0.489</td> <td style="text-align: center;">86,864</td> <td style="text-align: center;">2.049</td> </tr> <tr> <td></td> <td style="text-align: center;">7.30</td> <td></td> <td style="text-align: center;">183.3</td> <td style="text-align: center;">117.6</td> <td style="text-align: center;">21,560</td> <td></td> <td style="text-align: center</tr></tbody></table>									Depth Increment =	0.1 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		7.8	7.8	61		0.001			ISV	0.33		7.8	7.8	61		0.001	19	0.000		0.40		7.8	7.8	61		0.001	24	0.001		0.50		7.8	7.8	61		0.001	30	0.001		0.60		7.8	7.8	61		0.001	36	0.001		0.70		7.8	7.8	61		0.001	42	0.001		0.80		7.8	7.8	61		0.001	48	0.001		0.90		20.0	13.8	276		0.006	60	0.001		1.00		40.4	23.8	961		0.022	118	0.003		1.10		60.8	33.8	2,054		0.047	265	0.006		1.20		81.2	43.8	3,556		0.082	543	0.012		1.30		101.6	53.8	5,465		0.125	990	0.023		1.40		122.0	63.8	7,782		0.179	1,649	0.038		1.50		136.3	70.8	9,647		0.221	2,258	0.052		1.60		136.8	71.1	9,734		0.223	2,549	0.059		1.70		138.4	72.7	10,069		0.231	4,529	0.104		1.80		139.2	73.5	10,239		0.235	5,545	0.127		1.90		140.0	74.3	10,410		0.239	6,577	0.151		2.00		140.8	75.1	10,582		0.243	7,627	0.175		2.10		141.7	76.0	10,773		0.247	8,801	0.202		2.20		142.5	76.8	10,948		0.251	9,887	0.227		2.30		143.3	77.6	11,124		0.255	10,991	0.252		2.40		144.1	78.4	11,301		0.259	12,112	0.278		2.50		144.9	79.2	11,480		0.264	13,251	0.304		2.60		145.7	80.0	11,660		0.268	14,408	0.331		2.70		146.5	80.8	11,841		0.272	15,583	0.358		2.80		147.3	81.6	12,023		0.276	16,776	0.385		2.90		148.1	82.4	12,207		0.280	17,988	0.413		3.00		148.9	83.2	12,392		0.284	19,218	0.441		3.10		149.7	84.0	12,578		0.289	20,466	0.470		3.20		150.5	84.8	12,766		0.293	21,733	0.499		3.30		151.3	85.6	12,955		0.297	23,019	0.528		3.40		152.1	86.4	13,145		0.302	24,324	0.558		3.50		152.9	87.2	13,337		0.306	25,648	0.589		3.60		153.7	88.0	13,529		0.311	26,992	0.620		3.70		154.5	88.8	13,723		0.315	28,354	0.651		3.80		155.3	89.6	13,919		0.320	29,736	0.683		3.90		156.1	90.4	14,115		0.324	31,138	0.715		4.00		156.9	91.2	14,313		0.329	32,560	0.747		4.10		157.7	92.0	14,512		0.333	34,001	0.781		4.20		158.5	92.8	14,713		0.338	35,462	0.814		4.30		159.3	93.6	14,914		0.342	36,943	0.848		4.40		160.1	94.4	15,117		0.347	38,445	0.883		4.50		160.9	95.2	15,322		0.352	39,967	0.918		4.60		161.7	96.0	15,527		0.356	41,509	0.953		4.70		162.5	96.8	15,734		0.361	43,072	0.989		4.80		163.3	97.6	15,942		0.366	44,656	1.025		4.90		164.1	98.4	16,151		0.371	46,261	1.062		5.00		164.9	99.2	16,362		0.376	47,887	1.099		5.10		165.7	100.0	16,574		0.380	49,533	1.137		5.20		166.5	100.8	16,787		0.385	51,201	1.175		5.30		167.3	101.6	16,992		0.390	52,891	1.214		5.40		168.1	102.4	17,218		0.395	54,602	1.253		5.50		168.9	103.2	17,435		0.400	56,334	1.293		5.60		169.7	104.0	17,653		0.405	58,089	1.344		5.70		170.5	104.8	17,873		0.410	59,865	1.374		5.80		171.3	105.6	18,093		0.415	61,683	1.416		5.90		172.1	106.4	18,315		0.420	63,544	1.457		6.00		172.9	107.2	18,539		0.426	65,326	1.500		6.10		173.7	108.0	18,764		0.431	67,192	1.543		6.20		174.5	108.8	18,990		0.436	69,079	1.586		6.30		175.3	109.6	19,217		0.441	70,990	1.630		6.40		176.1	110.4	19,446		0.446	72,923	1.674		6.50		176.9	111.2	19,676		0.452	74,879	1.719		6.60		177.7	112.0	19,907		0.457	76,860	1.810		6.80		179.3	113.6	20,373		0.468	78,836	1.857		6.90		180.1	114.4	20,608		0.473	80,835	1.904		7.00		180.9	115.2	20,844		0.479	82,835	1.951		7.10		181.7	116.0	21,082		0.484	84,844	2.000		7.20		182.5	116.8	21,320		0.489	86,864	2.049		7.30		183.3	117.6	21,560	
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	0.70		7.8	7.8	61		0.001	42	0.001																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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	0.90		20.0	13.8	276		0.006	60	0.001																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.00		40.4	23.8	961		0.022	118	0.003																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.10		60.8	33.8	2,054		0.047	265	0.006																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.20		81.2	43.8	3,556		0.082	543	0.012																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.30		101.6	53.8	5,465		0.125	990	0.023																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.40		122.0	63.8	7,782		0.179	1,649	0.038																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.50		136.3	70.8	9,647		0.221	2,258	0.052																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.60		136.8	71.1	9,734		0.223	2,549	0.059																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.70		138.4	72.7	10,069		0.231	4,529	0.104																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.80		139.2	73.5	10,239		0.235	5,545	0.127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.90		140.0	74.3	10,410		0.239	6,577	0.151																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.00		140.8	75.1	10,582		0.243	7,627	0.175																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.10		141.7	76.0	10,773		0.247	8,801	0.202																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.20		142.5	76.8	10,948		0.251	9,887	0.227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.30		143.3	77.6	11,124		0.255	10,991	0.252																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.40		144.1	78.4	11,301		0.259	12,112	0.278																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.50		144.9	79.2	11,480		0.264	13,251	0.304																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.60		145.7	80.0	11,660		0.268	14,408	0.331																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.70		146.5	80.8	11,841		0.272	15,583	0.358																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.80		147.3	81.6	12,023		0.276	16,776	0.385																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.90		148.1	82.4	12,207		0.280	17,988	0.413																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.00		148.9	83.2	12,392		0.284	19,218	0.441																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.10		149.7	84.0	12,578		0.289	20,466	0.470																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.20		150.5	84.8	12,766		0.293	21,733	0.499																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.30		151.3	85.6	12,955		0.297	23,019	0.528																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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	3.50		152.9	87.2	13,337		0.306	25,648	0.589																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.60		153.7	88.0	13,529		0.311	26,992	0.620																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.70		154.5	88.8	13,723		0.315	28,354	0.651																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.80		155.3	89.6	13,919		0.320	29,736	0.683																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.90		156.1	90.4	14,115		0.324	31,138	0.715																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.00		156.9	91.2	14,313		0.329	32,560	0.747																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.10		157.7	92.0	14,512		0.333	34,001	0.781																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.20		158.5	92.8	14,713		0.338	35,462	0.814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.30		159.3	93.6	14,914		0.342	36,943	0.848																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.40		160.1	94.4	15,117		0.347	38,445	0.883																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.50		160.9	95.2	15,322		0.352	39,967	0.918																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.60		161.7	96.0	15,527		0.356	41,509	0.953																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.70		162.5	96.8	15,734		0.361	43,072	0.989																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.80		163.3	97.6	15,942		0.366	44,656	1.025																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.90		164.1	98.4	16,151		0.371	46,261	1.062																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.00		164.9	99.2	16,362		0.376	47,887	1.099																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.10		165.7	100.0	16,574		0.380	49,533	1.137																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.20		166.5	100.8	16,787		0.385	51,201	1.175																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.30		167.3	101.6	16,992		0.390	52,891	1.214																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.40		168.1	102.4	17,218		0.395	54,602	1.253																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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	5.60		169.7	104.0	17,653		0.405	58,089	1.344																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.70		170.5	104.8	17,873		0.410	59,865	1.374																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.80		171.3	105.6	18,093		0.415	61,683	1.416																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.90		172.1	106.4	18,315		0.420	63,544	1.457																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.00		172.9	107.2	18,539		0.426	65,326	1.500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.10		173.7	108.0	18,764		0.431	67,192	1.543																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.20		174.5	108.8	18,990		0.436	69,079	1.586																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.30		175.3	109.6	19,217		0.441	70,990	1.630																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.40		176.1	110.4	19,446		0.446	72,923	1.674																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.50		176.9	111.2	19,676		0.452	74,879	1.719																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.60		177.7	112.0	19,907		0.457	76,860	1.810																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.80		179.3	113.6	20,373		0.468	78,836	1.857																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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	7.00		180.9	115.2	20,844		0.479	82,835	1.951																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.10		181.7	116.0	21,082		0.484	84,844	2.000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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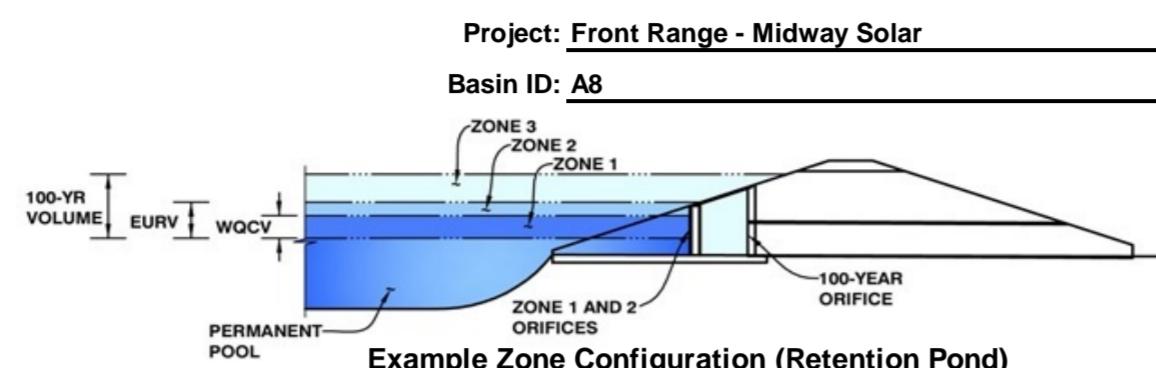
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



Required Volume Calculation

Selected BMP Type =	EDB
Watershed Area =	87.81 acres
Watershed Length =	2,421 ft
Watershed Slope =	0.024 ft/ft
Watershed Imperviousness =	3.90% 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) =	0.210 acre-feet
Excess Urban Runoff Volume (EURV) =	0.264 acre-feet
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.218 acre-feet
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.816 acre-feet
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	0.745 acre-feet
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
Approximate 2-yr Detention Volume =	0.203 acre-feet
Approximate 5-yr Detention Volume =	0.788 acre-feet
Approximate 10-yr Detention Volume =	0.000 acre-feet
Approximate 25-yr Detention Volume =	0.000 acre-feet
Approximate 50-yr Detention Volume =	0.000 acre-feet
Approximate 100-yr Detention Volume =	2.136 acre-feet

Optional User Override	
	1-hr Precipitation
1.19	inches
1.50	inches
2.52	inches

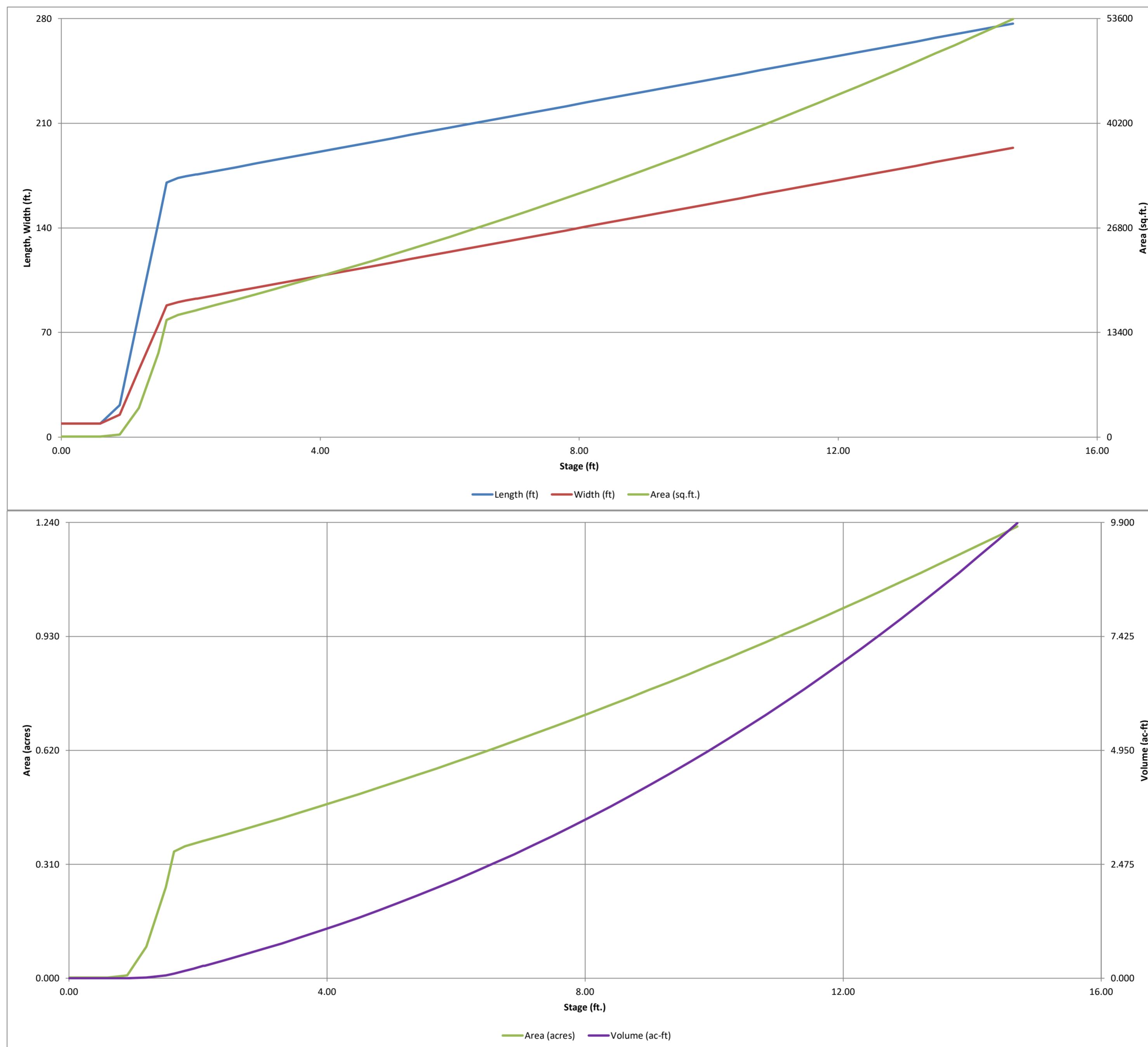
Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.210 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.054 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.871 acre-feet
Total Detention Basin Volume =	2.136 acre-feet
Initial Surcharge Volume (ISV) =	27 ft^3
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	83 ft^2
Surcharge Volume Length (L_{ISV}) =	9.1 ft
Surcharge Volume Width (W_{ISV}) =	9.1 ft
Depth of Basin Floor (H_{FLOOR}) =	0.80 ft
Length of Basin Floor (L_{FLOOR}) =	172.0 ft
Width of Basin Floor (W_{FLOOR}) =	89.0 ft
Area of Basin Floor (A_{FLOOR}) =	15,306 ft^2
Volume of Basin Floor (V_{FLOOR}) =	4,397 ft^3
Depth of Main Basin (H_{MAIN}) =	4.37 ft
Length of Main Basin (L_{MAIN}) =	207.0 ft
Width of Main Basin (W_{MAIN}) =	123.9 ft
Area of Main Basin (A_{MAIN}) =	25,657 ft^2
Volume of Main Basin (V_{MAIN}) =	88,563 ft^3
Calculated Total Basin Volume (V_{total}) =	2.136 acre-feet

Depth Increment =	0.3 ft	Stage - Storage Description	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			9.1	9.1	83		0.002		
ISV	0.33			9.1	9.1	83		0.002	27	0.001
	0.60			21.4	15.1	323		0.007	80	0.002
	0.90			82.6	45.1	3,724		0.085	596	0.014
	1.20			143.8	75.1	10,798		0.248	2,682	0.062
Floor	1.63			170.3	88.1	15,003		0.344	4,352	0.100
	1.80			173.3	90.3	15,645		0.359	6,980	0.160
Zone 1 (WQCV)	1.93			174.4	91.4	15,941		0.366	9,191	0.211
Zone 2 (EURV)	2.08			175.6	92.6	16,262		0.373	11,606	0.266
	2.10			175.8	92.7	16,305		0.374	11,931	0.274
	2.40			178.2	95.1	16,955		0.389	16,920	0.388
	2.70			180.6	97.5	17,617		0.404	22,105	0.507
	3.00			183.0	99.9	18,290		0.420	27,491	0.631
	3.30			185.4	102.3	18,975		0.436	33,080	0.759
	3.60			187.8	104.7	19,671		0.452	38,877	0.892
	3.90			190.2	107.1	20,379		0.468	44,884	1.030
	4.20			192.6	109.5	21,098		0.484	51,106	1.173
	4.50			195.0	111.9	21,829		0.501	57,544	1.321
	4.80			197.4	114.3	22,572		0.518	64,204	1.474
	5.10			199.8	116.7	23,326		0.535	71,088	1.632
	5.40			202.2	119.1	24,091		0.553	78,201	1.795
	5.70			204.6	121.5	24,868		0.571	85,544	1.964
Zone 3 (100-year)	6.00			207.0	123.9	25,657		0.589	93,123	2.138
	6.30			209.4	126.3	26,457		0.607	100,939	2.317
	6.60			211.8	128.7	27,268		0.626	108,998	2.502
	6.90			214.2	131.1	28,091		0.645	117,301	2.693
	7.20			216.6	133.5	28,926		0.664	125,854	2.889
	7.50			219.0	135.9	29,772		0.683	134,658	3.091
	7.80			221.4	138.3	30,629		0.703	143,718	3.299
	8.10			223.8	140.7	31,499		0.723	153,037	3.513
	8.40			226.2	143.1	32,379		0.743	162,618	3.733
	8.70			228.6	145.5	33,271		0.764	172,466	3.959
	9.00			231.0	147.9	34,175		0.785	182,582	4.192
	9.30			233.4	150.3	35,090		0.806	192,972	4.430
	9.60			235.8	152.7	36,017		0.827	203,638	4.675
	9.90			238.2	155.1	36,955		0.848	214,583	4.926
	10.20			240.6	157.5	37,905		0.870	225,812	5.184
	10.50			243.0	159.9	38,867		0.892	237,328	5.448
	10.80			245.4	162.3	39,839		0.915	249,133	5.719
	11.10			247.8	164.7	40,824		0.937	261,232	5.997
	11.40			250.2	167.1	41,820		0.960	273,628	6.282
	11.70			252.6	169.5	42,827		0.983	286,325	6.573
	12.00			255.0	171.9	43,846		1.007	299,326	6.872
	12.30			257.4	174.3	44,876		1.030	312,634	7.177
	12.60			259.8	176.7	45,918		1.054	326,253	7.490
	12.90			262.2	179.1	46,972		1.078	340,166	7.810
	13.20			264.6	181.5	48,037		1.103	354,437	8.137
	13.50			267.0	183.9	49,113		1.127	369,009	8.471
	13.80			269.4	186.3	50,201		1.152	383,906	8.813
	14.10		</							

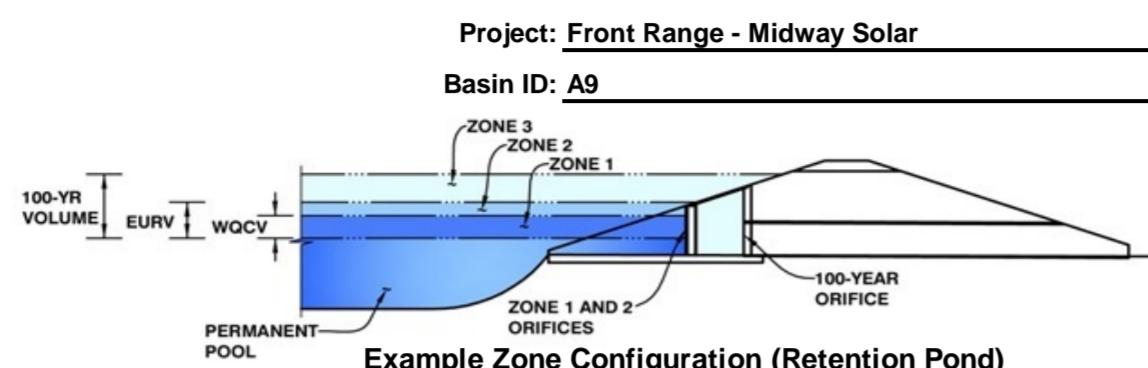
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



Required Volume Calculation

Selected BMP Type =	EDB	Optional User Override
Watershed Area =	32.86 acres	
Watershed Length =	1,854 ft	
Watershed Slope =	0.038 ft/ft	
Watershed Imperviousness =	5.20% 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) =	0.103 acre-feet	
Excess Urban Runoff Volume (EURV) =	0.135 acre-feet	
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.113 acre-feet	1.19 inches
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.358 acre-feet	1.50 inches
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	4.064 acre-feet	2.52 inches
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
Approximate 2-yr Detention Volume =	0.105 acre-feet	
Approximate 5-yr Detention Volume =	0.344 acre-feet	
Approximate 10-yr Detention Volume =	0.000 acre-feet	
Approximate 25-yr Detention Volume =	0.000 acre-feet	
Approximate 50-yr Detention Volume =	0.000 acre-feet	
Approximate 100-yr Detention Volume =	0.903 acre-feet	

