

APPENDIX K

Drainage Analysis



GENESIS ENGINEERING

September 20, 2016

Public Works Department
City of Grass Valley
125 East Main Street
Grass Valley, CA 95945

To Whom it may concern:

Re: Preliminary storage sizing for Dorsey Drive

Attached is a preliminary hydraulic design for designing the required detention due to the increase in runoff from post developed construction. The City of Grass Valley Standards use the Rational Method to determine increase runoff however the Rational Method is not an accurate way to design detention. Therefore the SCS method was used to determine the increased runoff.

Autodesk Storm and Sanitary Sewer Analysis 2014 was used for hydraulic calculations using the SCS Unit Hydrograph Method. The main CN value used was 0.95 with 75% impervious using a Type 1A SCS storm. The rain depth was from Rain Gage Station GRASS VALLEY 2 NNE, station number A60 3572 00. There are two main runoff directions for the site, both run from north to south. One portion discharges from the site through an existing set of (3) 24" pipes and the other leaves an existing Drainage inlet and 12" pipe that outfalls into a rock lined swale. The design will detain enough runoff to not increase the pre developed flow rates through the swale and the 24" pipes.

The West portion of the site running north to south will require 3.35 acre-ft of storage which will be achieved using a stepped detention basin. The stepped detention basin will have inflow from each side of the site and will allow each stage of the pond to fill up between 2-4 feet before transferring to the next step of the pond. These ponds will also work as an extended detention basin to meet the Post-Construction design and LID requirements. The design is shown on the Preliminary Utility Plan

The East portion of the site running north to south will require 0.4 acre-ft of storage which will be achieved with a series of underground storage pipes, which were modeled using StormTech MC-4500 chambers. This resulted in approximately 600 LF of MC-4500. These pipes will be located along the southeast parking lot as shown on the Preliminary Utility Plan. From the StormTech the outfall will enter a shallow rock lined pond to keep velocity down when entering the existing Drainage Inlet. To meet the Post Construction design and LID requirements a Contech CDS separator will be used to treat low flow prior to entering the Stormtech MC-4500 chambers.



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In addition to the hydraulics we ran preliminary Post Construction design and LID requirement calculations to ensure we had enough volume. The site is essentially broke up into 3 drainage management areas. Two of the drainage management areas will drain into the extended detention basins and the remaining drainage management area will enter the CDS separator and underground storage pipes.

Attached are the preliminary calculations for the volume required on the detention basin and the underground pipes. The first drainage management area (DMA1) takes the west portion of the site and the west portion of the detention basin before it steps down into the final detention basin. The required volume is 0.31 acre-ft of storage, we have provided 0.54 acre-ft of storage. The second drainage management area (DMA2) takes the east portion of the site and enters the east portion of the detention basin before it steps down into the final detention basin. The required volume is 0.32 acre-ft of storage, we have provided 1.49 acre-ft of storage. The final drainage management area (DMA3) takes the south east portion of the site and will enter the CDS before entering the underground detention pipes. The required volume is 0.13 acre-ft of storage, we have provided 0.4 acre-ft of storage.

The stepped detention basin in the upper tiers that are being used to meet the post construction LID requirements will have their soil amended and have 12 inches of crushed rock below the amended soil. Within the rock section a 4" perforated pipe will be placed and connect to the bottom tiers of the detention basin. The purpose of this is to allow drawdown and standing water in the ponds. The detention basins will have weirs at each top to allow overflow into the next tiered pond below.

Sean M. O'Neill



DMA1: West side detention pond

Total Area = 9.85 acres = 429,066 ft²

% Impervious = 75%

Impervious area = 7.38 acres = 321,800 ft²

runoff coefficient "C" = 0.60

assume 75-85% capture per Casqa handbooks

Since 6V is between Sacramento and Truckee using CASQA rain gauge data. we take the average between the two.

unit basin storage volume = Sacramento = 0.48

Truckee = 0.52

average = 0.50 inches

$$(321,800 \text{ ft}^2)(0.50 \text{ inches})(\frac{1}{12}) = 13,408 \text{ ft}^3 \text{ Storage required}$$

= 0.31 acre-ft required.



PMA 2: East side detention Pond

Total Area = 10.3 acres = 448,668 ft²
 % impervious = 75%

Impervious area = 7.725 acres = 336,501 ft²

runoff coefficient = 0.60

assume 75% - 80% capture.

average unit volume = 0.50 inches

$(336,501)(0.50)(\frac{1}{12}) = 14,020 \text{ ft}^3$ storage required
 = 0.32 acre-ft required.



