Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Grandwood Ranch - Pond 1**

Facility Location & Jurisdiction: **El Paso County**

User Input: Watershed Characteristics

Extended Detention Basin (EDB)	EDB	
Watershed Area =	8.48	acres
Watershed Length =	900	ft
Watershed Length to Centroid =	400	ft
Watershed Slope =	0.080	ft/ft
Watershed Imperviousness =	20.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

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

User Input

Steep Slope > 0.06 ft/ft

User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	40	0.00	0.00
0.33	180	0.33	0.01
1.33	4,571	1.33	0.03
2.33	11,918	2.33	0.39
3.33	14,680	3.33	4.61
4.33	16,345	4.33	83.35
4.63	16,877	4.63	148.05

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

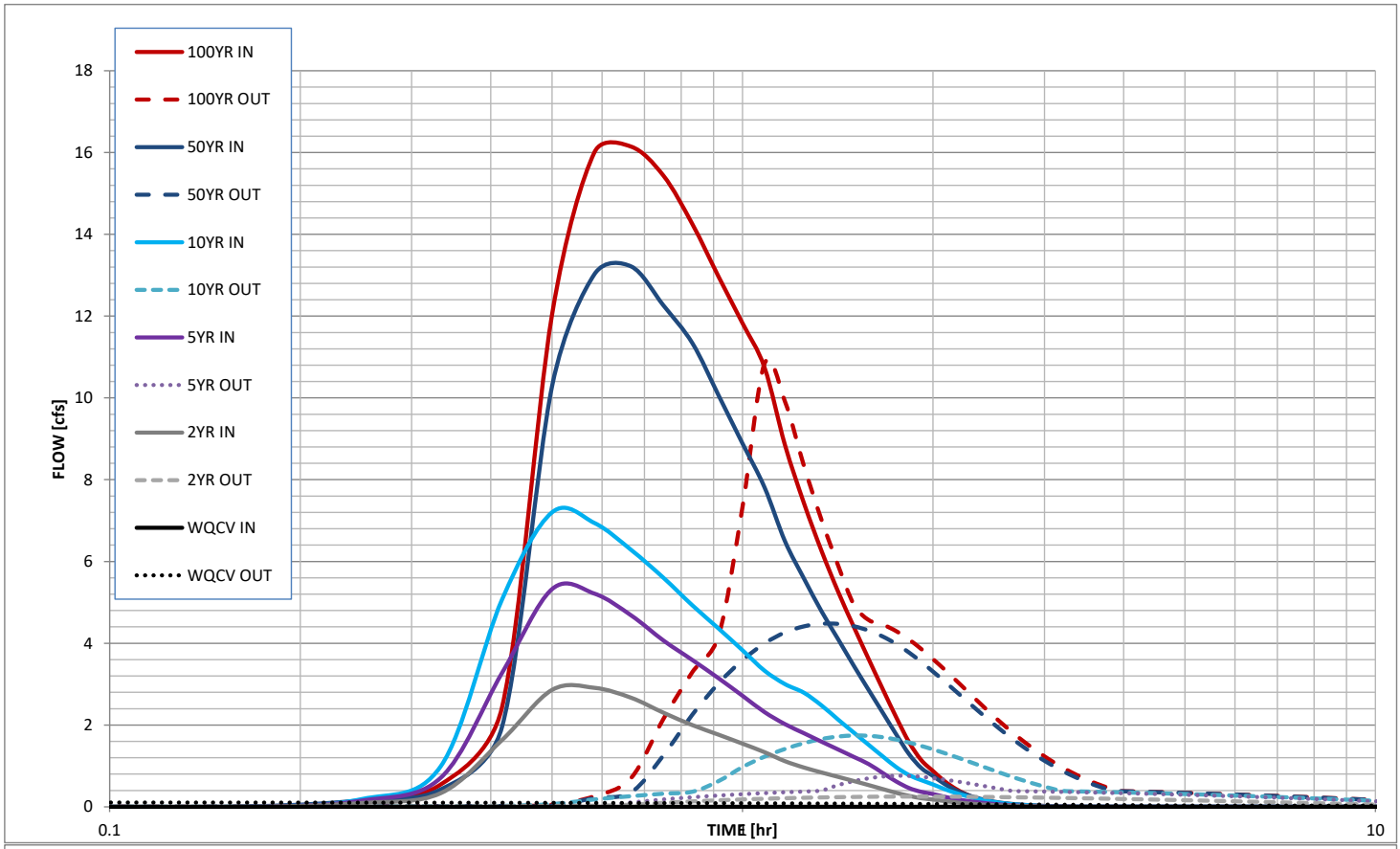
Once CUHP has been run and the Stage-Area-Discharge information has been provided, click 'Process Data' to interpolate the Stage-Area-Volume-Discharge data and generate summary results in the table below. Once this is complete, click 'Print to PDF'.