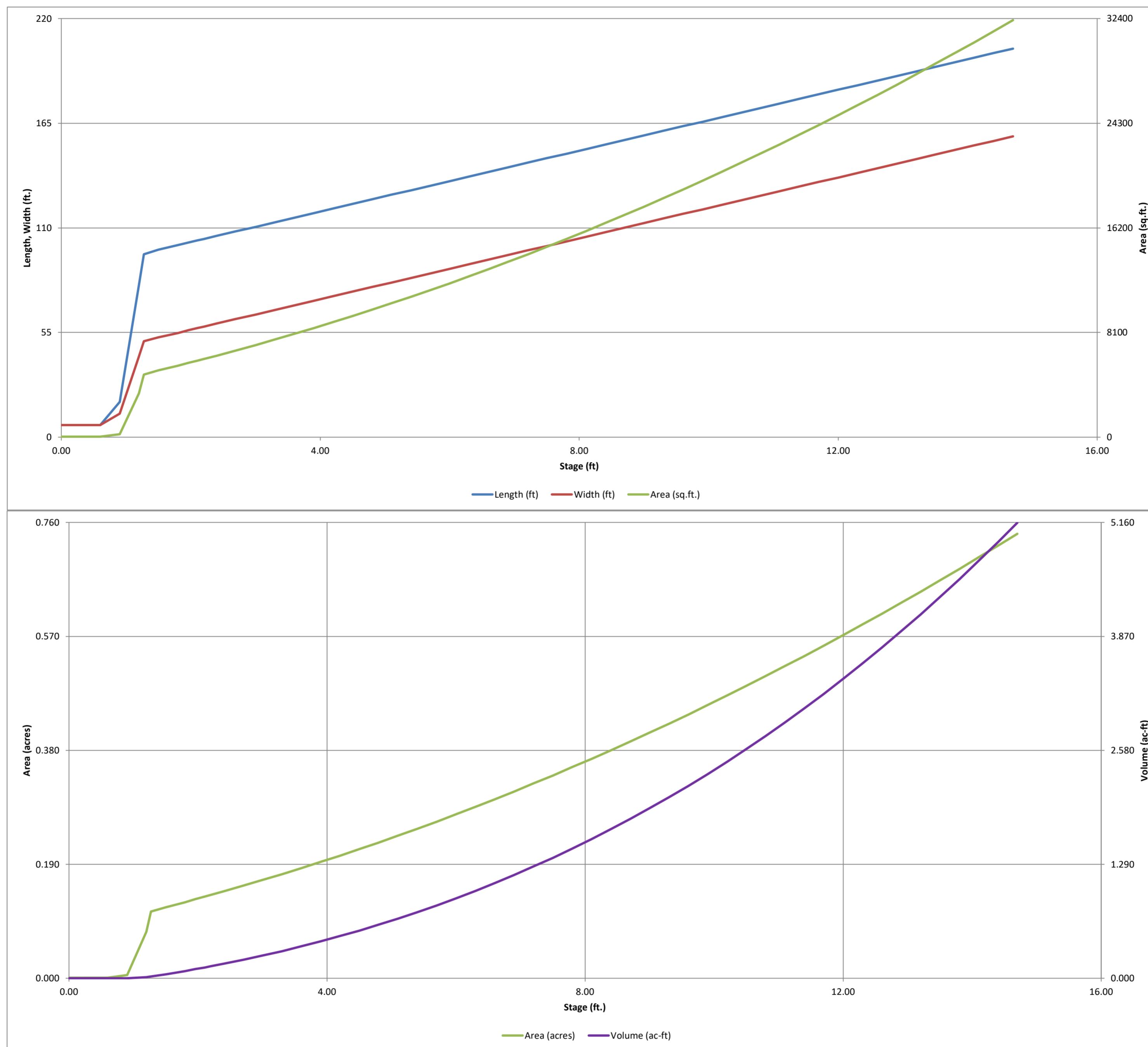
Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.103 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.032 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.768 acre-feet
Total Detention Basin Volume =	0.903 acre-feet
Initial Surcharge Volume (ISV) =	13 ft^3
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	41 ft^2
Surcharge Volume Length (L_{ISV}) =	6.4 ft
Surcharge Volume Width (W_{ISV}) =	6.4 ft
Depth of Basin Floor (H_{FLOOR}) =	0.44 ft
Length of Basin Floor (L_{FLOOR}) =	96.7 ft
Width of Basin Floor (W_{FLOOR}) =	50.7 ft
Area of Basin Floor (A_{FLOOR}) =	4,903 ft^2
Volume of Basin Floor (V_{FLOOR}) =	796 ft^3
Depth of Main Basin (H_{MAIN}) =	4.73 ft
Length of Main Basin (L_{MAIN}) =	134.6 ft
Width of Main Basin (W_{MAIN}) =	88.5 ft
Area of Main Basin (A_{MAIN}) =	11,907 ft^2
Volume of Main Basin (V_{MAIN}) =	38,526 ft^3
Calculated Total Basin Volume (V_{total}) =	0.903 acre-feet

Depth Increment =	0.3 ft	Stage - Storage Description	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			6.4	6.4	41		0.001		
ISV	0.33		6.4	6.4	41			0.001	13	0.000
	0.60		6.4	6.4	41			0.001	24	0.001
	0.90		18.6	12.4	230			0.005	41	0.001
	1.20		79.8	42.4	3,382			0.078	491	0.011
Floor	1.27		96.1	50.4	4,843			0.111	818	0.019
	1.50		98.5	52.4	5,161			0.118	1,925	0.044
	1.80		100.9	54.8	5,529			0.127	3,528	0.081
Zone 1 (WQCV)	1.96		102.2	56.2	5,743			0.132	4,486	0.103
	2.10		103.4	57.3	5,922			0.136	5,303	0.122
Zone 2 (EURV)	2.20		104.2	58.1	6,051			0.139	5,901	0.135
	2.40		105.8	59.7	6,313			0.145	7,138	0.164
	2.70		108.2	62.1	6,716			0.154	9,092	0.209
	3.00		110.6	64.5	7,130			0.164	11,168	0.256
	3.30		113.0	66.9	7,556			0.173	13,371	0.307
	3.60		115.4	69.3	7,993			0.184	15,703	0.360
	3.90		117.8	71.7	8,442			0.194	18,168	0.417
	4.20		120.2	74.1	8,903			0.204	20,770	0.477
	4.50		122.6	76.5	9,375			0.215	23,511	0.540
	4.80		125.0	78.9	9,858			0.226	26,396	0.606
	5.10		127.4	81.3	10,353			0.238	29,427	0.676
	5.40		129.8	83.7	10,860			0.249	32,609	0.749
	5.70		132.2	86.1	11,378			0.261	35,944	0.825
Zone 3 (100-year)	6.00		134.6	88.5	11,907			0.273	39,437	0.905
	6.30		137.0	90.9	12,449			0.286	43,090	0.989
	6.60		139.4	93.3	13,001			0.298	46,907	1.077
	6.90		141.8	95.7	13,565			0.311	50,892	1.168
	7.20		144.2	98.1	14,141			0.325	55,047	1.264
	7.50		146.6	100.5	14,728			0.338	59,377	1.363
	7.80		149.0	102.9	15,327			0.352	63,885	1.467
	8.10		151.4	105.3	15,937			0.366	68,575	1.574
	8.40		153.8	107.7	16,559			0.380	73,449	1.686
	8.70		156.2	110.1	17,192			0.395	78,511	1.802
	9.00		158.6	112.5	17,837			0.409	83,765	1.923
	9.30		161.0	114.9	18,493			0.425	89,214	2.048
	9.60		163.4	117.3	19,161			0.440	94,862	2.178
	9.90		165.8	119.7	19,840			0.455	100,712	2.312
	10.20		168.2	122.1	20,531			0.471	106,767	2.451
	10.50		170.6	124.5	21,233			0.487	113,032	2.595
	10.80		173.0	126.9	21,947			0.504	119,508	2.744
	11.10		175.4	129.3	22,673			0.520	126,201	2.897
	11.40		177.8	131.7	23,410			0.537	133,113	3.056
	11.70		180.2	134.1	24,158			0.555	140,248	3.220
	12.00		182.6	136.5	24,918			0.572	147,609	3.389
	12.30		185.0	138.9	25,689			0.590	155,200	3.563
	12.60		187.4	141.3	26,472			0.608	163,024	3.743
	12.90		189.8	143.7	27,267			0.626	171,085	3.928
	13.20		192.2	146.1	28,073			0.644	179,385	4.118
	13.50		194.6	148.5	28,891			0.663	187,929	4.314
	13.80		197.0	150.9	29,720			0.682	196,721	4.516
	14.10		199.4	153.3	30,560			0.702	205,762	4.724
	14.40		201.8	155.7	31,412			0.72		

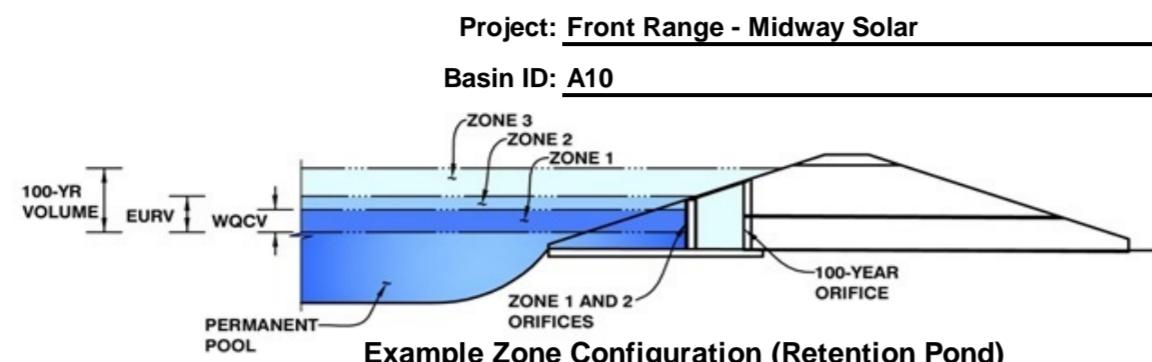
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



Required Volume Calculation

Selected BMP Type =	EDB
Watershed Area =	263.34 acres
Watershed Length =	7,992 ft
Watershed Slope =	0.014 ft/ft
Watershed Imperviousness =	3.50% percent
Percentage Hydrologic Soil Group A =	5.0% percent
Percentage Hydrologic Soil Group B =	0.0% percent
Percentage Hydrologic Soil Groups C/D =	95.0% percent
Desired WQCV Drain Time =	40.0 hours
Location for 1-hr Rainfall Depths =	User Input
Water Quality Capture Volume (WQCV) =	0.568 acre-feet
Excess Urban Runoff Volume (EURV) =	0.695 acre-feet
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.565 acre-feet
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	2.225 acre-feet
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	30.934 acre-feet
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
Approximate 2-yr Detention Volume =	0.526 acre-feet
Approximate 5-yr Detention Volume =	2.150 acre-feet
Approximate 10-yr Detention Volume =	0.000 acre-feet
Approximate 25-yr Detention Volume =	0.000 acre-feet
Approximate 50-yr Detention Volume =	0.000 acre-feet
Approximate 100-yr Detention Volume =	5.991 acre-feet

Optional User Override	
	1-hr Precipitation
1.19	inches
1.50	inches
2.26	inches
2.37	inches
2.40	inches
2.70	inches
3.00	inches
3.30	inches
3.60	inches
3.90	inches
4.20	inches
4.50	inches
4.80	inches
5.10	inches
5.40	inches
5.70	inches
6.00	inches
6.30	inches
6.60	inches
6.90	inches
7.20	inches
7.50	inches
7.80	inches
8.10	inches
8.40	inches
8.70	inches
9.00	inches
9.30	inches
9.60	inches
9.90	inches
10.20	inches
10.50	inches
10.80	inches
11.10	inches
11.40	inches
11.70	inches
12.00	inches
12.30	inches
12.60	inches
12.90	inches
13.20	inches
13.50	inches
13.80	inches
14.10	inches
14.40	inches
14.70	inches

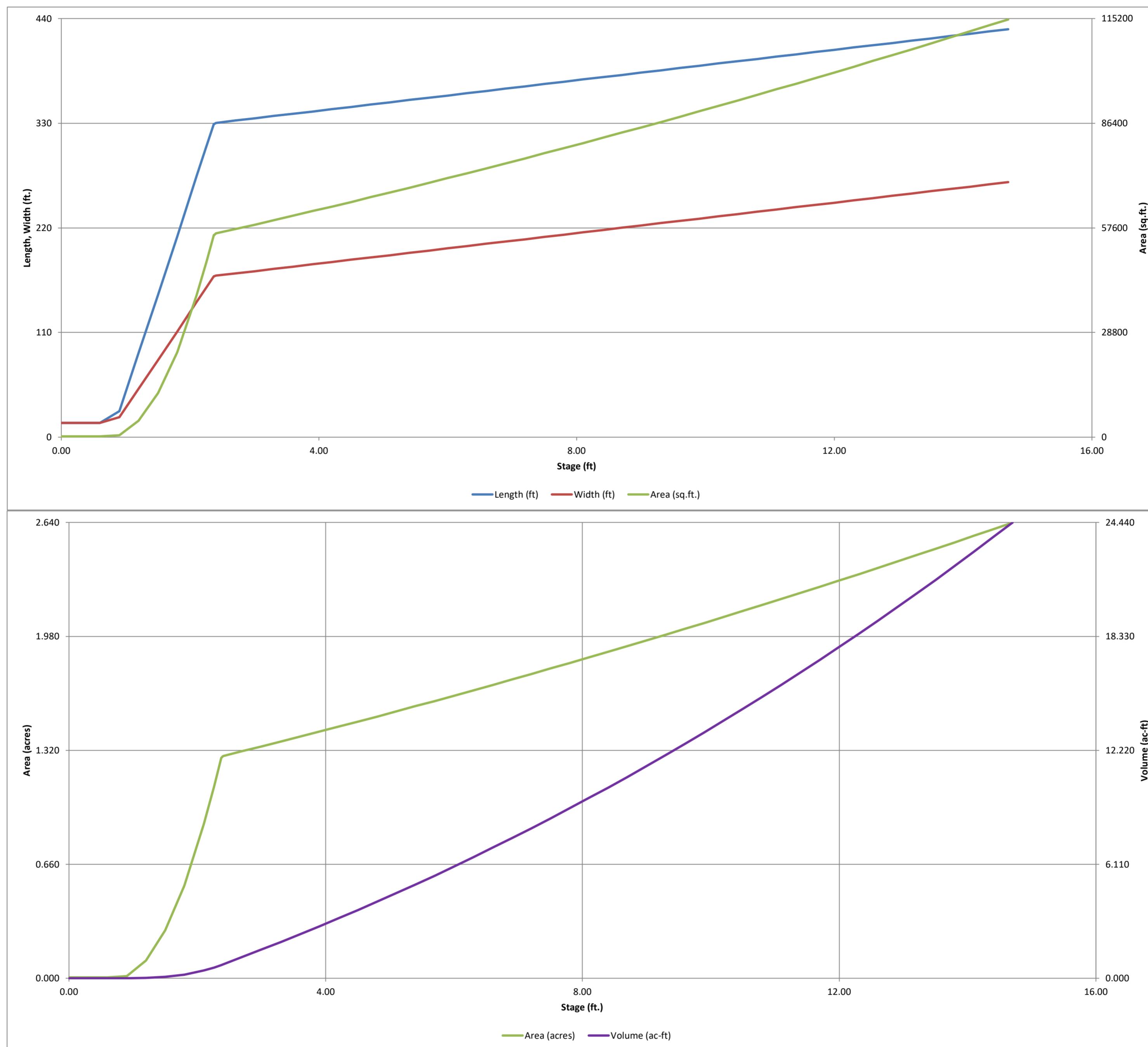
Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.568 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.127 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	5.297 acre-feet
Total Detention Basin Volume =	5.991 acre-feet
Initial Surcharge Volume (ISV) =	74 ft^3
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	225 ft^2
Surcharge Volume Length (L_{ISV}) =	15.0 ft
Surcharge Volume Width (W_{ISV}) =	15.0 ft
Depth of Basin Floor (H_{FLOOR}) =	1.54 ft
Length of Basin Floor (L_{FLOOR}) =	330.1 ft
Width of Basin Floor (W_{FLOOR}) =	169.5 ft
Area of Basin Floor (A_{FLOOR}) =	55,951 ft^2
Volume of Basin Floor (V_{FLOOR}) =	30,753 ft^3
Depth of Main Basin (H_{MAIN}) =	3.63 ft
Length of Main Basin (L_{MAIN}) =	359.1 ft
Width of Main Basin (W_{MAIN}) =	198.5 ft
Area of Main Basin (A_{MAIN}) =	71,281 ft^2
Volume of Main Basin (V_{MAIN}) =	230,060 ft^3
Calculated Total Basin Volume (V_{total}) =	5.992 acre-feet

Depth Increment =	0.3 ft	Stage - Storage Description	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			15.0	15.0	225		0.005		
ISV	0.33			15.0	15.0	225		0.005	72	0.002
	0.60			27.2	21.0	572		0.005	133	0.003
	0.90			88.4	51.0	4,510		0.104	880	0.020
	1.20			149.6	81.0	12,120		0.278	3,283	0.075
	1.50			210.8	111.0	23,402		0.537	8,520	0.196
	1.80			274.1	142.0	38,918		0.893	18,078	0.415
	2.10			306.7	158.0	48,460		1.112	25,054	0.575
Zone 1 (WQCV)	2.26			329.2	169.0	55,627		1.277	30,775	0.706
Zone 2 (EURV)	2.37			329.2	169.0	55,627		1.277	30,775	0.706
Floor	2.37			329.2	169.0	55,627		1.277	30,775	0.706
	2.40			330.3	169.7	56,051		1.287	32,453	0.745
	2.70			332.7	172.1	57,257		1.314	49,449	1.135
	3.00			335.1	174.5	58,474		1.342	66,809	1.534
	3.30			337.5	176.9	59,703		1.371	84,535	1.941
	3.60			339.9	179.3	60,944		1.399	102,631	2.356
	3.90			342.3	181.7	62,196		1.428	121,102	2.780
	4.20			344.7	184.1	63,459		1.457	139,950	3.213
	4.50			347.1	186.5	64,734		1.486	159,178	3.654
	4.80			349.5	188.9	66,020		1.516	178,791	4.104
	5.10			351.9	191.3	67,318		1.545	198,792	4.564
	5.40			354.3	193.7	68,628		1.575	219,183	5.032
	5.70			356.7	196.1	69,949		1.606	239,970	5.509
Zone 3 (100-year)	6.00			359.1	198.5	71,281		1.636	261,154	5.995
	6.30			361.5	200.9	72,625		1.667	282,739	6.491
	6.60			363.9	203.3	73,981		1.698	304,730	6.996
	6.90			366.3	205.7	75,348		1.730	327,129	7.510
	7.20			368.7	208.1	76,727		1.761	349,940	8.034
	7.50			371.1	210.5	78,117		1.793	373,166	8.567
	7.80			373.5	212.9	79,518		1.825	396,811	9.110
	8.10			375.9	215.3	80,931		1.858	420,878	9.662
	8.40			378.3	217.7	82,356		1.891	445,371	10.224
	8.70			380.7	220.1	83,792		1.924	470,293	10.796
	9.00			383.1	222.5	85,240		1.957	495,648	11.379
	9.30			385.5	224.9	86,699		1.990	521,438	11.971
	9.60			387.9	227.3	88,170		2.024	547,668	12.573
	9.90			390.3	229.7	89,652		2.058	574,342	13.185
	10.20			392.7	232.1	91,146		2.092	601,461	13.808
	10.50			395.1	234.5	92,651		2.127	629,030	1

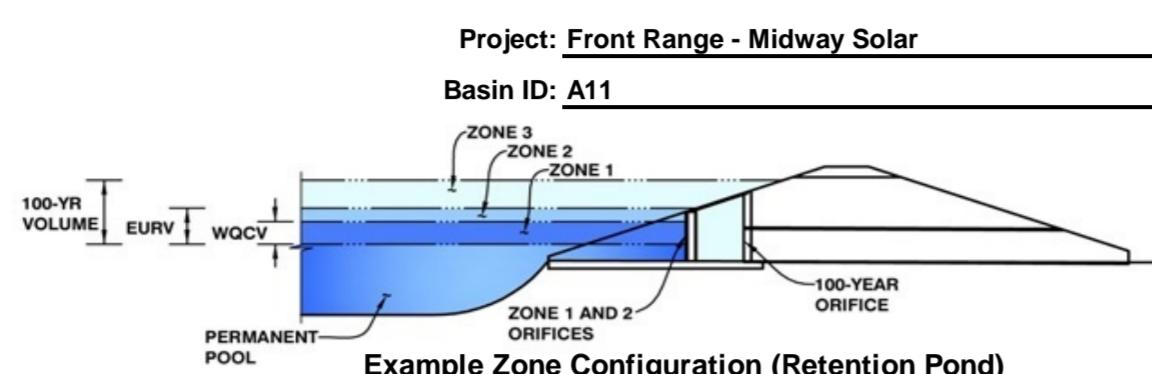
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

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Required Volume Calculation

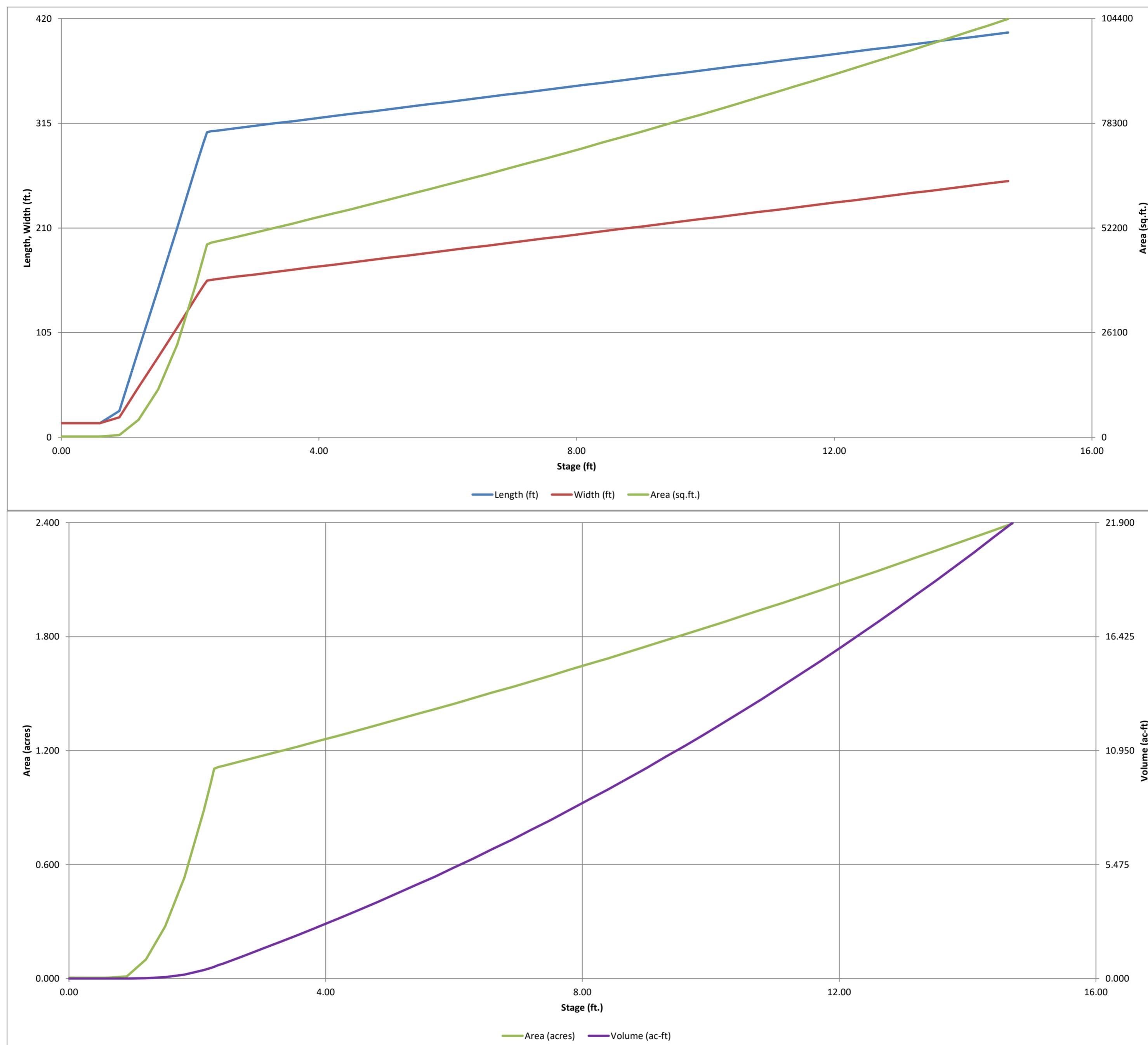
Selected BMP Type =	EDB	
Watershed Area =	224.01	acres
Watershed Length =	8,048	ft
Watershed Slope =	0.019	ft/ft
Watershed Imperviousness =	3.70%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths = User Input		
Water Quality Capture Volume (WQCV) =	0.509	acre-feet
Excess Urban Runoff Volume (EURV) =	0.637	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.523	acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	2.028	acre-feet
10-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
50-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	27.367	acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
Approximate 2-yr Detention Volume =	0.488	acre-feet
Approximate 5-yr Detention Volume =	1.959	acre-feet
Approximate 10-yr Detention Volume =	0.000	acre-feet
Approximate 25-yr Detention Volume =	0.000	acre-feet
Approximate 50-yr Detention Volume =	0.000	acre-feet
Approximate 100-yr Detention Volume =	5.329	acre-feet

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.509	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.127	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	4.692	acre-feet
Total Detention Basin Volume =	5.329	acre-feet
Initial Surcharge Volume (ISV) =	67	ft^3
Initial Surcharge Depth (ISD) =	0.33	ft
Total Available Detention Depth (H_{total}) =	6.00	ft
Depth of Trickle Channel (H_{TC}) =	0.50	ft
Slope of Trickle Channel (S_{TC}) =	0.005	ft/ft
Slopes of Main Basin Sides (S_{main}) =	4	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2	
Initial Surcharge Area (A_{ISV}) =	202	ft^2
Surcharge Volume Length (L_{ISV}) =	14.2	ft
Surcharge Volume Width (W_{ISV}) =	14.2	ft
Depth of Basin Floor (H_{FLOOR}) =	1.43	ft
Length of Basin Floor (L_{FLOOR}) =	306.5	ft
Width of Basin Floor (W_{FLOOR}) =	157.5	ft
Area of Basin Floor (A_{FLOOR}) =	48,260	ft^2
Volume of Basin Floor (V_{FLOOR}) =	24,633	ft^3
Depth of Main Basin (H_{MAIN}) =	3.74	ft
Length of Main Basin (L_{MAIN}) =	336.4	ft
Width of Main Basin (W_{MAIN}) =	187.4	ft
Area of Main Basin (A_{MAIN}) =	63,025	ft^2
Volume of Main Basin (V_{MAIN}) =	207,340	ft^3
Calculated Total Basin Volume (V_{total}) =	5.329	acre-feet

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

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DETENTION BASIN STAGE-STORAGE TABLE BUILDER

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Project: Front Range - Midway Solar
Basin ID: A12

Example Zone Configuration (Retention Pond)

Selected BMP Type =	EDB	Note: L / W Ratio < 1 L / W Ratio = 0.4
Watershed Area =	10.97 acres	
Watershed Length =	444 ft	
Watershed Slope =	0.040 ft/ft	
Watershed Imperviousness =	6.70% 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) =	0.043 acre-feet	
Excess Urban Runoff Volume (EURV) =	0.059 acre-feet	
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.050 acre-feet	
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.140 acre-feet	
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	1.373 acre-feet	
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	
Approximate 2-yr Detention Volume =	0.047 acre-feet	
Approximate 5-yr Detention Volume =	0.134 acre-feet	
Approximate 10-yr Detention Volume =	0.000 acre-feet	
Approximate 25-yr Detention Volume =	0.000 acre-feet	
Approximate 50-yr Detention Volume =	0.000 acre-feet	
Approximate 100-yr Detention Volume =	0.337 acre-feet	

Optional User Override

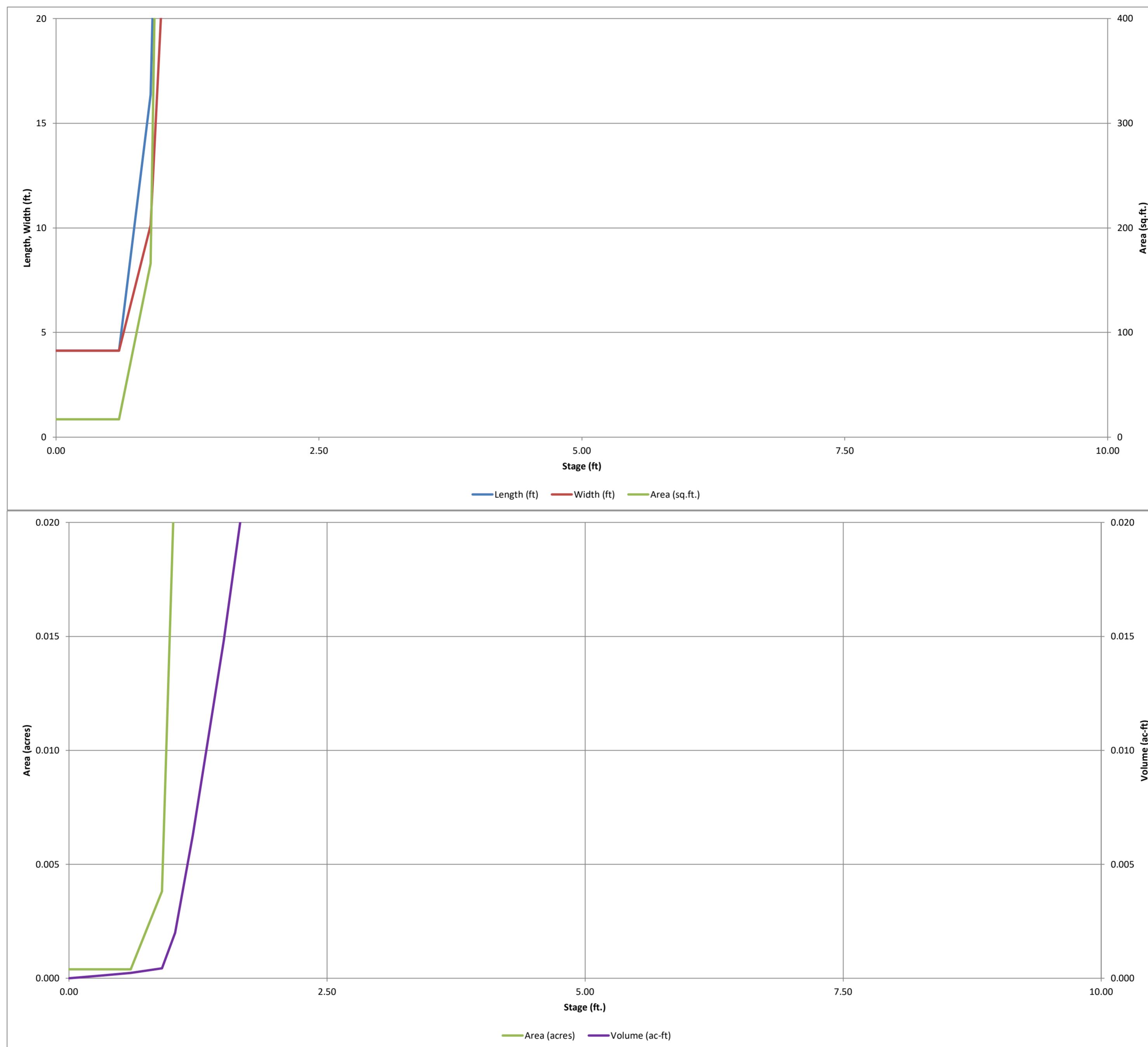
1-hr Precipitation	
1.19	inches
1.50	inches
3.00	inches
3.30	inches
3.60	inches
3.90	inches
4.20	inches
4.50	inches
4.80	inches
5.10	inches
5.40	inches
5.70	inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.043 acre-feet	
Zone 2 Volume (EURV - Zone 1) =	0.016 acre-feet	
Zone 3 Volume (100-year - Zones 1 & 2) =	0.278 acre-feet	
Total Detention Basin Volume =	0.337 acre-feet	
Initial Surcharge Volume (ISV) =	6 ft ³	
Initial Surcharge Depth (ISD) =	0.33 ft	
Total Available Detention Depth (H_{total}) =	6.00 ft	
Depth of Trickle Channel (H_{TC}) =	0.50 ft	
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft	
Slopes of Main Basin Sides (S_{main}) =	4 H:V	
Basin Length-to-Width Ratio ($R_{L/W}$) =	2	
Initial Surcharge Area (A_{ISV}) =	17 ft ²	
Surcharge Volume Length (L_{ISV}) =	4.1 ft	
Surcharge Volume Width (W_{ISV}) =	4.1 ft	
Depth of Basin Floor (H_{FLOOR}) =	0.20 ft	
Length of Basin Floor (L_{FLOOR}) =	44.4 ft	
Width of Basin Floor (W_{FLOOR}) =	23.9 ft	
Area of Basin Floor (A_{FLOOR}) =	1,059 ft ²	
Volume of Basin Floor (V_{FLOOR}) =	80 ft ³	
Depth of Main Basin (H_{MAIN}) =	4.97 ft	
Length of Main Basin (L_{MAIN}) =	84.2 ft	
Width of Main Basin (W_{MAIN}) =	63.6 ft	
Area of Main Basin (A_{MAIN}) =	5,357 ft ²	
Volume of Main Basin (V_{MAIN}) =	14,583 ft ³	
Calculated Total Basin Volume (V_{total}) =	0.337 acre-feet	
0.00	4.1	
0.33	4.1	
0.66	4.1	
0.99	4.1	
1.32	4.1	
1.65	4.1	
1.98	4.1	
2.31	4.1	
2.64	4.1	
2.97	4.1	
3.30	4.1	
3.63	4.1	
3.96	4.1	
4.29	4.1	
4.62	4.1	
4.95	4.1	
5.28	4.1	
5.61	4.1	
5.94	4.1	
6.27	4.1	
6.60	4.1	
6.93	4.1	
7.26	4.1	
7.59	4.1	
7.92	4.1	
8.25	4.1	
8.58	4.1	
8.91	4.1	
9.24	4.1	
9.57	4.1	
9.90	4.1	
10.23	4.1	
10.56	4.1	
10.89	4.1	
11.22	4.1	
11.55	4.1	
11.88	4.1	
12.21	4.1	
12.54	4.1	
12.87	4.1	
13.20	4.1	
13.53	4.1	
13.86	4.1	
14.19	4.1	
14.52	4.1	
14.85	4.1	
15.18	4.1	
15.51	4.1	
15.84	4.1	
16.17	4.1	
16.50	4.1	
16.83	4.1	
17.16	4.1	
17.49	4.1	
17.82	4.1	
18.15	4.1	
18.48	4.1	
18.81	4.1	
19.14	4.1	
19.47	4.1	
19.80	4.1	
20.13	4.1	
20.46	4.1	
20.79	4.1	
21.12	4.1	
21.45	4.1	
21.78	4.1	
22.11	4.1	
22.44	4.1	
22.77	4.1	
23.10	4.1	
23.43	4.1	
23.76	4.1	
24.09	4.1	
24.42	4.1	
24.75	4.1	
25.08	4.1	
25.41	4.1	
25.74	4.1	
26.07	4.1	
26.40	4.1	
26.73	4.1	
27.06	4.1	
27.39	4.1	
27.72	4.1	
28.05	4.1	
28.38	4.1	
28.71	4.1	
29.04	4.1	
29.37	4.1	
29.70	4.1	
30.03	4.1	
30.36	4.1	
30.69	4.1	
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31.68	4.1	
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46.00	4.1	
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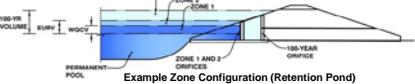
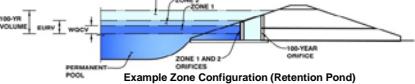
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



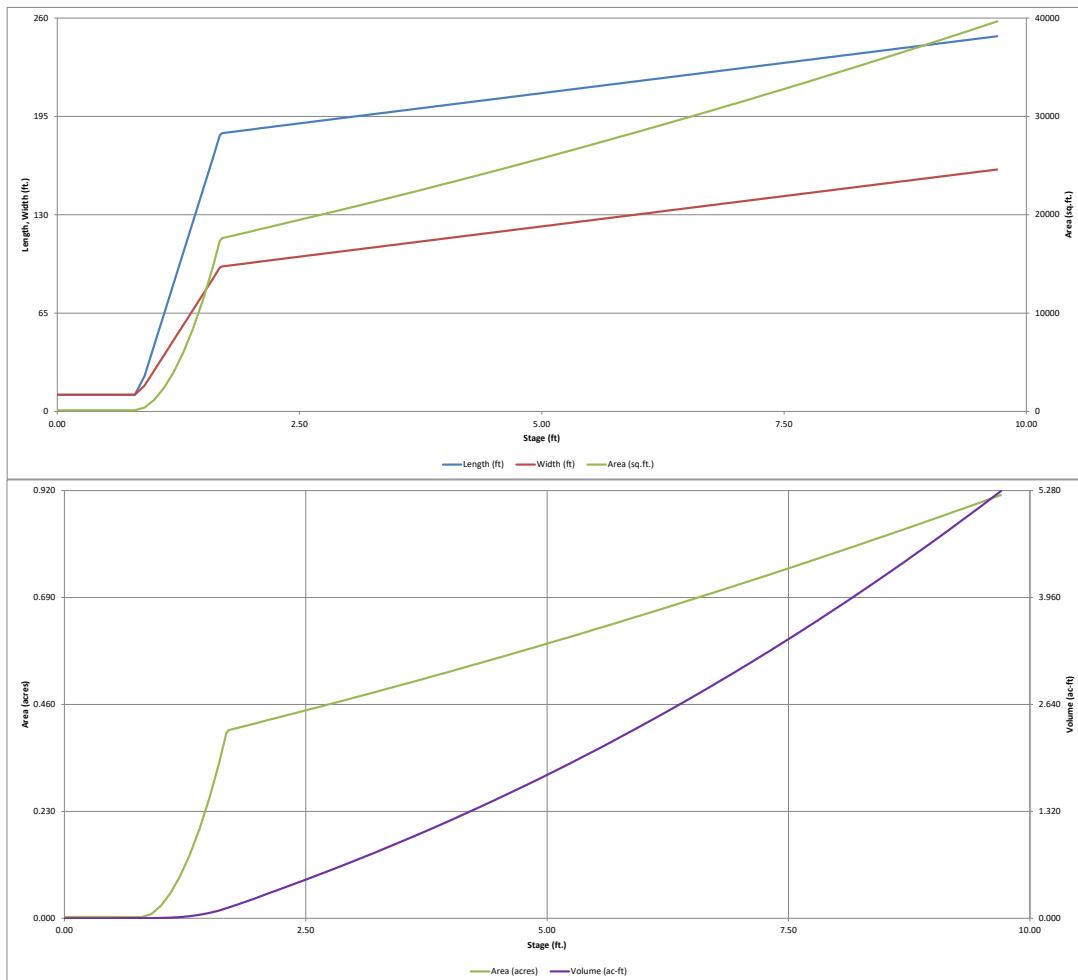
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

 Example Zone Configuration (Retention Pond)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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style="text-align: center;">343,970</td> <td style="text-align: center;">5.833</td> </tr> <tr> <td></td> <td style="text-align: center;">6.60</td> <td></td> <td style="text-align: center;">1165.7</td> <td style="text-align: center;">599.6</td> <td style="text-align: center;">283,355</td> <td></td> <td style="text-align: center;">4.400</td> <td style="text-align: center;">351,289</td> <td style="text-align: center;">5.952</td> </tr> <tr> <td></td> <td style="text-align: center;">6.70</td> <td></td> <td style="text-align: center;">1186.1</td> <td style="text-align: center;">610.0</td> <td style="text-align: center;">290,745</td> <td></td> <td style="text-align: center;">4.483</td> <td style="text-align: center;">358,608</td> <td style="text-align: center;">6.071</td> </tr> <tr> <td></td> <td style="text-align: center;">6.80</td> <td></td> <td style="text-align: center;">1206.5</td> <td style="text-align: center;">620.4</td> <td style="text-align: center;">298,135</td> <td></td> <td style="text-align: center;">4.566</td> <td style="text-align: center;">365,927</td> <td style="text-align: center;">6.190</td> </tr> <tr> <td></td> <td style="text-align: center;">6.90</td> <td></td> <td style="text-align: center;">1226.9</td> <td style="text-align: center;">630.8</td> <td style="text-align: center;">305,525</td> <td></td> <td style="text-align: center;">4.649</td> <td style="text-align: center;">373,246</td> <td style="text-align: center;">6.309</td> </tr> <tr> <td></td> <td style="text-align: center;">7.00</td> <td></td> <td style="text-align: center;">1247.3</td> <td style="text-align: center;">641.2</td> <td style="text-align: center;">312,915</td> <td></td> <td style="text-align: center;">4.732</td> <td style="text-align: center;">380,565</td> <td style="text-align: center;">6.428</td> </tr> <tr> <td></td> <td style="text-align: center;">7.10</td> <td></td> <td style="text-align: center;">1267.7</td> <td style="text-align: center;">651.6</td> <td style="text-align: center;">320,305</td> <td></td> <td style="text-align: center;">4.815</td> <td style="text-align: center;">387,884</td> <td style="text-align: center;">6.547</td> </tr> <tr> <td></td> <td style="text-align: center;">7.20</td> <td></td> <td style="text-align: center;">1288.1</td> <td style="text-align: center;">662.0</td> <td style="text-align: center;">327,695</td> <td></td> <td style="text-align: center;">4.898</td> <td style="text-align: center;">395,203</td> <td style="text-align: center;">6.666</td> </tr> <tr> <td></td> <td style="text-align: center;">7.30</td> <td></td> <td style="text-align: center;">1308.5</td> <td style="text-align: center;">672.4</td> <td style="text-align: center;">335,085</td> <td></td> <td style="text-align: center;">4.981</td> <td style="text-align: center;">402,522</td> <td style="text-align: center;">6.785</td> </tr> <tr> <td></td> <td style="text-align: center;">7.40</td> <td></td> <td style="text-align: center;">1328.9</td> <td style="text-align: center;">682.8</td> <td style="text-align: center;">3</td></tr></tbody></table>									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	11.0	122		0.003			ISV	0.33		11.0	11.0	122		0.003	39	0.001		0.40		11.0	11.0	122		0.003	48	0.001		0.50		11.0	11.0	122		0.003	60	0.001		0.60		11.0	11.0	122		0.003	72	0.002		0.70		11.0	11.0	122		0.003	84	0.002		0.80		11.0	11.0	122		0.003	96	0.002		0.90		23.3	17.0	397		0.009	116	0.003		1.00		43.7	27.0	1,182		0.027	192	0.004		1.10		64.1	37.0	2,374		0.055	366	0.008		1.20		84.5	47.0	3,975		0.091	680	0.016		1.30		104.9	57.0	5,984		0.137	1,175	0.027		1.40		125.3	67.0	8,400		0.193	1,890	0.043		1.50		145.7	77.0	11,225		0.258	2,868	0.066		1.60		166.1	87.0	14,457		0.332	4,149	0.095		1.70		186.5	97.4	18,077		0.415	9,340	0.214		1.80		206.9	107.8	21,935		0.497	14,730	0.333		2.00		227.3	118.2	25,985		0.580	20,793	0.452		2.10		247.7	128.6	30,101		0.663	27,014	0.571		2.20		268.1	139.0	34,295		0.746	33,234	0.689		2.30		288.5	149.4	38,585		0.830	39,553	0.808		2.40		308.9	160.8	42,975		0.913	45,872	0.927		2.50		329.3	171.2	47,365		0.997	52,191	1.046		2.60		349.7	182.6	51,755		1.080	58,510	1.165		2.70		370.1	193.0	56,145		1.163	65,829	1.284		2.80		390.5	203.4	60,535		1.246	73,148	1.403		2.90		410.9	213.8	64,925		1.329	80,467	1.522		3.00		431.3	224.2	69,315		1.412	87,786	1.641		3.10		451.7	234.6	73,705		1.495	95,105	1.760		3.20		472.1	245.0	78,095		1.578	102,424	1.879		3.30		492.5	255.4	82,485		1.661	109,743	2.000		3.40		512.9	265.8	86,875		1.744	117,062	2.119		3.50		533.3	276.2	91,265		1.827	124,381	2.238		3.60		553.7	286.6	95,655		1.910	131,700	2.357		3.70		574.1	297.0	100,045		1.993	139,019	2.476		3.80		594.5	307.4	104,435		2.076	146,338	2.595		3.90		614.9	317.8	108,825		2.159	153,657	2.714		4.00		635.3	328.2	113,215		2.242	160,976	2.833		4.10		655.7	338.6	117,605		2.325	168,295	2.952		4.20		676.1	349.0	122,995		2.408	175,614	3.071		4.30		696.5	359.4	127,385		2.491	182,933	3.190		4.40		716.9	370.8	132,775		2.574	190,252	3.309		4.50		737.3	381.2	138,165		2.657	197,571	3.428		4.60		757.7	391.6	143,555		2.740	204,890	3.547		4.70		778.1	402.0	148,945		2.823	212,209	3.666		4.80		798.5	412.4	154,335		2.906	219,528	3.785		4.90		818.9	422.8	160,725		2.989	226,847	3.904		5.00		839.3	433.2	167,115		3.072	234,166	4.023		5.10		859.7	443.6	173,505		3.155	241,485	4.142		5.20		880.1	454.0	180,895		3.238	248,804	4.261		5.30		900.5	464.4	188,285		3.321	256,123	4.380		5.40		920.9	474.8	195,675		3.404	263,442	4.499		5.50		941.3	485.2	203,065		3.487	270,781	4.618		5.60		961.7	495.6	210,455		3.570	278,100	4.737		5.70		982.1	506.0	217,845		3.653	285,419	4.856		5.80		1002.5	516.4	225,235		3.736	292,738	5.000		5.90		1022.9	526.8	232,625		3.819	300,057	5.119		6.00		1043.3	537.2	239,015		3.902	307,376	5.238		6.10		1063.7	547.6	246,405		3.985	314,694	5.357		6.20		1084.1	558.0	253,795		4.068	322,013	5.476		6.30		1104.5	568.4	261,185		4.151	329,332	5.595		6.40		1124.9	578.8	268,575		4.234	336,651	5.714		6.50		1145.3	589.2	275,965		4.317	343,970	5.833		6.60		1165.7	599.6	283,355		4.400	351,289	5.952		6.70		1186.1	610.0	290,745		4.483	358,608	6.071		6.80		1206.5	620.4	298,135		4.566	365,927	6.190		6.90		1226.9	630.8	305,525		4.649	373,246	6.309		7.00		1247.3	641.2	312,915		4.732	380,565	6.428		7.10		1267.7	651.6	320,305		4.815	387,884	6.547		7.20		1288.1	662.0	327,695		4.898	395,203	6.666		7.30		1308.5	672.4	335,085		4.981	402,522	6.785		7.40		1328.9	682.8	3
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)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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ISV	0.33		11.0	11.0	122		0.003	39	0.001																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.40		11.0	11.0	122		0.003	48	0.001																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.50		11.0	11.0	122		0.003	60	0.001																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.60		11.0	11.0	122		0.003	72	0.002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.70		11.0	11.0	122		0.003	84	0.002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.80		11.0	11.0	122		0.003	96	0.002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.90		23.3	17.0	397		0.009	116	0.003																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.00		43.7	27.0	1,182		0.027	192	0.004																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.10		64.1	37.0	2,374		0.055	366	0.008																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.20		84.5	47.0	3,975		0.091	680	0.016																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.30		104.9	57.0	5,984		0.137	1,175	0.027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.40		125.3	67.0	8,400		0.193	1,890	0.043																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.50		145.7	77.0	11,225		0.258	2,868	0.066																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.60		166.1	87.0	14,457		0.332	4,149	0.095																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.70		186.5	97.4	18,077		0.415	9,340	0.214																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	1.80		206.9	107.8	21,935		0.497	14,730	0.333																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.00		227.3	118.2	25,985		0.580	20,793	0.452																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.10		247.7	128.6	30,101		0.663	27,014	0.571																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.20		268.1	139.0	34,295		0.746	33,234	0.689																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.30		288.5	149.4	38,585		0.830	39,553	0.808																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.40		308.9	160.8	42,975		0.913	45,872	0.927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.50		329.3	171.2	47,365		0.997	52,191	1.046																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.60		349.7	182.6	51,755		1.080	58,510	1.165																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.70		370.1	193.0	56,145		1.163	65,829	1.284																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.80		390.5	203.4	60,535		1.246	73,148	1.403																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.90		410.9	213.8	64,925		1.329	80,467	1.522																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.00		431.3	224.2	69,315		1.412	87,786	1.641																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.10		451.7	234.6	73,705		1.495	95,105	1.760																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.20		472.1	245.0	78,095		1.578	102,424	1.879																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.30		492.5	255.4	82,485		1.661	109,743	2.000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.40		512.9	265.8	86,875		1.744	117,062	2.119																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.50		533.3	276.2	91,265		1.827	124,381	2.238																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.60		553.7	286.6	95,655		1.910	131,700	2.357																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.70		574.1	297.0	100,045		1.993	139,019	2.476																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.80		594.5	307.4	104,435		2.076	146,338	2.595																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	3.90		614.9	317.8	108,825		2.159	153,657	2.714																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.00		635.3	328.2	113,215		2.242	160,976	2.833																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.10		655.7	338.6	117,605		2.325	168,295	2.952																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.20		676.1	349.0	122,995		2.408	175,614	3.071																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.30		696.5	359.4	127,385		2.491	182,933	3.190																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.40		716.9	370.8	132,775		2.574	190,252	3.309																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.50		737.3	381.2	138,165		2.657	197,571	3.428																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.60		757.7	391.6	143,555		2.740	204,890	3.547																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.70		778.1	402.0	148,945		2.823	212,209	3.666																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.80		798.5	412.4	154,335		2.906	219,528	3.785																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	4.90		818.9	422.8	160,725		2.989	226,847	3.904																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.00		839.3	433.2	167,115		3.072	234,166	4.023																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.10		859.7	443.6	173,505		3.155	241,485	4.142																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.20		880.1	454.0	180,895		3.238	248,804	4.261																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.30		900.5	464.4	188,285		3.321	256,123	4.380																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.40		920.9	474.8	195,675		3.404	263,442	4.499																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.50		941.3	485.2	203,065		3.487	270,781	4.618																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.60		961.7	495.6	210,455		3.570	278,100	4.737																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.70		982.1	506.0	217,845		3.653	285,419	4.856																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.80		1002.5	516.4	225,235		3.736	292,738	5.000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	5.90		1022.9	526.8	232,625		3.819	300,057	5.119																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.00		1043.3	537.2	239,015		3.902	307,376	5.238																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.10		1063.7	547.6	246,405		3.985	314,694	5.357																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.20		1084.1	558.0	253,795		4.068	322,013	5.476																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.30		1104.5	568.4	261,185		4.151	329,332	5.595																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.40		1124.9	578.8	268,575		4.234	336,651	5.714																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.50		1145.3	589.2	275,965		4.317	343,970	5.833																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.60		1165.7	599.6	283,355		4.400	351,289	5.952																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.70		1186.1	610.0	290,745		4.483	358,608	6.071																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.80		1206.5	620.4	298,135		4.566	365,927	6.190																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	6.90		1226.9	630.8	305,525		4.649	373,246	6.309																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.00		1247.3	641.2	312,915		4.732	380,565	6.428																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.10		1267.7	651.6	320,305		4.815	387,884	6.547																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.20		1288.1	662.0	327,695		4.898	395,203	6.666																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.30		1308.5	672.4	335,085		4.981	402,522	6.785																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	7.40		1328.9	682.8	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