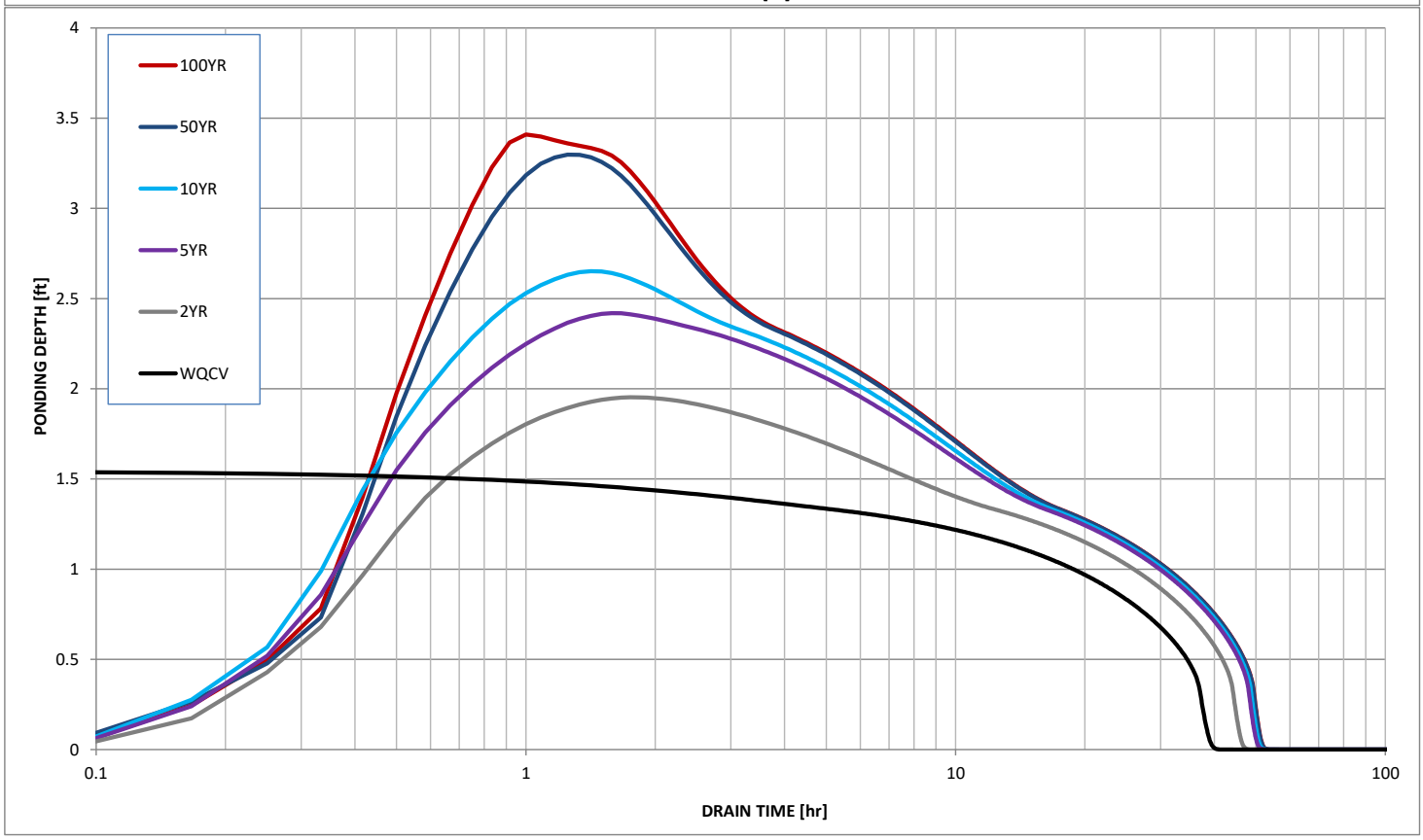
After completing and printing this worksheet to a pdf, go to:
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif
Create a new stormwater facility, and attach the PDF of this worksheet to that record.

Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	1.19	1.50	1.75	2.25	2.52	in
CUHP Runoff Volume =	0.082	0.181	0.330	0.471	0.867	1.096	acre-ft
Inflow Hydrograph Volume =	N/A	0.181	0.330	0.471	0.867	1.096	acre-ft
Time to Drain 97% of Inflow Volume =	35.2	39.5	**39.9**	37.6	31.2	27.7	hours
Time to Drain 99% of Inflow Volume =	37.1	43.0	45.3	44.6	42.1	**40.4**	hours
Maximum Ponding Depth =	1.55	1.95	2.42	2.65	3.30	3.41	ft
Maximum Ponded Area =	0.14	0.21	0.28	0.29	0.33	**0.34**	acres
Maximum Volume Stored =	0.082	0.153	0.269	0.335	0.538	0.576	acre-ft

Stormwater Detention and Infiltration Design Data Sheet





Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Grandwood Ranch - Pond 2**

Facility Location & Jurisdiction: **El Paso County**

User Input: Watershed Characteristics

Extended Detention Basin (EDB)	EDB	
Watershed Area =	8.04	acres
Watershed Length =	2,300	ft
Watershed Length to Centroid =	800	ft
Watershed Slope =	0.050	ft/ft
Watershed Imperviousness =	50.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

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

Denver - Capitol Building

Note: L / W Ratio > 8

L / W Ratio = 15.1

User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	56	0.00	0.00
0.33	210	0.33	0.01
1.33	2,850	1.33	0.03
2.33	8,682	2.33	0.13
3.33	9,984	3.33	0.99
4.33	11,356	4.33	1.42
4.90	12,218	4.90	11.18
5.33	12,818	5.33	60.36
6.33	14,508	6.33	288.96

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

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

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Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	0.83	1.09	1.33	1.99	2.31	in
CUHP Runoff Volume =	0.138	0.243	0.346	0.475	0.938	1.184	acre-ft
Inflow Hydrograph Volume =	N/A	0.243	0.346	0.475	0.938	1.184	acre-ft
Time to Drain 97% of Inflow Volume =	31.8	38.0	**38.1**	37.5	34.3	31.7	hours
Time to Drain 99% of Inflow Volume =	33.9	41.3	42.3	42.8	42.7	**41.4**	hours
Maximum Ponding Depth =	2.18	2.53	2.86	3.25	4.45	4.63	ft
Maximum Ponded Area =	0.18	0.20	0.21	0.23	0.26	**0.27**	acres
Maximum Volume Stored =	0.139	0.207	0.277	0.364	0.657	0.706	acre-ft

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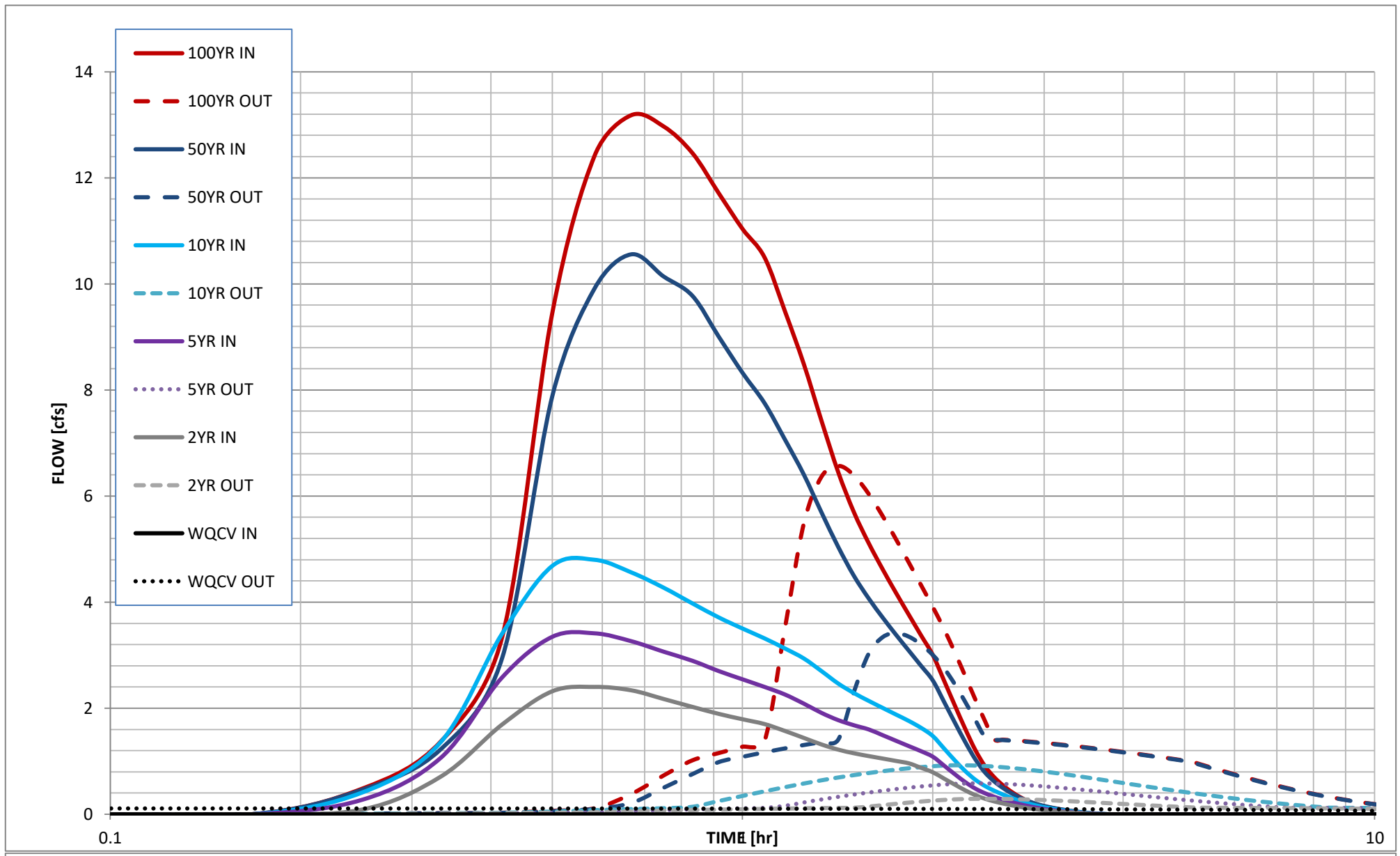