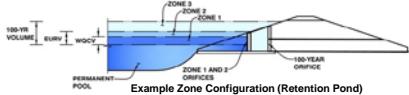
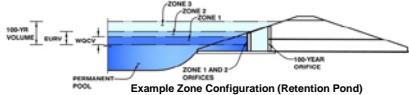
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



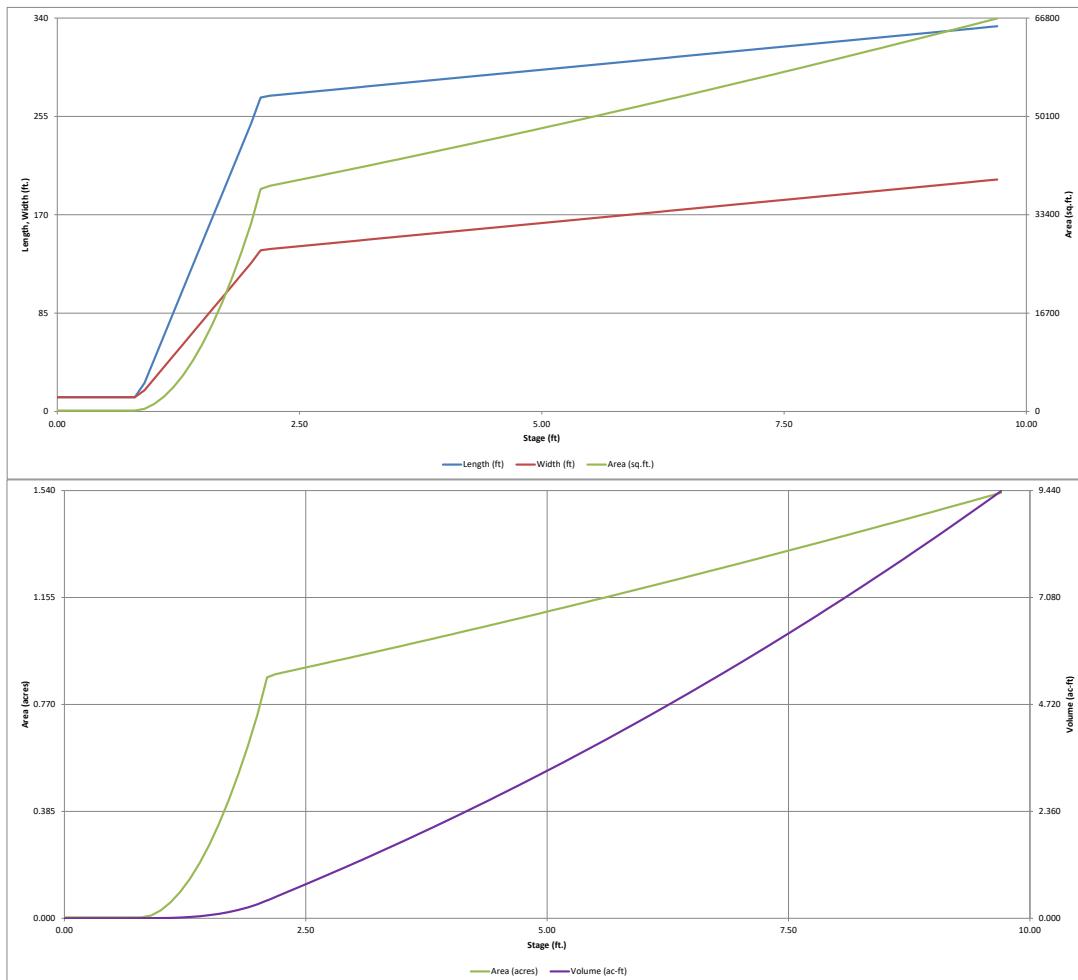
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

 Example Zone Configuration (Retention Pond)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Project: Front Range - Midway Solar Basin ID: A5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Selected BMP Type =</td> <td style="width: 10%; text-align: center;">EDB</td> <td style="width: 10%;"></td> </tr> <tr> <td>Watershed Area =</td> <td style="text-align: center;">199.14</td> <td>acres</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Length =</td> <td style="text-align: center;">4,884</td> <td>ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Slope =</td> <td style="text-align: center;">0.014</td> <td>ft/ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Imperviousness =</td> <td style="text-align: center;">3.10%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group A =</td> <td style="text-align: center;">0.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group B =</td> <td style="text-align: center;">0.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Groups C/D =</td> <td style="text-align: center;">100.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Desired WQCV Drain Time =</td> <td style="text-align: center;">40.0</td> <td>hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Location for 1-hr Rainfall Depths =</td> <td colspan="8">User Input</td> </tr> <tr> <td>Water Quality Capture Volume (WQCV) =</td> <td style="text-align: center;">0.383</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excess Urban Runoff Volume (EURV) =</td> <td style="text-align: center;">0.468</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2-yr Runoff Volume (P1 = 1.19 in.) =</td> <td style="text-align: center;">0.381</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5-yr Runoff Volume (P1 = 1.5 in.) =</td> <td style="text-align: center;">1.655</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>50-yr Runoff Volume (P1 = 0 in.) =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>100-yr Runoff Volume (P1 = 0.52 in.) =</td> <td style="text-align: center;">24.208</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 2-yr Detention Volume =</td> <td style="text-align: center;">0.355</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 5-yr Detention Volume =</td> <td style="text-align: center;">1.604</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 10-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 25-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 50-yr Detention Volume =</td> <td style="text-align: center;">0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 100-yr Detention Volume =</td> <td style="text-align: center;">4.400</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									Selected BMP Type =	EDB								Watershed Area =	199.14	acres							Watershed Length =	4,884	ft							Watershed Slope =	0.014	ft/ft							Watershed Imperviousness =	3.10%	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) =	0.383	acre-feet							Excess Urban Runoff Volume (EURV) =	0.468	acre-feet							2-yr Runoff Volume (P1 = 1.19 in.) =	0.381	acre-feet							5-yr Runoff Volume (P1 = 1.5 in.) =	1.655	acre-feet							10-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							50-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							100-yr Runoff Volume (P1 = 0.52 in.) =	24.208	acre-feet							Approximate 2-yr Detention Volume =	0.355	acre-feet							Approximate 5-yr Detention Volume =	1.604	acre-feet							Approximate 10-yr Detention Volume =	0.000	acre-feet							Approximate 25-yr Detention Volume =	0.000	acre-feet							Approximate 50-yr Detention Volume =	0.000	acre-feet							Approximate 100-yr Detention Volume =	4.400	acre-feet																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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<td style="text-align: center;">152</td> <td></td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">105</td> <td style="text-align: center;">0.002</td> </tr> <tr> <td></td> <td style="text-align: center;">0.80</td> <td></td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">12.3</td> <td style="text-align: center;">152</td> <td></td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">120</td> <td style="text-align: center;">0.003</td> </tr> <tr> <td></td> <td style="text-align: center;">0.90</td> <td></td> <td style="text-align: center;">24.6</td> <td style="text-align: center;">18.3</td> <td style="text-align: center;">450</td> <td></td> <td style="text-align: center;">0.010</td> <td style="text-align: center;">143</td> <td style="text-align: center;">0.003</td> </tr> <tr> <td></td> <td style="text-align: center;">1.00</td> <td></td> <td style="text-align: center;">45.0</td> <td style="text-align: center;">28.3</td> <td style="text-align: center;">1,273</td> <td></td> <td style="text-align: center;">0.029</td> <td style="text-align: center;">226</td> <td style="text-align: center;">0.005</td> </tr> <tr> <td></td> <td style="text-align: center;">1.10</td> <td></td> <td style="text-align: center;">65.4</td> <td style="text-align: center;">38.3</td> <td style="text-align: center;">2,504</td> <td></td> <td style="text-align: center;">0.057</td> <td style="text-align: center;">411</td> <td style="text-align: center;">0.009</td> </tr> <tr> <td></td> <td style="text-align: center;">1.20</td> <td></td> <td style="text-align: center;">85.8</td> <td style="text-align: center;">48.3</td> <td style="text-align: center;">4,143</td> <td></td> <td style="text-align: center;">0.095</td> <td style="text-align: center;">740</td> <td style="text-align: center;">0.017</td> </tr> <tr> <td></td> <td style="text-align: center;">1.30</td> <td></td> <td style="text-align: center;">106.2</td> <td style="text-align: center;">58.3</td> <td style="text-align: center;">6,190</td> <td></td> <td style="text-align: center;">0.142</td> <td style="text-align: center;">1,253</td> <td style="text-align: center;">0.029</td> </tr> <tr> <td></td> <td style="text-align: center;">1.40</td> <td></td> <td style="text-align: center;">126.6</td> <td style="text-align: center;">68.3</td> <td style="text-align: center;">8,645</td> <td></td> <td style="text-align: center;">0.198</td> <td style="text-align: center;">1,992</td> <td style="text-align: center;">0.046</td> </tr> <tr> <td></td> <td style="text-align: center;">1.50</td> <td></td> <td style="text-align: center;">147.0</td> <td style="text-align: center;">78.3</td> <td style="text-align: center;">11,508</td> <td></td> <td style="text-align: center;">0.264</td> <td style="text-align: center;">2,996</td> <td style="text-align: center;">0.069</td> </tr> <tr> <td></td> <td style="text-align: center;">1.60</td> <td></td> <td style="text-align: center;">167.4</td> <td style="text-align: center;">88.3</td> <td style="text-align: center;">14,779</td> <td></td> <td style="text-align: center;">0.339</td> <td style="text-align: center;">4,307</td> <td style="text-align: center;">0.099</td> </tr> <tr> <td></td> <td style="text-align: center;">1.70</td> <td></td> <td style="text-align: center;">187.8</td> <td style="text-align: center;">98.3</td> <td style="text-align: center;">18,458</td> <td></td> <td style="text-align: center;">0.424</td> <td style="text-align: center;">5,965</td> <td style="text-align: center;">0.137</td> </tr> <tr> <td></td> <td style="text-align: center;">1.80</td> <td></td> <td style="text-align: center;">208.2</td> <td style="text-align: center;">108.3</td> <td style="text-align: center;">22,545</td> <td></td> <td style="text-align: center;">0.518</td> <td style="text-align: center;">8,012</td> <td style="text-align: center;">0.184</td> </tr> <tr> <td></td> <td style="text-align: center;">1.90</td> <td></td> <td style="text-align: center;">228.6</td> <td style="text-align: center;">118.3</td> <td style="text-align: center;">27,040</td> <td></td> <td style="text-align: center;">0.621</td> <td style="text-align: center;">10,488</td> <td style="text-align: center;">0.241</td> </tr> <tr> <td></td> <td style="text-align: center;">2.00</td> <td></td> <td style="text-align: center;">249.0</td> <td style="text-align: center;">128.3</td> <td style="text-align: center;">31,943</td> <td></td> <td style="text-align: center;">0.733</td> <td style="text-align: center;">13,434</td> <td style="text-align: center;">0.308</td> </tr> <tr> <td></td> <td style="text-align: center;">2.10</td> <td></td> <td style="text-align: center;">269.4</td> <td style="text-align: center;">138.3</td> <td style="text-align: center;">37,254</td> <td></td> <td style="text-align: center;">0.855</td> <td style="text-align: center;">16,890</td> <td style="text-align: center;">0.388</td> </tr> <tr> <td></td> <td style="text-align: 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style="text-align: center;">46,282</td> <td></td> <td style="text-align: center;">1,062</td> <td style="text-align: center;">118,263</td> <td style="text-align: center;">2,715</td> </tr> <tr> <td></td> <td style="text-align: center;">4.60</td> <td></td> <td style="text-align: center;">292.1</td> <td style="text-align: center;">159.7</td> <td style="text-align: center;">46,643</td> <td></td> <td style="text-align: center;">1,071</td> <td style="text-align: center;">122,910</td> <td style="text-align: center;">2,822</td> </tr> <tr> <td></td> <td style="text-align: center;">4.70</td> <td></td> <td style="text-align: center;">292.9</td> <td style="text-align: center;">160.5</td> <td style="text-align: center;">47,005</td> <td></td> <td style="text-align: center;">1,079</td> <td style="text-align: center;">127,592</td> <td style="text-align: center;">2,929</td> </tr> <tr> <td></td> <td style="text-align: center;">4.80</td> <td></td> <td style="text-align: center;">293.7</td> <td style="text-align: center;">161.3</td> <td style="text-align: center;">47,368</td> <td></td> <td style="text-align: center;">1,087</td> <td style="text-align: center;">132,311</td> <td style="text-align: center;">3,037</td> </tr> <tr> <td></td> <td style="text-align: center;">4.90</td> <td></td> <td style="text-align: center;">294.5</td> <td style="text-align: center;">162.1</td> <td style="text-align: center;">47,733</td> <td></td> <td style="text-align: center;">1,096</td> <td style="text-align: center;">137,068</td> <td style="text-align: center;">3,147</td> </tr> <tr> <td></td> <td style="text-align: center;">5.00</td> <td></td> <td style="text-align: center;">295.3</td> <td style="text-align: center;">162.9</td> <td style="text-align: center;">48,099</td> <td></td> <td style="text-align: center;">1,104</td> <td style="text-align: center;">141,857</td> <td style="text-align: center;">3,257</td> </tr> <tr> <td></td> <td style="text-align: center;">5.10</td> <td></td> <td 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<td></td> <td style="text-align: center;">5.70</td> <td></td> <td style="text-align: center;">300.9</td> <td style="text-align: center;">168.5</td> <td style="text-align: center;">50,696</td> <td></td> <td style="text-align: center;">1,164</td> <td style="text-align: center;">176,432</td> <td style="text-align: center;">4,050</td> </tr> <tr> <td></td> <td style="text-align: center;">5.80</td> <td></td> <td style="text-align: center;">301.7</td> <td style="text-align: center;">169.3</td> <td style="text-align: center;">51,072</td> <td></td> <td style="text-align: center;">1,172</td> <td style="text-align: center;">181,520</td> <td style="text-align: center;">4,167</td> </tr> <tr> <td></td> <td style="text-align: center;">5.90</td> <td></td> <td style="text-align: center;">302.5</td> <td style="text-align: center;">169.9</td> <td style="text-align: center;">51,444</td> <td></td> <td style="text-align: center;">1,181</td> <td style="text-align: center;">186,626</td> <td style="text-align: center;">4,285</td> </tr> <tr> <td></td> <td style="text-align: center;">6.00</td> <td></td> <td style="text-align: center;">303.3</td> <td style="text-align: center;">170.5</td> <td style="text-align: center;">51,828</td> <td></td> <td style="text-align: center;">1,190</td> <td style="text-align: center;">191,810</td> <td style="text-align: center;">4,403</td> </tr> <tr> <td></td> <td style="text-align: center;">6.10</td> <td></td> <td style="text-align: center;">304.1</td> <td style="text-align: center;">171.1</td> <td style="text-align: center;">52,208</td> <td></td> <td style="text-align: center;">1,199</td> <td style="text-align: center;">197,012</td> <td style="text-align: center;">4,523</td> </tr> <tr> <td></td> <td style="text-align: center;">6.20</td> <td></td> <td style="text-align: center;">304.9</td> <td style="text-align: center;">172.5</td> <td style="text-align: center;">52,589</td> <td></td> <td style="text-align: center;">1,207</td> <td style="text-align: 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center;">1,234</td> <td style="text-align: center;">218,201</td> <td style="text-align: center;">5,009</td> </tr> <tr> <td></td> <td style="text-align: center;">6.60</td> <td></td> <td style="text-align: center;">308.1</td> <td style="text-align: center;">175.7</td> <td style="text-align: center;">54,127</td> <td></td> <td style="text-align: center;">1,243</td> <td style="text-align: center;">223,544</td> <td style="text-align: center;">5,127</td> </tr> <tr> <td></td> <td style="text-align: center;">6.70</td> <td></td> <td style="text-align: center;">308.9</td> <td style="text-align: center;">176.5</td> <td style="text-align: center;">54,515</td> <td></td> <td style="text-align: center;">1,251</td> <td style="text-align: center;">229,026</td> <td style="text-align: center;">5,258</td> </tr> <tr> <td></td> <td style="text-align: center;">6.80</td> <td></td> <td style="text-align: center;">309.7</td> <td style="text-align: center;">177.3</td> <td style="text-align: center;">54,894</td> <td></td> <td style="text-align: center;">1,260</td> <td style="text-align: center;">234,497</td> <td style="text-align: center;">5,383</td> </tr> <tr> <td></td> <td style="text-align: center;">6.90</td> <td></td> <td style="text-align: center;">310.5</td> <td style="text-align: center;">178.1</td> <td style="text-align: center;">55,294</td> <td></td> <td style="text-align: center;">1,269</td> <td style="text-align: center;">240,007</td> <td style="text-align: center;">5,510</td> </tr> <tr> <td></td> <td style="text-align: center;">7.00</td> <td></td> <td style="text-align: center;">311.3</td> <td style="text-align: center;">178.9</td> <td style="text-align: center;">55,686</td> <td></td> <td style="text-align: center;">1,278</td> <td style="text-align: center;">245,556</td> <td style="text-align: center;">5,637</td> </tr> <tr> <td></td> <td style="text-align: center;">7.10</td> <td></td> <td style="text-align: center;">312.1</td> <td style="text-align: center;">179.7</td> <td style="text-align: center;">56,079</td> <td></td> <td style="text-align: center;">1,287</td> <td style="text-align: center;">251,144</td> <td style="text-align: center;">5,765</td> </</tr></table>									Stage - Storage Description	0.1 ft								Top of Micropool	0.00		12.3	12.3	152		0.003		ISV	0.33		12.3	12.3	152		0.003	49	0.001		0.40		12.3	12.3	152		0.003	59	0.001		0.50		12.3	12.3	152		0.003	74	0.002		0.60		12.3	12.3	152		0.003	89	0.002		0.70		12.3	12.3	152		0.003	105	0.002		0.80		12.3	12.3	152		0.003	120	0.003		0.90		24.6	18.3	450		0.010	143	0.003		1.00		45.0	28.3	1,273		0.029	226	0.005		1.10		65.4	38.3	2,504		0.057	411	0.009		1.20		85.8	48.3	4,143		0.095	740	0.017		1.30		106.2	58.3	6,190		0.142	1,253	0.029		1.40		126.6	68.3	8,645		0.198	1,992	0.046		1.50		147.0	78.3	11,508		0.264	2,996	0.069		1.60		167.4	88.3	14,779		0.339	4,307	0.099		1.70		187.8	98.3	18,458		0.424	5,965	0.137		1.80		208.2	108.3	22,545		0.518	8,012	0.184		1.90		228.6	118.3	27,040		0.621	10,488	0.241		2.00		249.0	128.3	31,943		0.733	13,434	0.308		2.10		269.4	138.3	37,254		0.855	16,890	0.388		2.20		279.8	148.3	42,808		0.868	17,266	0.396		2.30		290.2	158.3	48,361		0.895	28,815	0.662		2.40		274.5	162.1	39,001		0.903	32,732	0.751		2.50		275.3	142.9	39,335		0.903				2.60		276.1	143.7	39,670		0.911	36,682	0.842		2.70		276.9	144.5	40,006		0.918	40,666	0.934		2.80		277.7	145.3	40,344		0.926	44,684	1,026		2.90		278.5	146.1	40,683		0.934	48,735	1,119		3.00		279.3	146.9	41,023		0.942	52,820	1,213		3.10		280.1	147.7	41,365		0.950	56,940	1,307		3.20		280.9	148.5	41,708		0.957	61,093	1,403		3.30		281.7	149.3	42,052		0.965	65,281	1,499		3.40		282.5	150.1	42,398		0.973	69,504	1,596		3.50		283.3	150.9	42,744		0.981	73,761	1,693		3.60		284.1	151.7	43,092		0.989	78,053	1,792		3.70		284.9	152.5	43,442		0.997	82,379	1,891		3.80		285.7	153.3	43,792		1,005	86,741	1,991		3.90		286.5	154.1	44,144		1,013	91,138	2,092		4.00		287.3	154.9	44,497		1,022	95,570	2,194		4.10		288.1	155.7	44,851		1,030	100,037	2,297		4.20		288.9	156.5	45,207		1,038	104,540	2,400		4.30		289.7	157.3	45,564		1,046	109,079	2,504		4.40		290.5	158.1	45,922		1,054	113,653	2,609		4.50		291.3	158.9	46,282		1,062	118,263	2,715		4.60		292.1	159.7	46,643		1,071	122,910	2,822		4.70		292.9	160.5	47,005		1,079	127,592	2,929		4.80		293.7	161.3	47,368		1,087	132,311	3,037		4.90		294.5	162.1	47,733		1,096	137,068	3,147		5.00		295.3	162.9	48,099		1,104	141,857	3,257		5.10		296.1	163.7	48,466		1,113	146,685	3,367		5.20		296.9	164.5	48,834		1,121	151,550	3,479		5.30		297.7	165.3	49,192		1,130	156,452	3,582		5.40		298.5	166.1	49,575		1,138	161,391	3,705		5.50		299.3	166.9	49,947		1,147	166,367	3,819		5.60		300.1	167.7	50,321		1,155	171,381	3,934		5.70		300.9	168.5	50,696		1,164	176,432	4,050		5.80		301.7	169.3	51,072		1,172	181,520	4,167		5.90		302.5	169.9	51,444		1,181	186,626	4,285		6.00		303.3	170.5	51,828		1,190	191,810	4,403		6.10		304.1	171.1	52,208		1,199	197,012	4,523		6.20		304.9	172.5	52,589		1,207	202,252	4,643		6.30		305.7	173.3	52,972		1,216	207,530	4,764		6.40		306.5	174.1	53,356		1,225	212,846	4,886		6.50		307.3	174.9	53,741		1,234	218,201	5,009		6.60		308.1	175.7	54,127		1,243	223,544	5,127		6.70		308.9	176.5	54,515		1,251	229,026	5,258		6.80		309.7	177.3	54,894		1,260	234,497	5,383		6.90		310.5	178.1	55,294		1,269	240,007	5,510		7.00		311.3	178.9	55,686		1,278	245,556	5,637		7.10		312.1	179.7	56,079		1,287	251,144	5,765
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	1.40		126.6	68.3	8,645		0.198	1,992	0.046																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.50		147.0	78.3	11,508		0.264	2,996	0.069																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.60		167.4	88.3	14,779		0.339	4,307	0.099																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.70		187.8	98.3	18,458		0.424	5,965	0.137																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.80		208.2	108.3	22,545		0.518	8,012	0.184																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1.90		228.6	118.3	27,040		0.621	10,488	0.241																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.00		249.0	128.3	31,943		0.733	13,434	0.308																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.10		269.4	138.3	37,254		0.855	16,890	0.388																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.20		279.8	148.3	42,808		0.868	17,266	0.396																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.30		290.2	158.3	48,361		0.895	28,815	0.662																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.40		274.5	162.1	39,001		0.903	32,732	0.751																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.50		275.3	142.9	39,335		0.903																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	2.60		276.1	143.7	39,670		0.911	36,682	0.842																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.70		276.9	144.5	40,006		0.918	40,666	0.934																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.80		277.7	145.3	40,344		0.926	44,684	1,026																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	2.90		278.5	146.1	40,683		0.934	48,735	1,119																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.00		279.3	146.9	41,023		0.942	52,820	1,213																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.10		280.1	147.7	41,365		0.950	56,940	1,307																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.20		280.9	148.5	41,708		0.957	61,093	1,403																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.30		281.7	149.3	42,052		0.965	65,281	1,499																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.40		282.5	150.1	42,398		0.973	69,504	1,596																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.50		283.3	150.9	42,744		0.981	73,761	1,693																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.60		284.1	151.7	43,092		0.989	78,053	1,792																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.70		284.9	152.5	43,442		0.997	82,379	1,891																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.80		285.7	153.3	43,792		1,005	86,741	1,991																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	3.90		286.5	154.1	44,144		1,013	91,138	2,092																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.00		287.3	154.9	44,497		1,022	95,570	2,194																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.10		288.1	155.7	44,851		1,030	100,037	2,297																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.20		288.9	156.5	45,207		1,038	104,540	2,400																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.30		289.7	157.3	45,564		1,046	109,079	2,504																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.40		290.5	158.1	45,922		1,054	113,653	2,609																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.50		291.3	158.9	46,282		1,062	118,263	2,715																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.60		292.1	159.7	46,643		1,071	122,910	2,822																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.70		292.9	160.5	47,005		1,079	127,592	2,929																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.80		293.7	161.3	47,368		1,087	132,311	3,037																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	4.90		294.5	162.1	47,733		1,096	137,068	3,147																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.00		295.3	162.9	48,099		1,104	141,857	3,257																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.10		296.1	163.7	48,466		1,113	146,685	3,367																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.20		296.9	164.5	48,834		1,121	151,550	3,479																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.30		297.7	165.3	49,192		1,130	156,452	3,582																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.40		298.5	166.1	49,575		1,138	161,391	3,705																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.50		299.3	166.9	49,947		1,147	166,367	3,819																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.60		300.1	167.7	50,321		1,155	171,381	3,934																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.70		300.9	168.5	50,696		1,164	176,432	4,050																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.80		301.7	169.3	51,072		1,172	181,520	4,167																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	5.90		302.5	169.9	51,444		1,181	186,626	4,285																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.00		303.3	170.5	51,828		1,190	191,810	4,403																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.10		304.1	171.1	52,208		1,199	197,012	4,523																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.20		304.9	172.5	52,589		1,207	202,252	4,643																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.30		305.7	173.3	52,972		1,216	207,530	4,764																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.40		306.5	174.1	53,356		1,225	212,846	4,886																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.50		307.3	174.9	53,741		1,234	218,201	5,009																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.60		308.1	175.7	54,127		1,243	223,544	5,127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.70		308.9	176.5	54,515		1,251	229,026	5,258																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.80		309.7	177.3	54,894		1,260	234,497	5,383																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	6.90		310.5	178.1	55,294		1,269	240,007	5,510																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	7.00		311.3	178.9	55,686		1,278	245,556	5,637																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	7.10		312.1	179.7	56,079		1,287	251,144	5,765																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