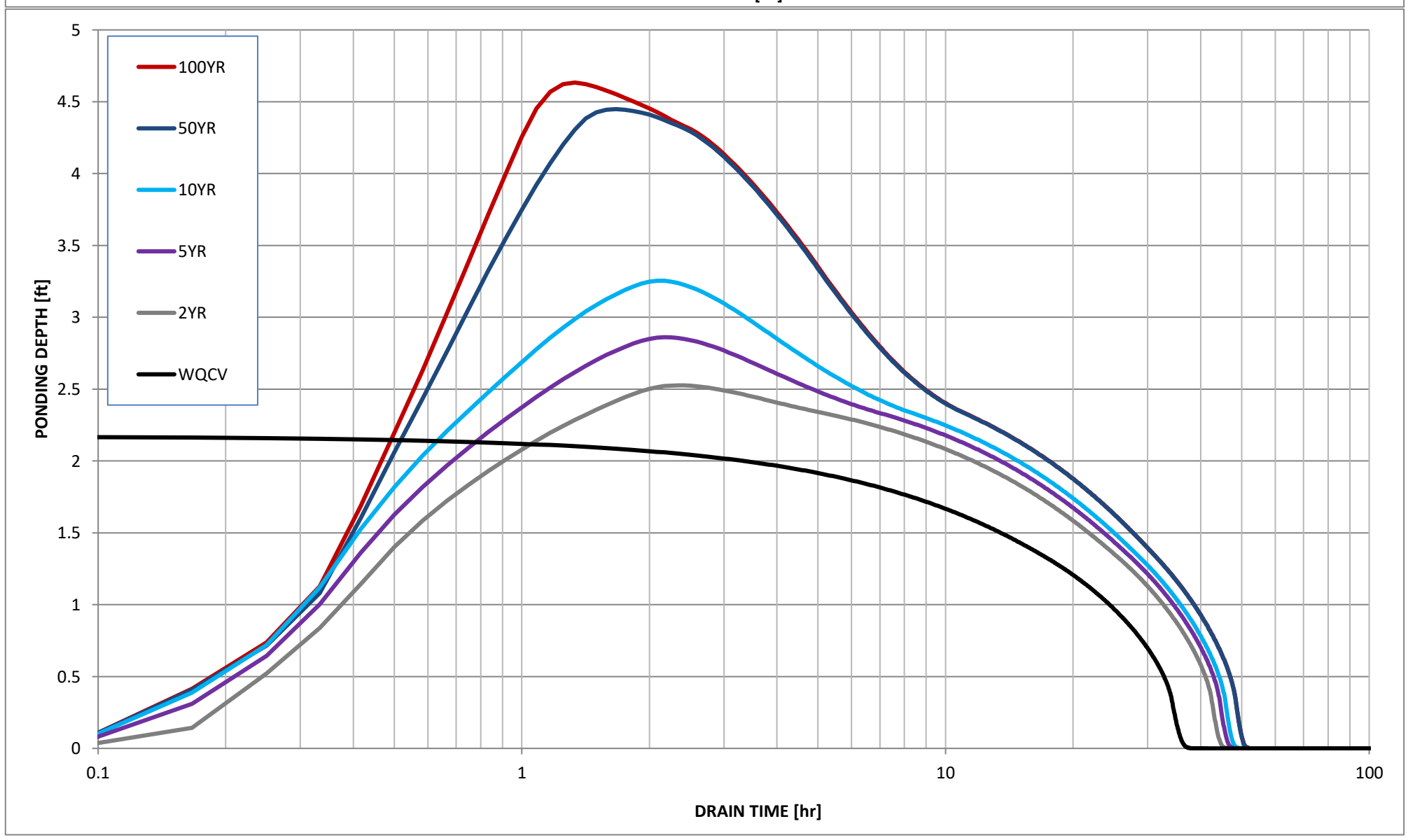

Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Grandwood Ranch - Pond 3**

Facility Location & Jurisdiction: **El Paso County**

User Input: Watershed Characteristics

Extended Detention Basin (EDB)	EDB	
Watershed Area =	25.10	acres
Watershed Length =	1,600	ft
Watershed Length to Centroid =	1,000	ft
Watershed Slope =	0.060	ft/ft
Watershed Imperviousness =	15.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

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

User Input

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

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

User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	80	0.00	0.00
0.33	200	0.33	0.01
1.33	1,521	1.33	0.04
2.33	13,279	2.33	0.08
3.33	18,393	3.33	7.22
4.33	20,693	4.33	23.90
4.83	22,270	4.83	60.29
5.30	23,440	5.30	161.34
6.00	25,395	6.00	386.24

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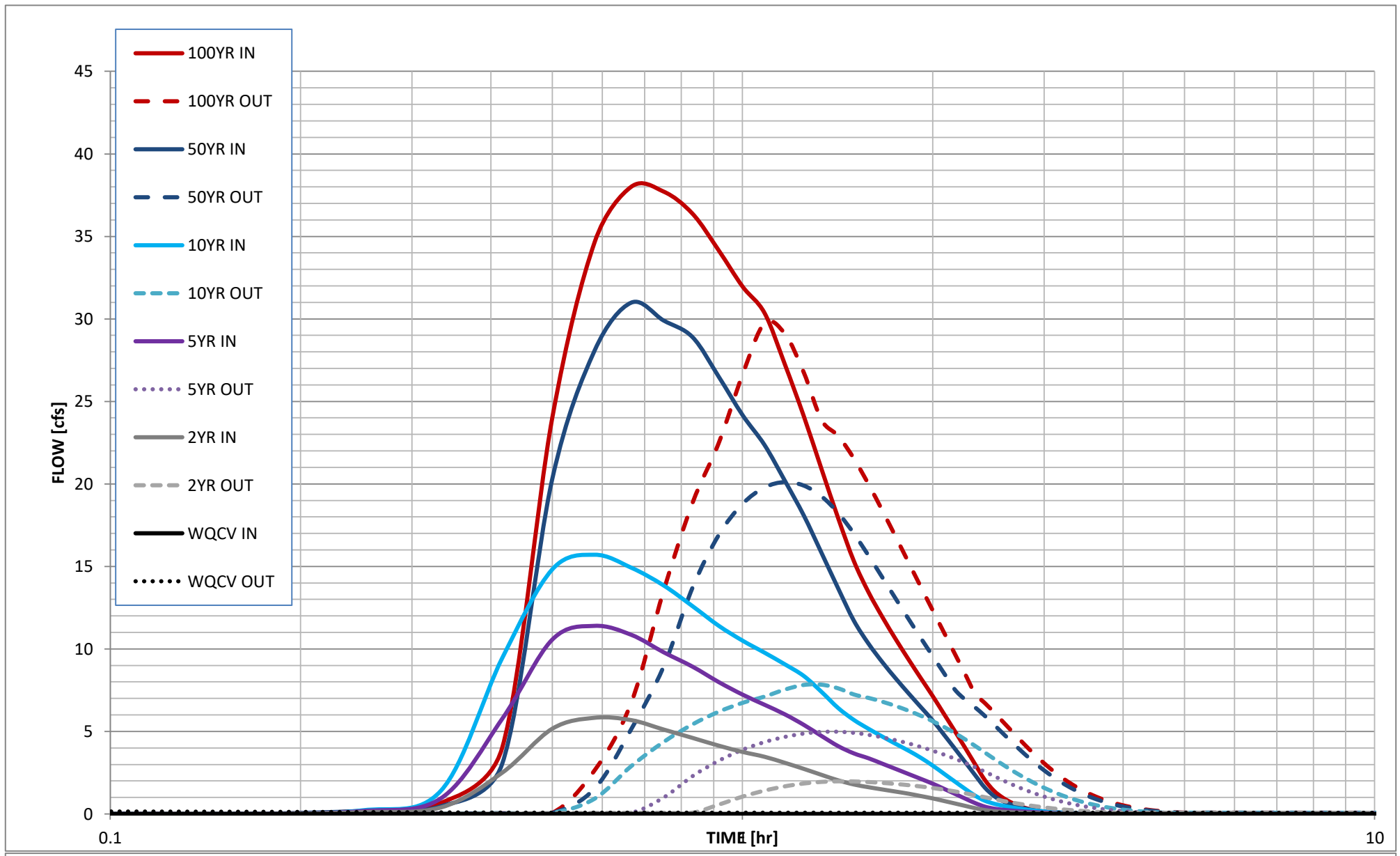
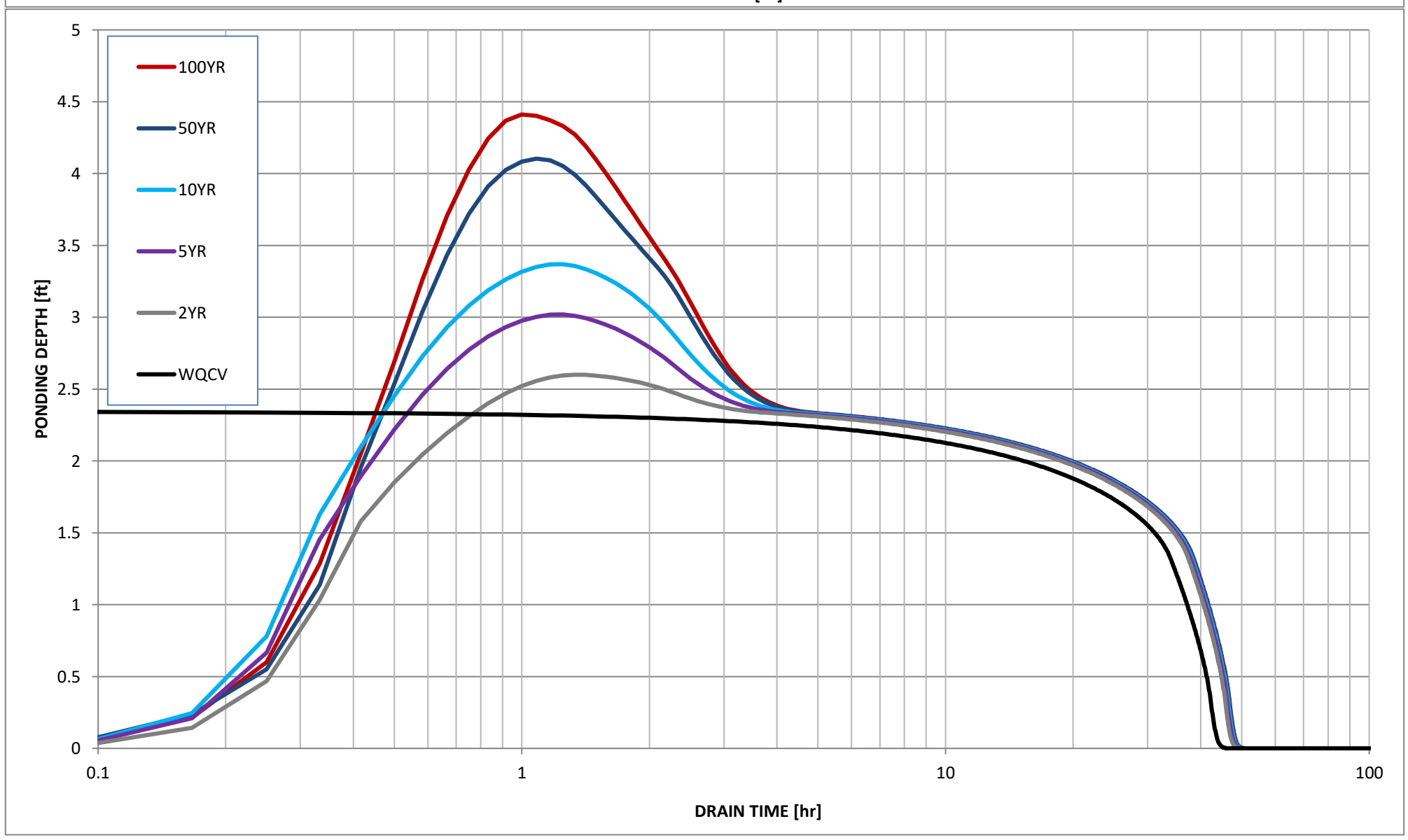
Create a new stormwater facility, and attach the PDF of this worksheet to that record.

Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	1.19	1.50	1.75	2.25	2.52	in
CUHP Runoff Volume =	0.195	0.439	0.867	1.284	2.487	3.187	acre-ft
Inflow Hydrograph Volume =	N/A	0.439	0.867	1.284	2.487	3.187	acre-ft
Time to Drain 97% of Inflow Volume =	39.4	39.8	**36.3**	33.4	25.7	21.6	hours
Time to Drain 99% of Inflow Volume =	41.6	43.6	42.0	40.7	37.2	**35.4**	hours
Maximum Ponding Depth =	2.35	2.60	3.02	3.37	4.10	4.41	ft
Maximum Ponded Area =	0.31	0.34	0.38	0.42	0.46	**0.48**	acres
Maximum Volume Stored =	0.196	0.275	0.426	0.569	0.894	1.039	acre-ft

Stormwater Detention and Infiltration Design Data Sheet





Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Grandwood Ranch - Pond 4**

Facility Location & Jurisdiction: **El Paso County**

User Input: Watershed Characteristics

Extended Detention Basin (EDB)	EDB	
Watershed Area =	8.53	acres
Watershed Length =	1,000	ft
Watershed Length to Centroid =	500	ft
Watershed Slope =	0.090	ft/ft
Watershed Imperviousness =	13.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

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

User Input

Steep Slope > 0.06 ft/ft

User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	24	0.00	0.00
0.33	50	0.33	0.01
1.33	2,257	1.33	0.02
2.33	6,728	2.33	0.55
3.33	8,185	3.33	7.15
4.20	9,524	4.20	16.37
5.33	9,721	5.33	166.92
6.00	11,422	6.00	318.77

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

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

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Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	1.19	1.50	1.75	2.25	2.52	in
CUHP Runoff Volume =	0.059	0.133	0.273	0.411	0.816	1.051	acre-ft
Inflow Hydrograph Volume =	N/A	0.133	0.273	0.411	0.816	1.051	acre-ft
Time to Drain 97% of Inflow Volume =	25.1	25.5	**22.3**	18.8	10.1	7.2	hours
Time to Drain 99% of Inflow Volume =	26.9	28.9	28.2	26.8	22.8	**20.7**	hours
Maximum Ponding Depth =	1.77	2.07	2.50	2.70	3.35	3.62	ft
Maximum Ponded Area =	0.10	0.13	0.16	0.17	0.19	**0.20**	acres
Maximum Volume Stored =	0.059	0.092	0.156	0.189	0.304	0.356	acre-ft

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