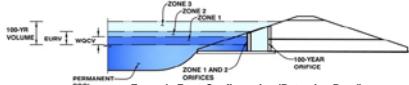
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

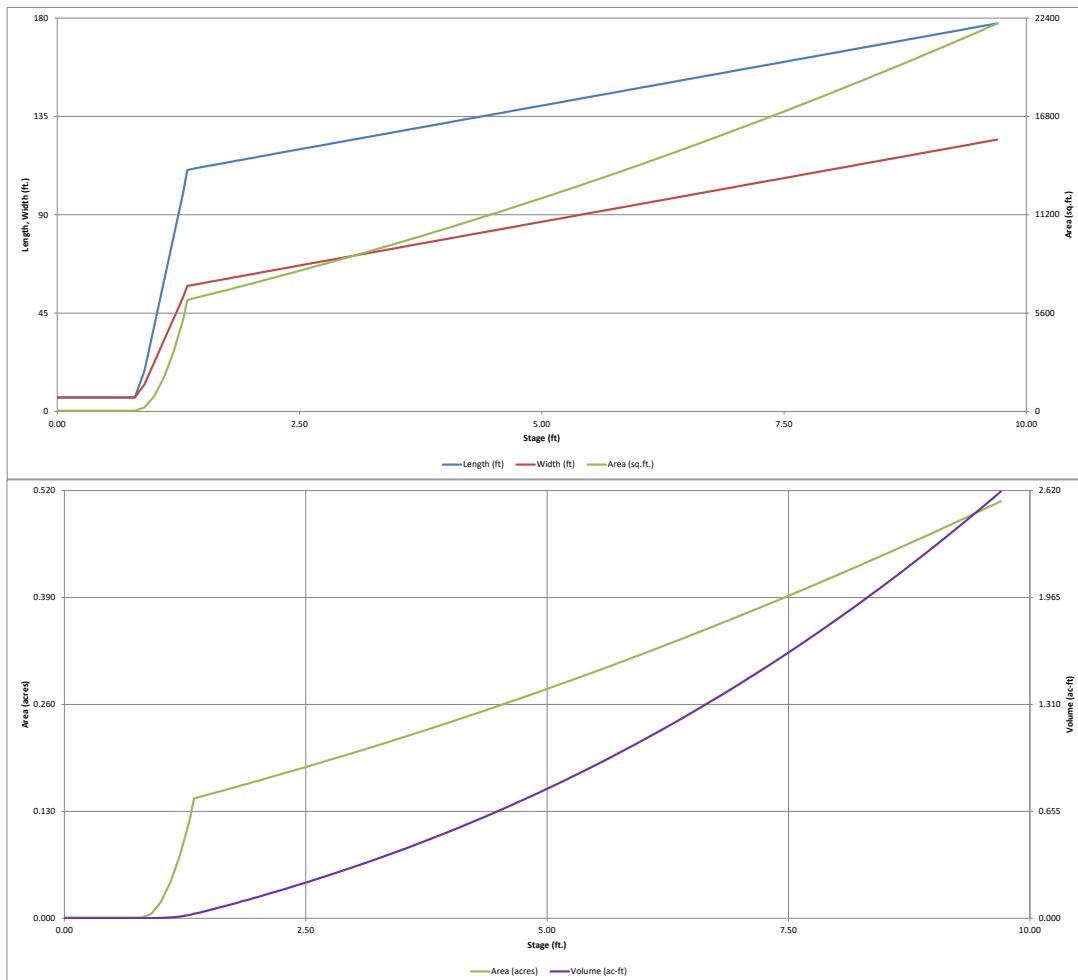
<p style="margin: 0;">Project: <u>Front Range - Midway Solar</u></p> <p style="margin: 0;">Basin ID: <u>A6</u></p>  <p style="margin: 0;">Example Zone Configuration (Retention Pond)</p>																																																																																																																																																																																																																																
<p>Required Volume Calculation</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Selected BMP Type =</td> <td style="width: 15%; text-align: right;">EDB</td> <td style="width: 15%;"></td> </tr> <tr> <td>Watershed Area =</td> <td>47.98</td> <td>acres</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Length =</td> <td>1,777</td> <td>ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Slope =</td> <td>0.014</td> <td>ft/ft</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Watershed Imperviousness =</td> <td>3.50%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group A =</td> <td>5.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Group B =</td> <td>0.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage Hydrologic Soil Groups C/D =</td> <td>95.0%</td> <td>percent</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Desired WQCV Drain Time =</td> <td>40.0</td> <td>hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Location for 1-hr Rainfall Depths =</td> <td colspan="7">User Input</td> <td></td> </tr> <tr> <td>Water Quality Capture Volume (WQCV) =</td> <td>0.103</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excess Urban Runoff Volume (EURV) =</td> <td>0.127</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2-yr Runoff Volume (P1 = 1.19 in.) =</td> <td>0.103</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5-yr Runoff Volume (P1 = 1.5 in.) =</td> <td>0.405</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>50-yr Runoff Volume (P1 = 0 in.) =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>100-yr Runoff Volume (P1 = 0.52 in.) =</td> <td>5.636</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 2-yr Detention Volume =</td> <td>0.096</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 5-yr Detention Volume =</td> <td>0.392</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 10-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 25-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 50-yr Detention Volume =</td> <td>0.000</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Approximate 100-yr Detention Volume =</td> <td>1.092</td> <td>acre-feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									Selected BMP Type =	EDB								Watershed Area =	47.98	acres							Watershed Length =	1,777	ft							Watershed Slope =	0.014	ft/ft							Watershed Imperviousness =	3.50%	percent							Percentage Hydrologic Soil Group A =	5.0%	percent							Percentage Hydrologic Soil Group B =	0.0%	percent							Percentage Hydrologic Soil Groups C/D =	95.0%	percent							Desired WQCV Drain Time =	40.0	hours							Location for 1-hr Rainfall Depths =	User Input								Water Quality Capture Volume (WQCV) =	0.103	acre-feet							Excess Urban Runoff Volume (EURV) =	0.127	acre-feet							2-yr Runoff Volume (P1 = 1.19 in.) =	0.103	acre-feet							5-yr Runoff Volume (P1 = 1.5 in.) =	0.405	acre-feet							10-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							50-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet							100-yr Runoff Volume (P1 = 0.52 in.) =	5.636	acre-feet							Approximate 2-yr Detention Volume =	0.096	acre-feet							Approximate 5-yr Detention Volume =	0.392	acre-feet							Approximate 10-yr Detention Volume =	0.000	acre-feet							Approximate 25-yr Detention Volume =	0.000	acre-feet							Approximate 50-yr Detention Volume =	0.000	acre-feet							Approximate 100-yr Detention Volume =	1.092	acre-feet						
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Optional User Override	
	1-hr Precipitation
1.19	inches
1.50	inches
1.60	inches
1.70	inches
1.80	inches
2.52	inches

Depth Increment =	0.1 ft							
Top of Micropool	0.00	6.4	6.4	41		0.001		
ISV	0.33	6.4	6.4	41		0.001	13	0.000
	0.40	6.4	6.4	41		0.001	16	0.000
	0.50	6.4	6.4	41		0.001	20	0.000
	0.60	6.4	6.4	41		0.001	24	0.001
	0.70	6.4	6.4	41		0.001	28	0.001
	0.80	6.4	6.4	41		0.001	32	0.001
	0.90	18.6	12.4	231		0.005	41	0.001
	1.00	39.0	22.4	875		0.020	93	0.002
	1.10	59.4	32.4	1,926		0.044	230	0.005
	1.20	79.8	42.4	3,385		0.078	492	0.011
	1.30	100.2	52.4	5,253		0.121	921	0.021
	1.40	110.4	57.4	6,340		0.146	1,210	0.028
	1.50	111.1	57.9	6,433		0.148	1,530	0.035
	1.60	111.9	58.7	6,568		0.151	2,180	0.050
	1.70	112.7	59.5	6,706		0.154	2,844	0.065
	1.80	114.3	61.1	6,984		0.160	4,212	0.097
	1.90	115.1	61.9	7,125		0.164	4,918	0.113
	2.00	115.9	62.7	7,267		0.167	5,637	0.129
	2.10	116.8	63.6	7,425		0.170	6,445	0.148
	2.20	117.6	64.4	7,570		0.174	7,195	0.165
	2.30	118.4	65.2	7,716		0.177	7,959	0.183
	2.40	119.2	66.0	7,863		0.181	8,738	0.201
	2.50	120.0	66.8	8,012		0.184	9,532	0.219
	2.60	120.8	67.6	8,162		0.187	10,341	0.237
	2.70	121.6	68.4	8,313		0.191	11,165	0.256
	2.80	122.4	69.2	8,466		0.194	12,004	0.276
	2.90	123.2	70.0	8,620		0.198	12,858	0.295
	3.00	124.0	70.8	8,775		0.201	13,728	0.315
	3.10	124.8	71.6	8,929		0.205	14,613	0.335
	3.20	125.6	72.4	9,089		0.209	15,514	0.356
	3.30	126.4	73.2	9,248		0.212	16,431	0.377
	3.40	127.2	74.0	9,409		0.216	17,364	0.399
	3.50	128.0	74.8	9,570		0.220	18,313	0.420
	3.60	128.8	75.6	9,733		0.223	19,278	0.443
	3.70	129.6	76.4	9,897		0.227	20,259	0.465
	3.80	130.4	77.2	10,062		0.231	21,257	0.488
	3.90	131.2	78.0	10,229		0.235	22,272	0.511
	4.00	132.0	78.8	10,397		0.239	23,303	0.535
	4.10	132.8	79.6	10,566		0.243	24,351	0.559
	4.20	133.6	80.4	10,737		0.246	25,416	0.583
	4.30	134.4	81.2	10,909		0.250	26,499	0.608
	4.40	135.2	82.0	11,082		0.254	27,598	0.634
	4.50	136.0	82.8	11,256		0.258	28,715	0.659
	4.60	136.8	83.6	11,432		0.262	29,849	0.685
	4.70	137.6	84.4	11,609		0.266	31,001	0.712
	4.80	138.4	85.2	11,787		0.271	32,171	0.739
	4.90	139.2	86.0	11,966		0.275	33,359	0.766
	5.00	140.0	86.8	12,147		0.279	34,564	0.793
	5.10	140.8	87.6	12,329		0.283	35,788	0.822
	5.20	141.6	88.4	12,512		0.287	37,030	0.850
	5.30	142.4	89.2	12,697		0.291	38,291	0.879
	5.40	143.2	90.0	12,883		0.296	39,570	0.908
	5.50	144.0	90.8	13,070		0.300	40,867	0.938
	5.60	144.8	91.6	13,259		0.304	42,184	0.968
	5.70	145.6	92.4	13,448		0.309	43,519	0.999
	5.80	146.4	93.2	13,639		0.313	44,874	1.030
	5.90	147.2	94.0	13,831		0.316	46,247	1.062
	6.00	148.0	94.8	14,025		0.322	47,640	1.094
	6.10	148.8	95.6	14,220		0.326	49,052	1.126
	6.20	149.6	96.4	14,416		0.331	50,484	1.159
	6.30	150.4	97.2	14,613		0.335	51,935	1.192
	6.40	151.2	98.0	14,812		0.340	53,407	1.226
	6.50	152.0	98.8	15,012		0.345	54,988	1.260
	6.60	152.8	99.6	15,213		0.350	56,580	1.294
	6.70	153.6	100.4	15,416		0.354	57,941	1.330
	6.80	154.4	101.2	15,620		0.359	59,492	1.366
	6.90	155.2	102.0	15,825		0.363	61,065	1.402
	7.00	156.0	102.8	16,031		0.368	62,657	1.438
	7.10	156.8	103.6	16,239		0.373	64,271	1.475
	7.20	157.6	104.4	16,446		0.378	65,904	1.513
	7.30	158.4	105.2	16,653		0.382	67,560	1.551
	7.40	159.2	106.0	16,860		0.387	69,237	1.589
	7.50	160.0	106.8	17,082		0.392	70,934	1.628
	7.60	160.8	107.6	17,296		0.397	72,653	1.668
	7.70	161.6	108.4	17,511		0.402	74,394	1.708
	7.80	162.4	109.2	17,726		0.407	76,146	1.748
	7.90	163.2	110.0	17,946		0.412	77,939	1.789
	8.00	164.0	110.8	18,165		0.417	79,745	1.831
	8.10	164.8	111.6	18,386		0.422	81,572	1.873
	8.20	165.6	112.4	18,607		0.427	83,422	1.915
	8.30	166.4	113.2	18,830		0.432	85,294	1.958
	8.40	167.2	114.0	19,055		0.437	87,166	2.002
	8.50	168.0	114.8	19,280		0.443	89,046	2.046
	8.60	168.8	115.6	19,507		0.448	91,044	2.090
	8.70	169.6	116.4	19,735		0.453	93,066	2.135
	8.80	170.4	117.2	19,964		0.458	94,991	2.181
	8.90	171.2	118.0	20,195		0.464	96,999	2.227
	9.00	172.0	118.8	20,427		0.469	99,030	2.273
	9.10	172.8	119.6	20,659		0.474	101,084	2.321
	9.20	173.6	120.4	20,895		0.480	103,162	2.368
	9.30	174.4	121.2	21,131		0.485	105,263	2.417
	9.40	175.2	122.0	21,368		0.491	107,388	2.465
	9.50	176.0	122.8	21,606		0.496	109,537	2.515
	9.60	176.8	123.6	21,846		0.502	111,710	2.565
	9.70	177.6	124.4	22,087		0.507	113,906	2.615

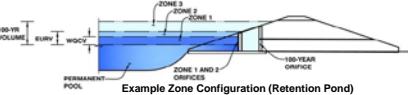
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



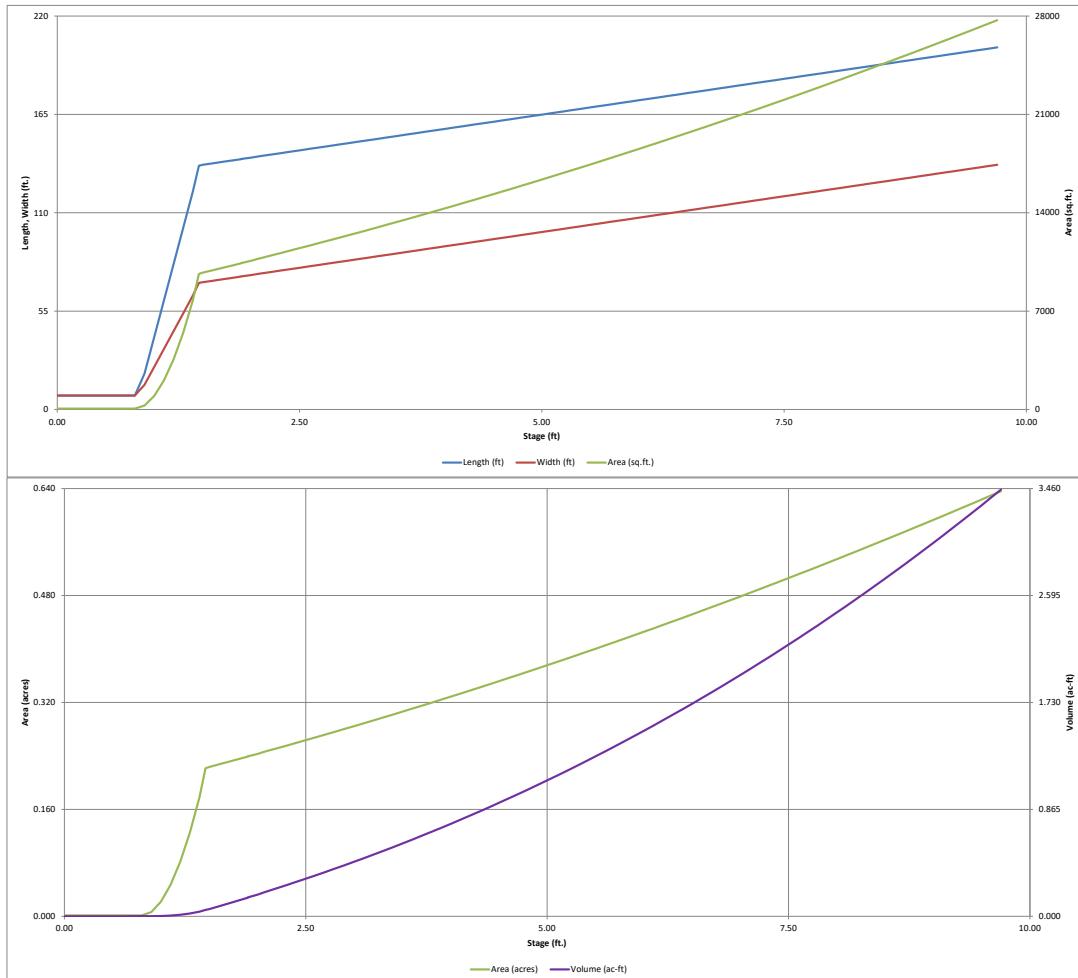
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Depth Increment =</th> <th style="width: 10%;">0.1 ft</th> <th style="width: 80%;">Stage - Storage Description</th> <th style="width: 10%;">Optional Override Stage (ft)</th> <th style="width: 10%;">Optional Override Length (ft)</th> <th style="width: 10%;">Width (ft)</th> <th style="width: 10%;">Area (ft²)</th> <th style="width: 10%;">Optional Override Area (ft²)</th> <th style="width: 10%;">Area (acre)</th> <th style="width: 10%;">Volume (ft³)</th> <th style="width: 10%;">Volume (ac-ft)</th> </tr> </thead> <tbody> <tr> <td>Top of Micropool</td> <td>0.00</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td></td> <td></td> </tr> <tr> <td>ISV</td> <td>0.33</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>19</td> <td>0.000</td> </tr> <tr> <td></td> <td>0.40</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>24</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.50</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>30</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.60</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>36</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.70</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>42</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.80</td> <td></td> <td></td> <td></td> <td>7.8</td> <td>7.8</td> <td>61</td> <td>0.001</td> <td>48</td> <td>0.001</td> </tr> <tr> <td></td> <td>0.90</td> <td></td> <td></td> <td></td> <td>20.0</td> <td>13.8</td> <td>276</td> <td>0.006</td> <td>60</td> <td>0.001</td> </tr> <tr> <td></td> <td>1.00</td> <td></td> <td></td> <td></td> <td>40.4</td> <td>23.8</td> <td>961</td> <td>0.022</td> <td>118</td> <td>0.003</td> </tr> <tr> <td></td> <td>1.10</td> <td></td> <td></td> <td></td> <td>60.8</td> <td>33.8</td> <td>2,054</td> <td>0.047</td> <td>265</td> <td>0.006</td> </tr> <tr> <td></td> <td>1.20</td> <td></td> <td></td> <td></td> <td>81.2</td> <td>43.8</td> <td>3,556</td> <td>0.082</td> <td>543</td> <td>0.012</td> </tr> <tr> <td></td> <td>1.30</td> <td></td> <td></td> <td></td> <td>101.6</td> <td>53.8</td> <td>5,465</td> <td>0.125</td> <td>990</td> <td>0.023</td> </tr> <tr> <td></td> <td>1.40</td> <td></td> <td></td> <td></td> <td>122.0</td> <td>63.8</td> <td>7,782</td> <td>0.179</td> <td>1,649</td> <td>0.038</td> </tr> <tr> <td>Floor</td> <td>1.46</td> <td></td> <td></td> <td></td> <td>136.3</td> <td>70.8</td> <td>9,647</td> <td>0.221</td> <td>2,258</td> <td>0.052</td> </tr> <tr> <td></td> <td>1.50</td> <td></td> <td></td> <td></td> <td>136.8</td> <td>71.1</td> <td>9,734</td> <td>0.223</td> <td>2,549</td> <td>0.059</td> </tr> <tr> <td></td> <td>1.60</td> <td></td> <td></td> <td></td> <td>137.6</td> <td>71.9</td> <td>9,901</td> <td>0.227</td> <td>3,531</td> <td>0.081</td> </tr> <tr> <td></td> <td>1.70</td> <td></td> <td></td> <td></td> <td>138.4</td> <td>72.7</td> <td>10,069</td> <td>0.231</td> <td>4,529</td> <td>0.104</td> </tr> <tr> <td></td> <td>1.80</td> <td></td> <td></td> <td></td> <td>139.2</td> <td>73.5</td> <td>10,239</td> <td>0.235</td> <td>5,545</td> <td>0.127</td> </tr> <tr> <td></td> <td>1.90</td> <td></td> <td></td> <td></td> <td>140.0</td> <td>74.3</td> <td>10,410</td> <td>0.239</td> <td>6,577</td> <td>0.151</td> </tr> <tr> <td>Zone 1 (WQCV)</td> <td>1.90</td> <td></td> <td></td> <td></td> <td>140.1</td> <td>74.4</td> <td>10,427</td> <td>0.239</td> <td>6,681</td> <td>0.153</td> </tr> <tr> <td>Zone 2 (EURV)</td> <td>2.07</td> <td></td> <td></td> <td></td> <td>141.5</td> <td>75.8</td> <td>10,721</td> <td>0.246</td> <td>8,479</td> <td>0.195</td> </tr> <tr> <td></td> <td>2.10</td> <td></td> <td></td> <td></td> <td>141.7</td> <td>76.0</td> <td>10,773</td> <td>0.247</td> <td>8,801</td> <td>0.202</td> </tr> <tr> <td></td> <td>2.20</td> <td></td> <td></td> <td></td> <td>142.5</td> <td>76.8</td> <td>10,948</td> <td>0.251</td> <td>9,887</td> <td>0.227</td> </tr> <tr> <td></td> <td>2.30</td> <td></td> <td></td> <td></td> <td>143.3</td> <td>77.6</td> <td>11,124</td> <td>0.255</td> <td>10,991</td> <td>0.252</td> </tr> <tr> <td></td> <td>2.40</td> <td></td> <td></td> <td></td> <td>144.1</td> <td>78.4</td> <td>11,301</td> <td>0.259</td> <td>12,112</td> <td>0.278</td> </tr> <tr> <td></td> <td>2.50</td> <td></td> <td></td> <td></td> <td>144.9</td> <td>79.2</td> <td>11,480</td> <td>0.264</td> <td>13,251</td> <td>0.304</td> </tr> <tr> <td></td> <td>2.60</td> <td></td> <td></td> <td></td> <td>145.7</td> <td>80.0</td> <td>11,660</td> <td>0.268</td> <td>14,408</td> <td>0.331</td> </tr> <tr> <td></td> <td>2.70</td> <td></td> <td></td> <td></td> <td>146.5</td> <td>80.8</td> <td>11,841</td> <td>0.272</td> <td>15,583</td> <td>0.358</td> </tr> <tr> <td></td> <td>2.80</td> <td></td> <td></td> <td></td> <td>147.3</td> <td>81.6</td> <td>12,023</td> <td>0.276</td> <td>16,776</td> <td>0.385</td> </tr> <tr> <td></td> <td>2.90</td> <td></td> <td></td> <td></td> <td>148.1</td> <td>82.4</td> <td>12,207</td> <td>0.280</td> <td>17,988</td> <td>0.413</td> </tr> <tr> <td></td> <td>3.00</td> <td></td> <td></td> <td></td> <td>148.9</td> <td>83.2</td> <td>12,392</td> <td>0.284</td> <td>19,218</td> <td>0.441</td> </tr> <tr> <td></td> <td>3.10</td> <td></td> <td></td> <td></td> <td>149.7</td> <td>84.0</td> <td>12,578</td> <td>0.289</td> <td>20,466</td> <td>0.470</td> </tr> <tr> <td></td> <td>3.20</td> <td></td> <td></td> <td></td> <td>150.5</td> <td>84.8</td> <td>12,766</td> <td>0.293</td> <td>21,733</td> <td>0.499</td> </tr> <tr> <td></td> <td>3.30</td> <td></td> <td></td> <td></td> <td>151.3</td> <td>85.6</td> <td>12,955</td> <td>0.297</td> <td>23,019</td> <td>0.528</td> </tr> <tr> <td></td> <td>3.40</td> <td></td> <td></td> <td></td> <td>152.1</td> <td>86.4</td> <td>13,145</td> <td>0.302</td> <td>24,324</td> <td>0.558</td> </tr> <tr> <td></td> <td>3.50</td> <td></td> <td></td> <td></td> <td>152.9</td> <td>87.2</td> <td>13,337</td> <td>0.306</td> <td>25,648</td> <td>0.589</td> </tr> <tr> <td></td> <td>3.60</td> <td></td> <td></td> <td></td> <td>153.7</td> <td>88.0</td> <td>13,529</td> <td>0.311</td> <td>26,992</td> <td>0.620</td> </tr> <tr> <td></td> <td>3.70</td> <td></td> <td></td> <td></td> <td>154.5</td> <td>88.8</td> <td>13,723</td> <td>0.315</td> <td>28,354</td> <td>0.651</td> </tr> <tr> <td></td> <td>3.80</td> <td></td> <td></td> <td></td> <td>155.3</td> <td>89.6</td> <td>13,919</td> <td>0.320</td> <td>29,736</td> <td>0.683</td> </tr> <tr> <td></td> <td>3.90</td> <td></td> <td></td> <td></td> <td>156.1</td> <td>90.4</td> <td>14,115</td> <td>0.324</td> <td>31,138</td> <td>0.715</td> </tr> <tr> <td></td> <td>4.00</td> <td></td> <td></td> <td></td> <td>156.9</td> <td>91.2</td> <td>14,313</td> <td>0.329</td> <td>32,560</td> <td>0.747</td> </tr> <tr> <td></td> <td>4.10</td> <td></td> <td></td> <td></td> <td>157.7</td> <td>92.0</td> <td>14,512</td> <td>0.333</td> <td>34,001</td> <td>0.781</td> </tr> <tr> <td></td> <td>4.20</td> <td></td> <td></td> <td></td> <td>158.5</td> <td>92.8</td> <td>14,713</td> <td>0.338</td> <td>35,462</td> <td>0.814</td> </tr> <tr> <td></td> <td>4.30</td> <td></td> <td></td> <td></td> <td>159.3</td> <td>93.6</td> <td>14,914</td> <td>0.342</td> <td>36,943</td> <td>0.848</td> </tr> <tr> <td></td> <td>4.40</td> <td></td> <td></td> <td></td> <td>160.1</td> <td>94.4</td> <td>15,117</td> <td>0.347</td> <td>38,445</td> <td>0.883</td> </tr> <tr> <td></td> <td>4.50</td> <td></td> <td></td> <td></td> <td>160.9</td> <td>95.2</td> <td>15,322</td> <td>0.352</td> <td>39,967</td> <td>0.918</td> </tr> <tr> <td></td> <td>4.60</td> <td></td> <td></td> <td></td> <td>161.7</td> <td>96.0</td> <td>15,527</td> <td>0.356</td> <td>41,509</td> <td>0.953</td> </tr> <tr> <td></td> <td>4.70</td> <td></td> <td></td> <td></td> <td>162.5</td> <td>96.8</td> <td>15,734</td> <td>0.361</td> <td>43,072</td> <td>0.989</td> </tr> <tr> <td></td> <td>4.80</td> <td></td> <td></td> <td></td> <td>163.3</td> <td>97.6</td> <td>15,942</td> <td>0.366</td> <td>44,656</td> <td>1.025</td> </tr> <tr> <td></td> <td>4.90</td> <td></td> <td></td> <td></td> <td>164.1</td> <td>98.4</td> <td>16,151</td> <td>0.371</td> <td>46,261</td> <td>1.062</td> </tr> <tr> <td></td> <td>5.00</td> <td></td> <td></td> <td></td> <td>164.9</td> <td>99.2</td> <td>16,362</td> <td>0.376</td> <td>47,887</td> <td>1.099</td> </tr> <tr> <td></td> <td>5.10</td> <td></td> <td></td> <td></td> <td>165.7</td> <td>100.0</td> <td>16,574</td> <td>0.380</td> <td>49,533</td> <td>1.137</td> </tr> <tr> <td></td> <td>5.20</td> <td></td> <td></td> <td></td> <td>166.5</td> <td>100.8</td> <td>16,787</td> <td>0.385</td> <td>51,201</td> <td>1.175</td> </tr> <tr> <td></td> <td>5.30</td> <td></td> <td></td> <td></td> <td>167.3</td> <td>101.6</td> <td>17,002</td> <td>0.390</td> <td>52,891</td> <td>1.214</td> </tr> <tr> <td></td> <td>5.40</td> <td></td> <td></td> <td></td> <td>168.1</td> <td>102.4</td> <td>17,218</td> <td>0.395</td> <td>54,602</td> <td>1.253</td> </tr> <tr> <td></td> <td>5.50</td> <td></td> <td></td> <td></td> <td>168.9</td> <td>103.2</td> <td>17,435</td> <td>0.400</td> <td>56,334</td> <td>1.293</td> </tr> <tr> <td></td> <td>5.60</td> <td></td> <td></td> <td></td> <td>169.7</td> <td>104.0</td> <td>17,653</td> <td>0.405</td> <td>58,089</td> <td>1.344</td> </tr> <tr> <td></td> <td>5.70</td> <td></td> <td></td> <td></td> <td>170.5</td> <td>104.8</td> <td>17,873</td> <td>0.410</td> <td>59,865</td> <td>1.374</td> </tr> <tr> <td></td> <td>5.80</td> <td></td> <td></td> <td></td> <td>171.3</td> <td>105.6</td> <td>18,093</td> <td>0.415</td> <td>61,683</td> <td>1.416</td> </tr> <tr> <td></td> <td>5.90</td> <td></td> <td></td> <td></td> <td>172.1</td> <td>106.4</td> <td>18,315</td> <td>0.420</td> <td>63,534</td> <td>1.457</td> </tr> <tr> <td></td> <td>6.00</td> <td></td> <td></td> <td></td> <td>172.9</td> <td>107.2</td> <td>18,539</td> <td>0.426</td> <td>65,326</td> <td>1.500</td> </tr> <tr> <td></td> <td>6.10</td> <td></td> <td></td> <td></td> <td>173.7</td> <td>108.0</td> <td>18,764</td> <td>0.431</td> <td>67,192</td> <td>1.543</td> </tr> <tr> <td></td> <td>6.20</td> <td></td> <td></td> <td></td> <td>174.5</td> <td>108.8</td> <td>18,990</td> <td>0.436</td> <td>69,079</td> <td>1.586</td> </tr> <tr> <td></td> <td>6.30</td> <td></td> <td></td> <td></td> <td>175.3</td> <td>109.6</td> <td>19,217</td> <td>0.441</td> <td>70,990</td> <td>1.630</td> </tr> <tr> <td></td> <td>6.40</td> <td></td> <td></td> <td></td> <td>176.1</td> <td>110.4</td> <td>19,446</td> <td>0.446</td> <td>72,923</td> <td>1.674</td> </tr> <tr> <td></td> <td>6.50</td> <td></td> <td></td> <td></td> <td>176.9</td> <td>111.2</td> <td>19,676</td> <td>0.452</td> <td>74,879</td> <td>1.719</td> </tr> <tr> <td></td> <td>6.60</td> <td></td> <td></td> <td></td> <td>177.7</td> <td>112.0</td> <td>19,907</td> <td>0.457</td> <td>76,860</td> <td>1.764</td> </tr> <tr> <td></td> <td>6.70</td> <td></td> <td></td> <td></td> <td>178.5</td> <td>112.8</td> <td>20,139</td> <td>0.462</td> <td>78,860</td> <td>1.810</td> </tr> <tr> <td></td> <td>6.80</td> <td></td> <td></td> <td></td> <td>179.3</td> <td>113.6</td> <td>20,373</td> <td>0.468</td> <td>80,886</td> <td>1.857</td> </tr> <tr> <td></td> <td>6.90</td> <td></td> <td></td> <td></td> <td>180.1</td> <td>114.4</td> <td>20,608</td> <td>0.473</td> <td>82,935</td> <td>1.904</td> </tr> <tr> <td></td> <td>7.00</td> <td></td> <td></td> <td></td> <td>180.9</td> <td>115.2</td> <td>20,844</td> <td>0.479</td> <td>85,007</td> <td>1.951</td> </tr> <tr> <td></td> <td>7.10</td> <td></td> <td></td> <td></td> <td>181.7</td> <td>116.0</td> <td>21,082</td> <td>0.484</td> <td>87,104</td> <td>2.000</td> </tr> <tr> <td></td> <td>7.20</td> <td></td> <td></td> <td></td> <td>182.5</td> <td>116.8</td> <td>21,320</td> <td>0.489</td> <td>89,224</td> <td>2.049</td> </tr> <tr> <td></td> <td>7.30</td> <td></td> <td></td> <td></td> <td>183.3</td> <td>117.6</td> <td>21,560</td> <td>0.495</td> <td>91,368</td> <td>2.098</td> </tr> <tr> <td></td> <td>7.40</td> <td></td> <td></td> <td></td> <td>184.1</td> <td>118.4</td> <td>21,802</td> <td>0.501</td> <td>93,536</td> <td>2.147</td> </tr> <tr> <td></td> <td>7.50</td> <td></td> <td></td> <td></td> <td>184.9</td> <td>119.2</td> <td>22,045</td> <td>0.506</td> <td>95,728</td> <td>2.198</td> </tr> <tr> <td></td> <td>7.60</td> <td></td> <td></td> <td></td> <td>185.7</td> <td>120.0</td> <td>22,288</td> <td>0.512</td> <td>97,945</td> <td>2.249</td> </tr> <tr> <td></td> <td>7.70</td> <td></td> <td></td> <td></td> <td>186.5</td> <td>120.8</td> <td>22,534</td> <td>0.517</td> <td>100,186</td> <td>2.300</td> </tr> <tr> <td></td> <td>7.80</td> <td></td> <td></td> <td></td> <td>187.3</td> <td>121.6</td> <td>22,780</td> <td>0.523</td> <td>102,440</td> <td>2.352</td> </tr> <tr> <td></td> <td>7.90</td> <td></td> <td></td> <td></td> <td>188.1</td> <td>122.4</td> <td>23,028</td> <td>0.529</td> <td>104,742</td> <td>2.405</td> </tr> <tr> <td></td> <td>8.00</td> <td></td> <td></td> <td></td> <td>188.9</td> <td>123.2</td> <td>23,277</td> <td>0.534</td> <td>107,057</td> <td>2.458</td> </tr> <tr> <td></td> <td>8.10</td> <td></td> <td></td> <td></td> <td>189.7</td> <td>124.0</td> <td>23,527</td> <td>0.540</td> <td>109,397</td> <td>2.511</td> </tr> <tr> <td></td> <td>8.20</td> <td></td> <td></td> <td></td> <td>190.5</td> <td>124.8</td> <td>23,779</td> <td>0.546</td> <td>111,763</td> <td>2.566</td> </tr> <tr> <td></td> <td>8.30</td> <td></td> <td></td> <td></td> <td>191.3</td> <td>125.6</td> <td>24,032</td> <td>0.552</td> <td>114,153</td> <td>2.621</td> </tr> <tr> <td></td> <td>8.40</td> <td></td> <td></td> <td></td> <td>192.1</td> <td>126.4</td> <td>24,286</td> <td>0.558</td> <td>116,565</td> <td>2.676</td> </tr> <tr> <td></td> <td>8.50</td> <td></td> <td></td> <td></td> <td>192.9</td> <td>127.2</td> <td>24,541</td> <td>0.563</td> <td>119,000</td> <td>2.732</td> </tr> <tr> <td></td> <td>8.60</td> <td></td> <td></td> <td></td> <td>193.7</td> <td>128.0</td> <td>24,798</td> <td>0.569</td> <td>121,477</td> <td>2.789</td> </tr> <tr> <td></td> <td>8.70</td> <td></td> <td></td> <td></td> <td>194.5</td> <td>128.8</td> <td>25,056</td> <td>0.575</td> <td>123,970</td> <td>2.846</td> </tr> <tr> <td></td> <td>8.80</td> <td></td> <td></td> <td></td> <td>195.3</td> <td>129.6</td> <td>25,316</td> <td>0.581</td> <td>126,489</td> <td>2.904</td> </tr> <tr> <td></td> <td>8.90</td> <td></td> <td></td> <td></td> <td>196.1</td> <td>130.4</td> <td>25,576</td> <td>0.587</td> <td>129,033</td> <td>2.962</td> </tr> <tr> <td></td> <td>9.00</td> <td></td> <td></td> <td></td> <td>196.9</td> <td>131.2</td> <td>25,838</td> <td>0.593</td> <td>131,620</td> <td>3.021</td> </tr> <tr> <td></td> <td>9.10</td> <td></td> <td></td> <td></td> <td>197.7</td> <td>132.0</td> <td>26,101</td> <td>0.599</td> <td>134,224</td> <td>3.081</td> </tr> <tr> <td></td> <td>9.20</td> <td></td> <td></td> <td></td> <td>198.5</td> <td>132.8</td> <td>26,366</td> <td>0.605</td> <td>136,824</td> <td>3.141</td> </tr> <tr> <td></td> <td>9.30</td> <td></td> <td></td> <td></td> <td>199.3</td> <td>133.6</td> <td>26,631</td> <td>0.611</td> <td>139,474</td> <td>3.202</td> </tr> <tr> <td></td> <td>9.40</td> <td></td> <td></td> <td></td> <td>200.1</td> <td>134.4</td> <td>26,898</td> <td>0.617</td> <td>142,151</td> <td>3.263</td> </tr> <tr> <td></td> <td>9.50</td> <td></td> <td></td> <td></td> <td>200.9</td> <td>135.2</td> <td>27,166</td> <td>0.624</td> <td>144,854</td> <td>3.325</td> </tr> <tr> <td></td> <td>9.60</td> </tr></tbody></table>									Depth Increment =	0.1 ft	Stage - Storage Description	Optional Override Stage (ft)	Optional Override 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				7.8	7.8	61	0.001			ISV	0.33				7.8	7.8	61	0.001	19	0.000		0.40				7.8	7.8	61	0.001	24	0.001		0.50				7.8	7.8	61	0.001	30	0.001		0.60				7.8	7.8	61	0.001	36	0.001		0.70				7.8	7.8	61	0.001	42	0.001		0.80				7.8	7.8	61	0.001	48	0.001		0.90				20.0	13.8	276	0.006	60	0.001		1.00				40.4	23.8	961	0.022	118	0.003		1.10				60.8	33.8	2,054	0.047	265	0.006		1.20				81.2	43.8	3,556	0.082	543	0.012		1.30				101.6	53.8	5,465	0.125	990	0.023		1.40				122.0	63.8	7,782	0.179	1,649	0.038	Floor	1.46				136.3	70.8	9,647	0.221	2,258	0.052		1.50				136.8	71.1	9,734	0.223	2,549	0.059		1.60				137.6	71.9	9,901	0.227	3,531	0.081		1.70				138.4	72.7	10,069	0.231	4,529	0.104		1.80				139.2	73.5	10,239	0.235	5,545	0.127		1.90				140.0	74.3	10,410	0.239	6,577	0.151	Zone 1 (WQCV)	1.90				140.1	74.4	10,427	0.239	6,681	0.153	Zone 2 (EURV)	2.07				141.5	75.8	10,721	0.246	8,479	0.195		2.10				141.7	76.0	10,773	0.247	8,801	0.202		2.20				142.5	76.8	10,948	0.251	9,887	0.227		2.30				143.3	77.6	11,124	0.255	10,991	0.252		2.40				144.1	78.4	11,301	0.259	12,112	0.278		2.50				144.9	79.2	11,480	0.264	13,251	0.304		2.60				145.7	80.0	11,660	0.268	14,408	0.331		2.70				146.5	80.8	11,841	0.272	15,583	0.358		2.80				147.3	81.6	12,023	0.276	16,776	0.385		2.90				148.1	82.4	12,207	0.280	17,988	0.413		3.00				148.9	83.2	12,392	0.284	19,218	0.441		3.10				149.7	84.0	12,578	0.289	20,466	0.470		3.20				150.5	84.8	12,766	0.293	21,733	0.499		3.30				151.3	85.6	12,955	0.297	23,019	0.528		3.40				152.1	86.4	13,145	0.302	24,324	0.558		3.50				152.9	87.2	13,337	0.306	25,648	0.589		3.60				153.7	88.0	13,529	0.311	26,992	0.620		3.70				154.5	88.8	13,723	0.315	28,354	0.651		3.80				155.3	89.6	13,919	0.320	29,736	0.683		3.90				156.1	90.4	14,115	0.324	31,138	0.715		4.00				156.9	91.2	14,313	0.329	32,560	0.747		4.10				157.7	92.0	14,512	0.333	34,001	0.781		4.20				158.5	92.8	14,713	0.338	35,462	0.814		4.30				159.3	93.6	14,914	0.342	36,943	0.848		4.40				160.1	94.4	15,117	0.347	38,445	0.883		4.50				160.9	95.2	15,322	0.352	39,967	0.918		4.60				161.7	96.0	15,527	0.356	41,509	0.953		4.70				162.5	96.8	15,734	0.361	43,072	0.989		4.80				163.3	97.6	15,942	0.366	44,656	1.025		4.90				164.1	98.4	16,151	0.371	46,261	1.062		5.00				164.9	99.2	16,362	0.376	47,887	1.099		5.10				165.7	100.0	16,574	0.380	49,533	1.137		5.20				166.5	100.8	16,787	0.385	51,201	1.175		5.30				167.3	101.6	17,002	0.390	52,891	1.214		5.40				168.1	102.4	17,218	0.395	54,602	1.253		5.50				168.9	103.2	17,435	0.400	56,334	1.293		5.60				169.7	104.0	17,653	0.405	58,089	1.344		5.70				170.5	104.8	17,873	0.410	59,865	1.374		5.80				171.3	105.6	18,093	0.415	61,683	1.416		5.90				172.1	106.4	18,315	0.420	63,534	1.457		6.00				172.9	107.2	18,539	0.426	65,326	1.500		6.10				173.7	108.0	18,764	0.431	67,192	1.543		6.20				174.5	108.8	18,990	0.436	69,079	1.586		6.30				175.3	109.6	19,217	0.441	70,990	1.630		6.40				176.1	110.4	19,446	0.446	72,923	1.674		6.50				176.9	111.2	19,676	0.452	74,879	1.719		6.60				177.7	112.0	19,907	0.457	76,860	1.764		6.70				178.5	112.8	20,139	0.462	78,860	1.810		6.80				179.3	113.6	20,373	0.468	80,886	1.857		6.90				180.1	114.4	20,608	0.473	82,935	1.904		7.00				180.9	115.2	20,844	0.479	85,007	1.951		7.10				181.7	116.0	21,082	0.484	87,104	2.000		7.20				182.5	116.8	21,320	0.489	89,224	2.049		7.30				183.3	117.6	21,560	0.495	91,368	2.098		7.40				184.1	118.4	21,802	0.501	93,536	2.147		7.50				184.9	119.2	22,045	0.506	95,728	2.198		7.60				185.7	120.0	22,288	0.512	97,945	2.249		7.70				186.5	120.8	22,534	0.517	100,186	2.300		7.80				187.3	121.6	22,780	0.523	102,440	2.352		7.90				188.1	122.4	23,028	0.529	104,742	2.405		8.00				188.9	123.2	23,277	0.534	107,057	2.458		8.10				189.7	124.0	23,527	0.540	109,397	2.511		8.20				190.5	124.8	23,779	0.546	111,763	2.566		8.30				191.3	125.6	24,032	0.552	114,153	2.621		8.40				192.1	126.4	24,286	0.558	116,565	2.676		8.50				192.9	127.2	24,541	0.563	119,000	2.732		8.60				193.7	128.0	24,798	0.569	121,477	2.789		8.70				194.5	128.8	25,056	0.575	123,970	2.846		8.80				195.3	129.6	25,316	0.581	126,489	2.904		8.90				196.1	130.4	25,576	0.587	129,033	2.962		9.00				196.9	131.2	25,838	0.593	131,620	3.021		9.10				197.7	132.0	26,101	0.599	134,224	3.081		9.20				198.5	132.8	26,366	0.605	136,824	3.141		9.30				199.3	133.6	26,631	0.611	139,474	3.202		9.40				200.1	134.4	26,898	0.617	142,151	3.263		9.50				200.9	135.2	27,166	0.624	144,854	3.325		9.60
Depth Increment =	0.1 ft	Stage - Storage Description	Optional Override Stage (ft)	Optional Override Length (ft)	Width (ft)	Area (ft ²)	Optional Override Area (ft ²)	Area (acre)	Volume (ft ³)	Volume (ac-ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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	2.50				144.9	79.2	11,480	0.264	13,251	0.304																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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	7.20				182.5	116.8	21,320	0.489	89,224	2.049																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.30				183.3	117.6	21,560	0.495	91,368	2.098																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.40				184.1	118.4	21,802	0.501	93,536	2.147																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.50				184.9	119.2	22,045	0.506	95,728	2.198																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.60				185.7	120.0	22,288	0.512	97,945	2.249																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.70				186.5	120.8	22,534	0.517	100,186	2.300																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.80				187.3	121.6	22,780	0.523	102,440	2.352																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	7.90				188.1	122.4	23,028	0.529	104,742	2.405																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.00				188.9	123.2	23,277	0.534	107,057	2.458																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.10				189.7	124.0	23,527	0.540	109,397	2.511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.20				190.5	124.8	23,779	0.546	111,763	2.566																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.30				191.3	125.6	24,032	0.552	114,153	2.621																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.40				192.1	126.4	24,286	0.558	116,565	2.676																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.50				192.9	127.2	24,541	0.563	119,000	2.732																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.60				193.7	128.0	24,798	0.569	121,477	2.789																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.70				194.5	128.8	25,056	0.575	123,970	2.846																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.80				195.3	129.6	25,316	0.581	126,489	2.904																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	8.90				196.1	130.4	25,576	0.587	129,033	2.962																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.00				196.9	131.2	25,838	0.593	131,620	3.021																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.10				197.7	132.0	26,101	0.599	134,224	3.081																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.20				198.5	132.8	26,366	0.605	136,824	3.141																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.30				199.3	133.6	26,631	0.611	139,474	3.202																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.40				200.1	134.4	26,898	0.617	142,151	3.263																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	9.50				200.9	135.2	27,166	0.624	144,854	3.325																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Front Range - Midway Solar
Basin ID: A8

Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB
Watershed Area =	87.81 acres
Watershed Length =	2,421 ft
Watershed Slope =	0.024 ft/ft
Watershed Imperviousness =	3.90% 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) =	0.210 acre-feet
Excess Urban Runoff Volume (EURV) =	0.264 acre-feet
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.218 acre-feet
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.816 acre-feet
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	0.10745 acre-feet
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet
Approximate 2-yr Detention Volume =	0.203 acre-feet
Approximate 5-yr Detention Volume =	0.788 acre-feet
Approximate 10-yr Detention Volume =	0.000 acre-feet
Approximate 25-yr Detention Volume =	0.000 acre-feet
Approximate 50-yr Detention Volume =	0.000 acre-feet
Approximate 100-yr Detention Volume =	2.136 acre-feet

Optional User Override

1-hr Precipitation	1.19 inches
	1.50 inches
	1.93 inches
	2.08 inches
	2.10 inches
	2.40 inches
	2.70 inches
	3.00 inches
	3.30 inches
	3.60 inches
	3.90 inches
	4.20 inches
	4.50 inches
	4.80 inches
	5.10 inches
	5.40 inches
	5.70 inches
	6.00 inches
	6.30 inches
	6.60 inches
	6.90 inches
	7.20 inches
	7.50 inches
	7.80 inches
	8.10 inches
	8.40 inches
	8.70 inches
	9.00 inches
	9.30 inches
	9.60 inches
	9.90 inches
	10.20 inches
	10.50 inches
	10.80 inches
	11.10 inches
	11.40 inches
	11.70 inches
	12.00 inches
	12.30 inches
	12.60 inches
	12.90 inches
	13.20 inches
	13.50 inches
	13.80 inches
	14.10 inches
	14.40 inches
	14.70 inches

Stage-Storage Calculation

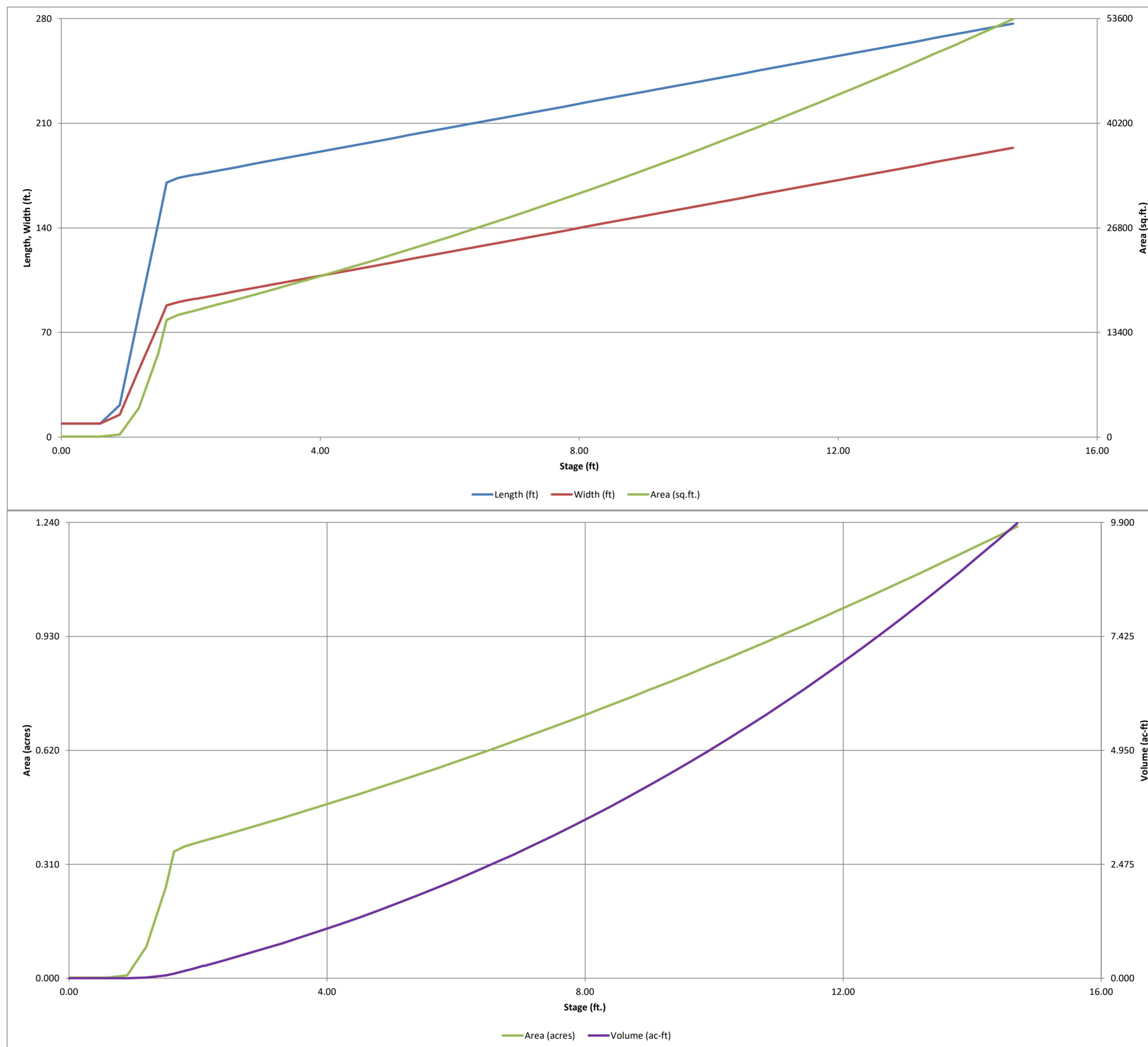
Zone 1 Volume (WQCV) =	0.210 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.054 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	1.871 acre-feet
Total Detention Basin Volume =	2.136 acre-feet
Initial Surcharge Volume (ISV) =	27 ft ³
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	83 ft ²
Surcharge Volume Length (L_{ISV}) =	9.1 ft
Surcharge Volume Width (W_{ISV}) =	9.1 ft
Depth of Basin Floor (H_{FLOOR}) =	0.80 ft
Length of Basin Floor (L_{FLOOR}) =	172.0 ft
Width of Basin Floor (W_{FLOOR}) =	89.0 ft
Area of Basin Floor (A_{FLOOR}) =	15,306 ft ²
Volume of Basin Floor (V_{FLOOR}) =	4,397 ft ³
Depth of Main Basin (H_{MAIN}) =	4.37 ft
Length of Main Basin (L_{MAIN}) =	207.0 ft
Width of Main Basin (W_{MAIN}) =	123.9 ft
Area of Main Basin (A_{MAIN}) =	25,657 ft ²
Volume of Main Basin (V_{MAIN}) =	88,563 ft ³
Calculated Total Basin Volume (V_{total}) =	2.136 acre-feet

Depth Increment = 0.3 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		9.1	9.1	83		0.002		
ISV	0.33		9.1	9.1	83		0.002	49	0.001
	0.60		9.1	9.1	83		0.002	80	0.002
	0.90		21.4	15.1	323		0.007		
	1.20		82.6	45.1	3,724		0.085	596	0.014
	1.50		143.8	75.1	10,798		0.248	2,682	0.062
Floor	1.63		170.3	88.1	15,003		0.344	4,352	0.100
	1.80		173.3	90.3	15,645		0.359	6,980	0.160
Zone 1 (WQCV)	1.93		174.4	91.4	15,941		0.366	9,191	0.211
Zone 2 (EURV)	2.08		175.6	92.6	16,262		0.373	11,606	0.266
	2.10		175.8	92.7	16,305		0.374	11,931	0.274
	2.40		178.2	95.1	16,955		0.389	16,920	0.388
	2.70		180.6	97.5	17,617		0.404	22,105	0.507
	3.00		183.0	99.9	18,290		0.420	27,491	0.631
	3.30		185.4	102.3	18,975		0.436	33,080	0.759
	3.60		187.8	104.7	19,671		0.452	38,877	0.892
	3.90		190.2	107.1	20,379		0.468	44,884	1.030
	4.20		192.6	109.5	21,098		0.484	51,106	1.173
	4.50		195.0	111.9	21,829		0.501	57,544	1.321
	4.80		197.4	114.3	22,572		0.518	64,204	1.474
	5.10		199.8	116.7	23,326		0.535	71,088	1.632
	5.40		202.2	119.1	24,091		0.553	78,201	1.795
	5.70		204.6	121.5	24,868		0.571	85,544	1.964
Zone 3 (100-year)	6.00		207.0	123.9	25,657		0.589	93,123	2.138
	6.30		209.4	126.3	26,457		0.607	100,939	2.317
	6.60		211.8	128.7	27,268		0.626	108,998	2.502
	6.90		214.2	131.1	28,091		0.645	117,301	2.693
	7.20		216.6	133.5	28,926		0.664	125,854	2.889
	7.50		219.0	135.9	29,772		0.683	134,658	3.091
	7.80		221.4	138.3	30,629		0.703	143,718	3.299
	8.10		223.8	140.7	31,499		0.723	153,037	3.513
	8.40		226.2	143.1	32,379		0.743	162,618	3.733
	8.70		228.6	145.5	33,271		0.764	172,466	3.959
	9.00		231.0	147.9	34,175		0.785	182,582	4.192
	9.30		233.4	150.3	35,090		0.806	192,972	4.430
	9.60		235.8	152.7	36,017		0.827	203,638	4.675
	9.90		238.2	155.1	36,955		0.848	214,583	4.926
	10.20		240.6	157.5	37,905		0.870	225,812	5.184
	10.50		243.0	159.9	38,867		0.892	237,328	5.448
	10.80		245.4	162.3	39,839		0.915	249,133	5.719
	11.10		247.8	164.7	40,824		0.937	261,232	5.997
	11.40		250.2	167.1	41,820		0.960	273,628	6.282
	11.70		252.6	169.5	42,827		0.983	286,325	6.573
	12.00		255.0	171.9	43,846		1.007	299,326	6.872
	12.30		257.4	174.3	44,876		1.030	312,634	7.177
	12.60		259.8	176.7	45,918		1.054	326,253	7.490
	12.90		262.2	179.1	46,972		1.078	340,166	7.810
	13.20		264.6	181.5	48,037		1.103	354,437	8.137
	13.50		267.0	183.9	49,113		1.127	369,009	8.471
	13.80		269.4	186.3	50,201		1.152	383,906	8.813
	14.10		271.8	188.7	51,301		1.178	399,131	9.163
	14.40		274.2	191.1	52,412		1.203	414,688	9.520
	14.70		276.6	193.5	53,534		1.229	430,579	9.885

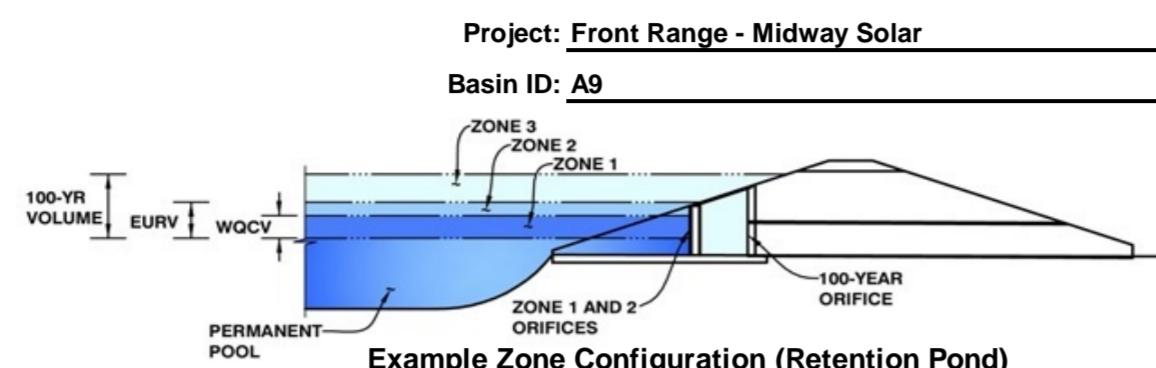
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



Required Volume Calculation

Selected BMP Type =	EDB	Optional User Override
Watershed Area =	32.86 acres	
Watershed Length =	1,854 ft	
Watershed Slope =	0.038 ft/ft	
Watershed Imperviousness =	5.20% 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) =	0.103 acre-feet	
Excess Urban Runoff Volume (EURV) =	0.135 acre-feet	
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.113 acre-feet	1.19 inches
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.358 acre-feet	1.50 inches
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	4.064 acre-feet	2.52 inches
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
Approximate 2-yr Detention Volume =	0.105 acre-feet	
Approximate 5-yr Detention Volume =	0.344 acre-feet	
Approximate 10-yr Detention Volume =	0.000 acre-feet	
Approximate 25-yr Detention Volume =	0.000 acre-feet	
Approximate 50-yr Detention Volume =	0.000 acre-feet	
Approximate 100-yr Detention Volume =	0.903 acre-feet	

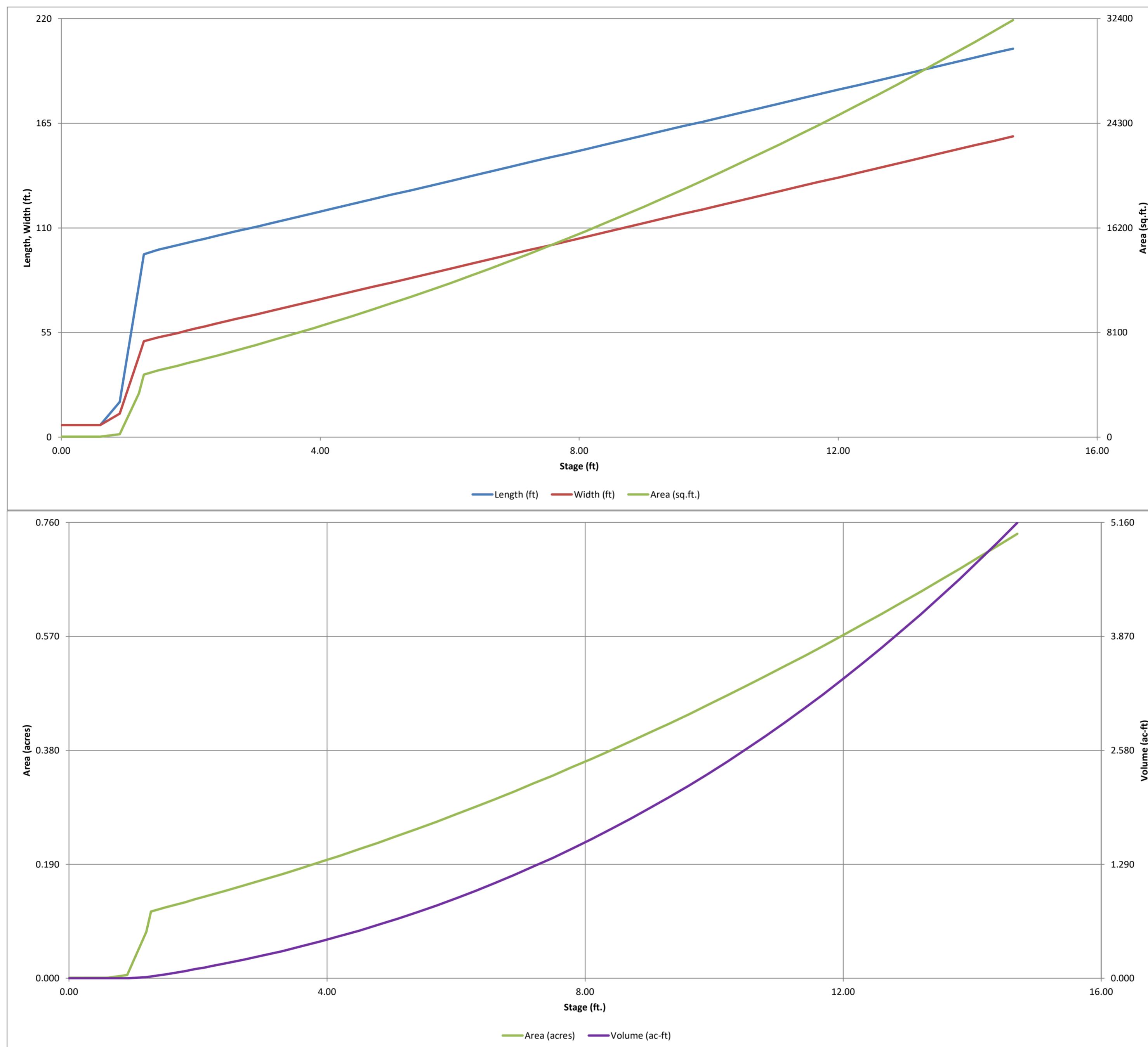
Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.103 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.032 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.768 acre-feet
Total Detention Basin Volume =	0.903 acre-feet
Initial Surcharge Volume (ISV) =	13 ft^3
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	41 ft^2
Surcharge Volume Length (L_{ISV}) =	6.4 ft
Surcharge Volume Width (W_{ISV}) =	6.4 ft
Depth of Basin Floor (H_{FLOOR}) =	0.44 ft
Length of Basin Floor (L_{FLOOR}) =	96.7 ft
Width of Basin Floor (W_{FLOOR}) =	50.7 ft
Area of Basin Floor (A_{FLOOR}) =	4,903 ft^2
Volume of Basin Floor (V_{FLOOR}) =	796 ft^3
Depth of Main Basin (H_{MAIN}) =	4.73 ft
Length of Main Basin (L_{MAIN}) =	134.6 ft
Width of Main Basin (W_{MAIN}) =	88.5 ft
Area of Main Basin (A_{MAIN}) =	11,907 ft^2
Volume of Main Basin (V_{MAIN}) =	38,526 ft^3
Calculated Total Basin Volume (V_{total}) =	0.903 acre-feet

Depth Increment =	0.3 ft	Stage - Storage Description	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			6.4	6.4	41		0.001		
ISV	0.33			6.4	6.4	41		0.001	13	0.000
	0.60			6.4	6.4	41		0.001	24	0.001
	0.90			18.6	12.4	230		0.005	41	0.001
	1.20			79.8	42.4	3,382		0.078	491	0.011
Floor	1.27			96.1	50.4	4,843		0.111	818	0.019
	1.50			98.5	52.4	5,161		0.118	1,925	0.044
	1.80			100.9	54.8	5,529		0.127	3,528	0.081
Zone 1 (WQCV)	1.96			102.2	56.2	5,743		0.132	4,486	0.103
	2.10			103.4	57.3	5,922		0.136	5,303	0.122
Zone 2 (EURV)	2.20			104.2	58.1	6,051		0.139	5,901	0.135
	2.40			105.8	59.7	6,313		0.145	7,138	0.164
	2.70			108.2	62.1	6,716		0.154	9,092	0.209
	3.00			110.6	64.5	7,130		0.164	11,168	0.256
	3.30			113.0	66.9	7,556		0.173	13,371	0.307
	3.60			115.4	69.3	7,993		0.184	15,703	0.360
	3.90			117.8	71.7	8,442		0.194	18,168	0.417
	4.20			120.2	74.1	8,903		0.204	20,770	0.477
	4.50			122.6	76.5	9,375		0.215	23,511	0.540
	4.80			125.0	78.9	9,858		0.226	26,396	0.606
	5.10			127.4	81.3	10,353		0.238	29,427	0.676
	5.40			129.8	83.7	10,860		0.249	32,609	0.749
	5.70			132.2	86.1	11,378		0.261	35,944	0.825
Zone 3 (100-year)	6.00			134.6	88.5	11,907		0.273	39,437	0.905
	6.30			137.0	90.9	12,449		0.286	43,090	0.989
	6.60			139.4	93.3	13,001		0.298	46,907	1.077
	6.90			141.8	95.7	13,565		0.311	50,892	1.168
	7.20			144.2	98.1	14,141		0.325	55,047	1.264
	7.50			146.6	100.5	14,728		0.338	59,377	1.363
	7.80			149.0	102.9	15,327		0.352	63,885	1.467
	8.10			151.4	105.3	15,937		0.366	68,575	1.574
	8.40			153.8	107.7	16,559		0.380	73,449	1.686
	8.70			156.2	110.1	17,192		0.395	78,511	1.802
	9.00			158.6	112.5	17,837		0.409	83,765	1.923
	9.30			161.0	114.9	18,493		0.425	89,214	2.048
	9.60			163.4	117.3	19,161		0.440	94,862	2.178
	9.90			165.8	119.7	19,840		0.455	100,712	2.312
	10.20			168.2	122.1	20,531		0.471	106,767	2.451
	10.50			170.6	124.5	21,233		0.487	113,032	2.595
	10.80			173.0	126.9	21,947		0.504	119,508	2.744
	11.10			175.4	129.3	22,673		0.520	126,201	2.897
	11.40			177.8	131.7	23,410		0.537	133,113	3.056
	11.70			180.2	134.1	24,158		0.555	140,248	3.220
	12.00			182.6	136.5	24,918		0.572	147,609	3.389
	12.30			185.0	138.9	25,689		0.590	155,200	3.563
	12.60			187.4	141.3	26,472		0.608	163,024	3.743
	12.90			189.8	143.7	27,267		0.626	171,085	3.928
	13.20			192.2	146.1	28,073		0.644	179,385	4.118
	13.50			194.6	148.5	28,891		0.663	187,929	4.314
	13.80			197.0	150.9	29,720		0.682	196,721	4.516
	14.10			199.4	153.3	30,560		0.702	205,762	4.724
	14.40			201.8	155.7	31,412</td				

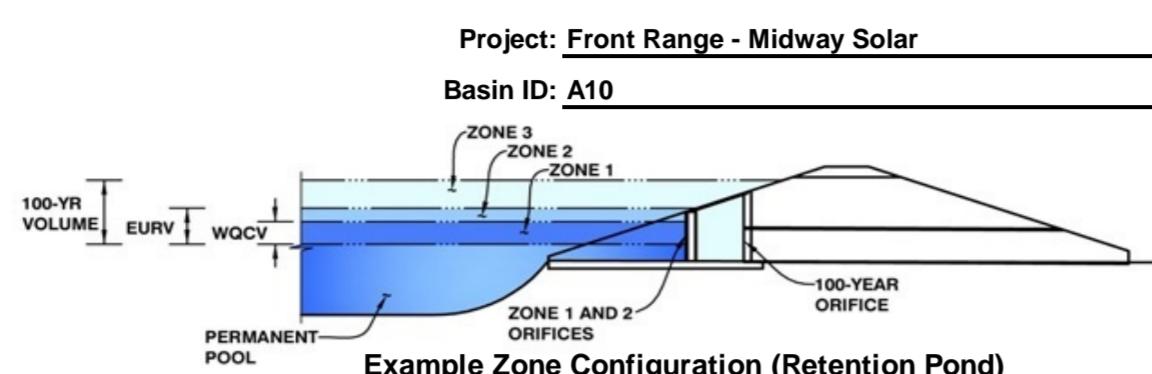
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

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Required Volume Calculation

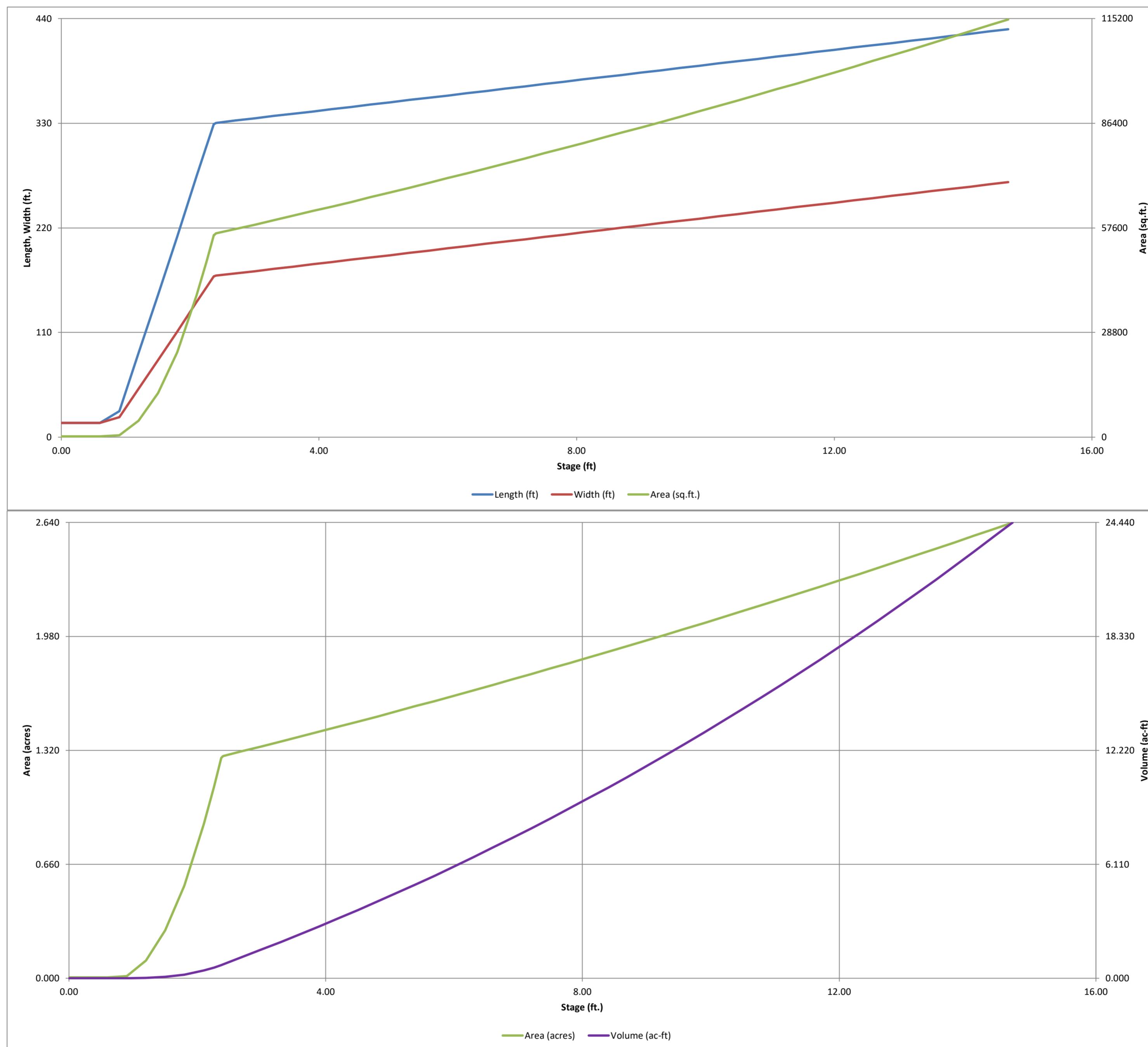
Required Volume Calculation	
Selected BMP Type =	EDB
Watershed Area =	263.34
Watershed Length =	7,992
Watershed Slope =	0.014
Watershed Imperviousness =	3.50%
Percentage Hydrologic Soil Group A =	5.0%
Percentage Hydrologic Soil Group B =	0.0%
Percentage Hydrologic Soil Groups C/D =	95.0%
Desired WQCV Drain Time =	40.0
Location for 1-hr Rainfall Depths =	User Input
Water Quality Capture Volume (WQCV) =	0.568
Excess Urban Runoff Volume (EURV) =	0.695
2-yr Runoff Volume (P1 = 1.19 in.) =	0.565
5-yr Runoff Volume (P1 = 1.5 in.) =	2.225
10-yr Runoff Volume (P1 = 0 in.) =	0.000
25-yr Runoff Volume (P1 = 0 in.) =	0.000
50-yr Runoff Volume (P1 = 0 in.) =	0.000
100-yr Runoff Volume (P1 = 2.52 in.) =	30.934
500-yr Runoff Volume (P1 = 0 in.) =	0.000
Approximate 2-yr Detention Volume =	0.526
Approximate 5-yr Detention Volume =	2.150
Approximate 10-yr Detention Volume =	0.000
Approximate 25-yr Detention Volume =	0.000
Approximate 50-yr Detention Volume =	0.000
Approximate 100-yr Detention Volume =	5.991
Optional User Overrides	
1-hr Precipitation	
	1.19
	1.50
	2.52

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.568	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.127	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	5.297	acre-feet
Total Detention Basin Volume =	5.991	acre-feet
Initial Surcharge Volume (ISV) =	74	ft^3
Initial Surcharge Depth (ISD) =	0.33	ft
Total Available Detention Depth (H_{total}) =	6.00	ft
Depth of Trickle Channel (H_{TC}) =	0.50	ft
Slope of Trickle Channel (S_{TC}) =	0.005	ft/ft
Slopes of Main Basin Sides (S_{main}) =	4	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2	
Initial Surcharge Area (A_{ISV}) =	225	ft^2
Surcharge Volume Length (L_{ISV}) =	15.0	ft
Surcharge Volume Width (W_{ISV}) =	15.0	ft
Depth of Basin Floor (H_{FLOOR}) =	1.54	ft
Length of Basin Floor (L_{FLOOR}) =	330.1	ft
Width of Basin Floor (W_{FLOOR}) =	169.5	ft
Area of Basin Floor (A_{FLOOR}) =	55,951	ft^2
Volume of Basin Floor (V_{FLOOR}) =	30,753	ft^3
Depth of Main Basin (H_{MAIN}) =	3.63	ft
Length of Main Basin (L_{MAIN}) =	359.1	ft
Width of Main Basin (W_{MAIN}) =	198.5	ft
Area of Main Basin (A_{MAIN}) =	71,281	ft^2
Volume of Main Basin (V_{MAIN}) =	230,060	ft^3
Calculated Total Basin Volume (V_{total}) =	5.992	acre-feet

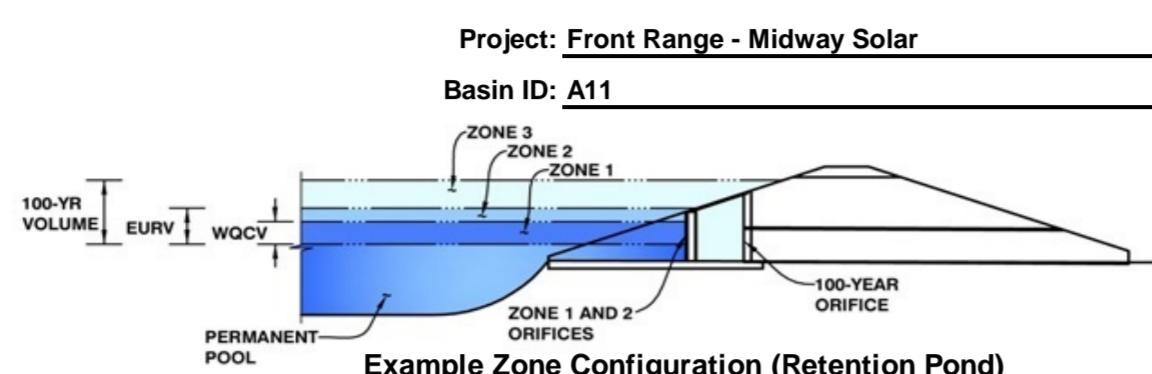
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Required Volume Calculation

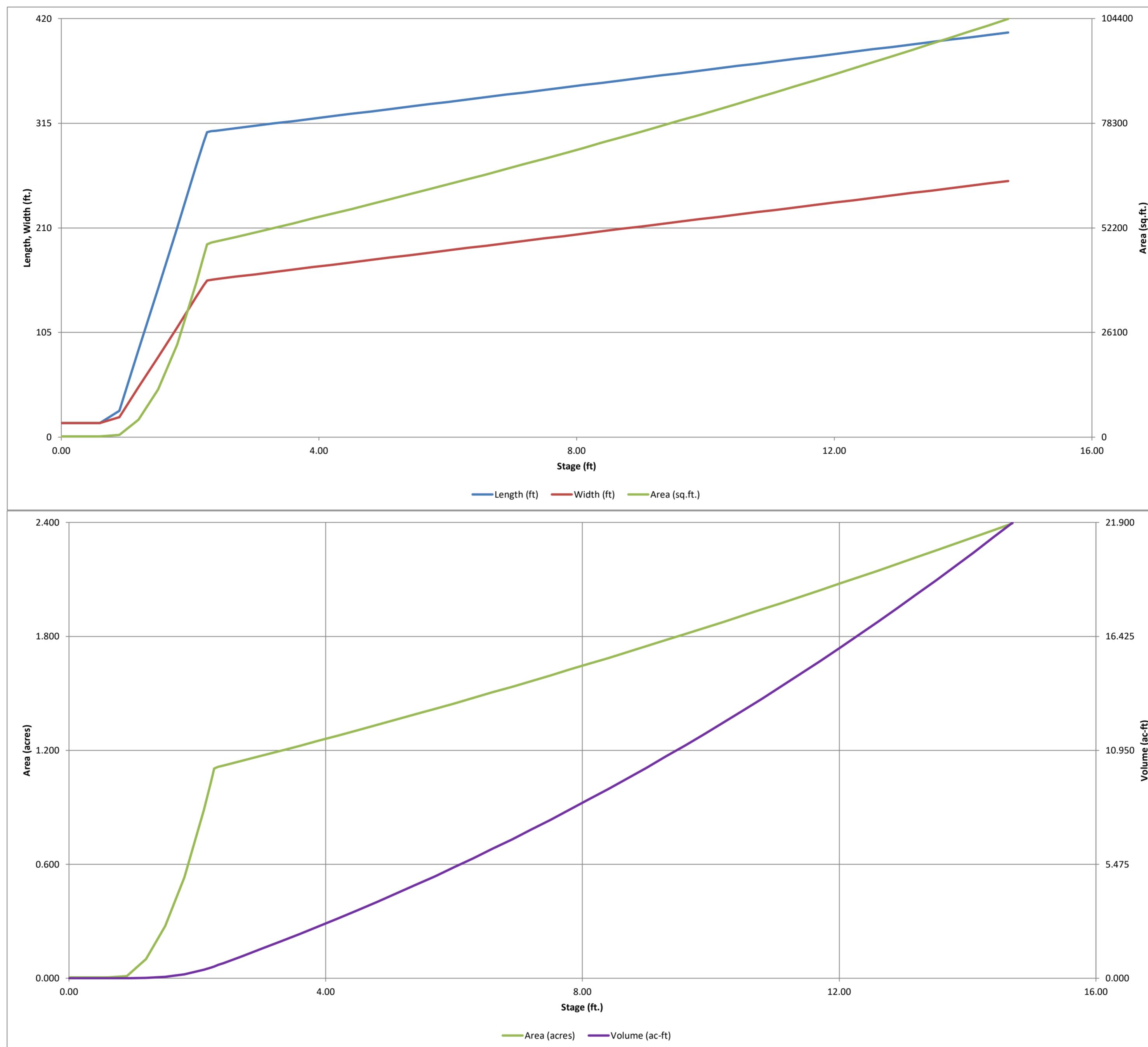
Required Volume Calculation	
Selected BMP Type =	EDB
Watershed Area =	224.01 acres
Watershed Length =	8,048 ft
Watershed Slope =	0.019 ft/ft
Watershed Imperviousness =	3.70% percent
Percentage Hydrologic Soil Group A =	0.0% percent
Percentage Hydrologic Soil Group B =	0.0% percent
Percentage Hydrologic 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) =	0.509 acre-feet
Excess Urban Runoff Volume (EURV) =	0.637 acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.523 acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	2.028 acre-feet
10-yr Runoff Volume (P1 = 0 in.) =	0.000 acre-feet
25-yr Runoff Volume (P1 = 0 in.) =	0.000 acre-feet
50-yr Runoff Volume (P1 = 0 in.) =	0.000 acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	27.367 acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000 acre-feet
Approximate 2-yr Detention Volume =	0.488 acre-feet
Approximate 5-yr Detention Volume =	1.959 acre-feet
Approximate 10-yr Detention Volume =	0.000 acre-feet
Approximate 25-yr Detention Volume =	0.000 acre-feet
Approximate 50-yr Detention Volume =	0.000 acre-feet
Approximate 100-yr Detention Volume =	5.329 acre-feet
Optional User Overrides	
1-hr Precipitation	
	1.19 inches
	1.50 inches
	2.52 inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.509	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.127	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	4.692	acre-feet
Total Detention Basin Volume =	5.329	acre-feet
Initial Surcharge Volume (ISV) =	67	ft^3
Initial Surcharge Depth (ISD) =	0.33	ft
Total Available Detention Depth (H_{total}) =	6.00	ft
Depth of Trickle Channel (H_{TC}) =	0.50	ft
Slope of Trickle Channel (S_{TC}) =	0.005	ft/ft
Slopes of Main Basin Sides (S_{main}) =	4	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2	
Initial Surcharge Area (A_{ISV}) =	202	ft^2
Surcharge Volume Length (L_{ISV}) =	14.2	ft
Surcharge Volume Width (W_{ISV}) =	14.2	ft
Depth of Basin Floor (H_{FLOOR}) =	1.43	ft
Length of Basin Floor (L_{FLOOR}) =	306.5	ft
Width of Basin Floor (W_{FLOOR}) =	157.5	ft
Area of Basin Floor (A_{FLOOR}) =	48,260	ft^2
Volume of Basin Floor (V_{FLOOR}) =	24,633	ft^3
Depth of Main Basin (H_{MAIN}) =	3.74	ft
Length of Main Basin (L_{MAIN}) =	336.4	ft
Width of Main Basin (W_{MAIN}) =	187.4	ft
Area of Main Basin (A_{MAIN}) =	63,025	ft^2
Volume of Main Basin (V_{MAIN}) =	207,340	ft^3
Calculated Total Basin Volume (V_{total}) =	5.329	acre-feet

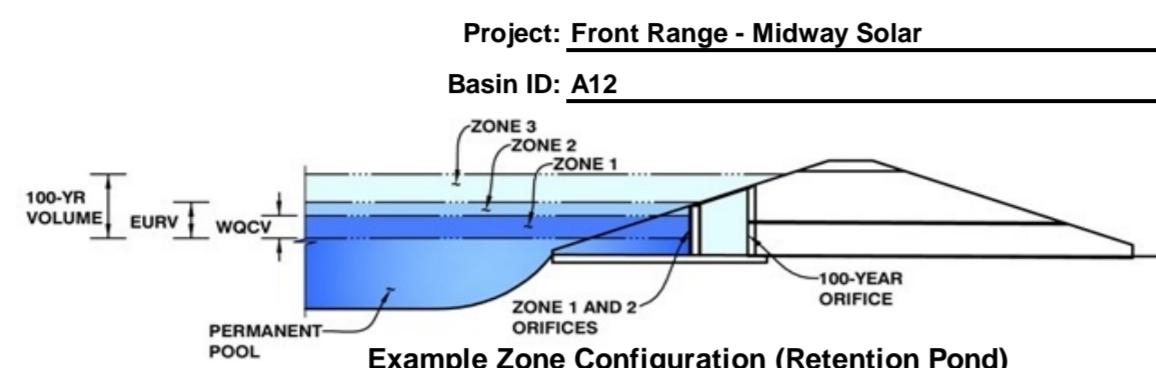
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Required Volume Calculation

Selected BMP Type =	EDB	Optional User Override
Watershed Area =	10.97 acres	Note: L / W Ratio < 1
Watershed Length =	444 ft	L / W Ratio = 0.4
Watershed Slope =	0.040 ft/ft	
Watershed Imperviousness =	6.70% 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) =	0.043 acre-feet	Optional User Override
Excess Urban Runoff Volume (EURV) =	0.059 acre-feet	1-hr Precipitation
2-yr Runoff Volume ($P_1 = 1.19$ in.) =	0.050 acre-feet	1.19 inches
5-yr Runoff Volume ($P_1 = 1.5$ in.) =	0.140 acre-feet	1.50 inches
10-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
25-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
50-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
100-yr Runoff Volume ($P_1 = 2.52$ in.) =	1.373 acre-feet	2.52 inches
500-yr Runoff Volume ($P_1 = 0$ in.) =	0.000 acre-feet	inches
Approximate 2-yr Detention Volume =	0.047 acre-feet	
Approximate 5-yr Detention Volume =	0.134 acre-feet	
Approximate 10-yr Detention Volume =	0.000 acre-feet	
Approximate 25-yr Detention Volume =	0.000 acre-feet	
Approximate 50-yr Detention Volume =	0.000 acre-feet	
Approximate 100-yr Detention Volume =	0.337 acre-feet	

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.043 acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.016 acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.278 acre-feet
Total Detention Basin Volume =	0.337 acre-feet
Initial Surcharge Volume (ISV) =	6 ft ³
Initial Surcharge Depth (ISD) =	0.33 ft
Total Available Detention Depth (H_{total}) =	6.00 ft
Depth of Trickle Channel (H_{TC}) =	0.50 ft
Slope of Trickle Channel (S_{TC}) =	0.005 ft/ft
Slopes of Main Basin Sides (S_{main}) =	4 H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2
Initial Surcharge Area (A_{ISV}) =	17 ft ²
Surcharge Volume Length (L_{ISV}) =	4.1 ft
Surcharge Volume Width (W_{ISV}) =	4.1 ft
Depth of Basin Floor (H_{FLOOR}) =	0.20 ft
Length of Basin Floor (L_{FLOOR}) =	44.4 ft
Width of Basin Floor (W_{FLOOR}) =	23.9 ft
Area of Basin Floor (A_{FLOOR}) =	1,059 ft ²
Volume of Basin Floor (V_{FLOOR}) =	80 ft ³
Depth of Main Basin (H_{MAIN}) =	4.97 ft
Length of Main Basin (L_{MAIN}) =	84.2 ft
Width of Main Basin (W_{MAIN}) =	63.6 ft
Area of Main Basin (A_{MAIN}) =	5,357 ft ²
Volume of Main Basin (V_{MAIN}) =	14,583 ft ³
Calculated Total Basin Volume (V_{total}) =	0.337 acre-feet

Depth Increment =	0.3 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				4.1	4.1	17		0.000		
ISV	0.33		4.1	4.1	17				0.000	5	0.000
	0.60		4.1	4.1	16.4	10.1	166		0.004	19	0.000
Floor	1.03		42.9	23.1	992				0.023	87	0.002
	1.20		45.7	25.2	1,150				0.026	274	0.006
	1.50		48.1	27.6	1,325				0.030	645	0.015
	1.80		50.5	30.0	1,513				0.035	1,070	0.025
	2.10		53.0	32.4	1,718				0.039	1,571	0.036
Zone 1 (WQCV)	2.28		54.4	33.9	1,843				0.042	1,891	0.043
	2.40		55.4	34.8	1,929				0.044	2,118	0.049
Zone 2 (EURV)	2.63		57.2	36.7	2,099				0.048	2,581	0.059
	2.70		57.8	37.2	2,151				0.049	2,729	0.063
	3.00		60.2	39.6	2,385				0.055	3,410	0.078
	3.30		62.6	42.0	2,630				0.060	4,162	0.096
	3.60		65.0	44.4	2,887				0.066	4,989	0.115
	3.90		67.4	46.8	3,156				0.072	5,895	0.135
	4.20		69.8	49.2	3,436				0.079	6,884	0.158
	4.50		72.2	51.6	3,727				0.086	7,958	0.183
	4.80		74.6	54.0	4,030				0.093	9,121	0.209
	5.10		77.0	56.4	4,344				0.100	10,377	0.238
	5.40		79.4	58.8	4,670				0.107	11,729	0.269
	5.70		81.8	61.2	5,008				0.115	13,180	0.303
Zone 3 (100-year)	5.99		84.1	63.6	5,345				0.123	14,681	0.337
	6.00		84.2	63.6	5,357				0.123	14,734	0.338
	6.30		86.6	66.0	5,717				0.131	16,395	0.376
	6.60		89.0	68.4	6,089				0.140	18,166	0.417
	6.90		91.4	70.8	6,473				0.149	20,050	0.460
	7.20		93.8	73.2	6,868				0.158	22,050	0.506
	7.50		96.2	75.6	7,274				0.167	24,171	0.555
	7.80		98.6	78.0	7,692				0.177	26,416	0.606
	8.10		101.0	80.4	8,122				0.186	28,788	0.661
	8.40		103.4	82.8	8,563				0.197	31,291	0.718
	8.70		105.8	85.2	9,016				0.207	33,927	0.779
	9.00		108.2	87.6	9,480				0.218	36,701	0.843
	9.30		110.6	90.0	9,956				0.229	39,616	0.909
	9.60		113.0	92.4	10,443				0.240	42,676	0.980
	9.90		115.4	94.8	10,942				0.251	45,883	1.053
	10.20		117.8	97.2	11,452				0.263	49,242	1.130
	10.50		120.2	99.6	11,974				0.275	52,756	1.211
	10.80		122.6	102.0	12,507				0.287	56,427	1.295
	11.10		125.0	104.4	13,052				0.300	60,261	1.383
	11.40		127.4	106.8	13,608				0.312	64,260	1.475
	11.70		129.8	109.2	14,176				0.325	68,427	1.571
	12.00		132.2	111.6	14,755				0.339	72,766	1.670
	12.30		134.6	114.0	15,346				0.352	77,281	1.774
	12.60		137.0	116.4	15,949				0.366	81,975	1.882
	12.90		139.4	118.8	16,563						

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