DMA3: Apartment Complex

Total Area = 4.25 acres = 185,130 ft²
75% impervious

impervious Area = 3.2 acres = 139,392 ft²

runoff coeff. C_p = 0.6

assume 75-85% capture

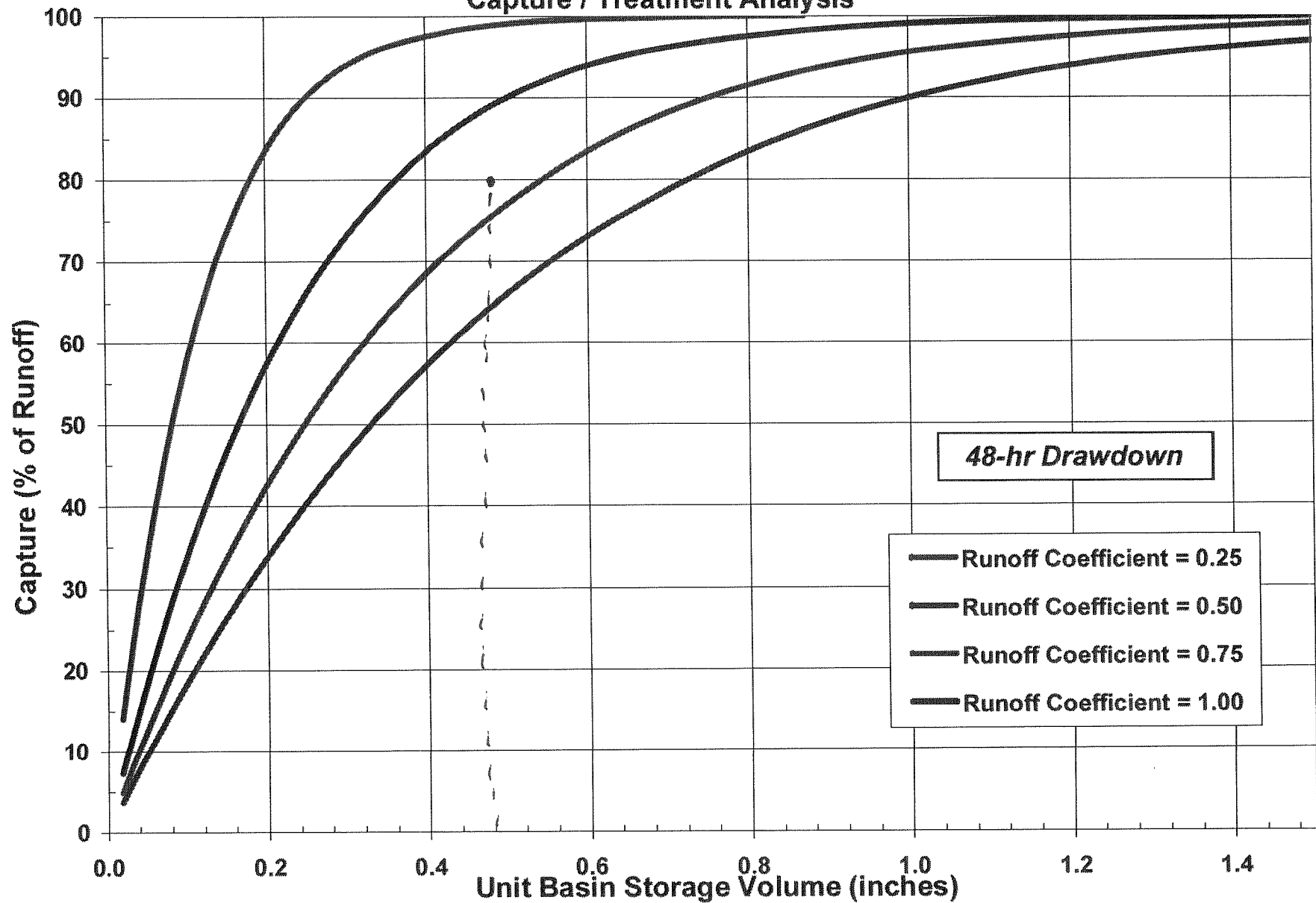
average unit volume = 0.50 inches

$(139,392)(0.50)(\frac{1}{12}) = \underline{5808 \text{ ft}^3}$

$= \underline{0.13 \text{ acre-ft}}$

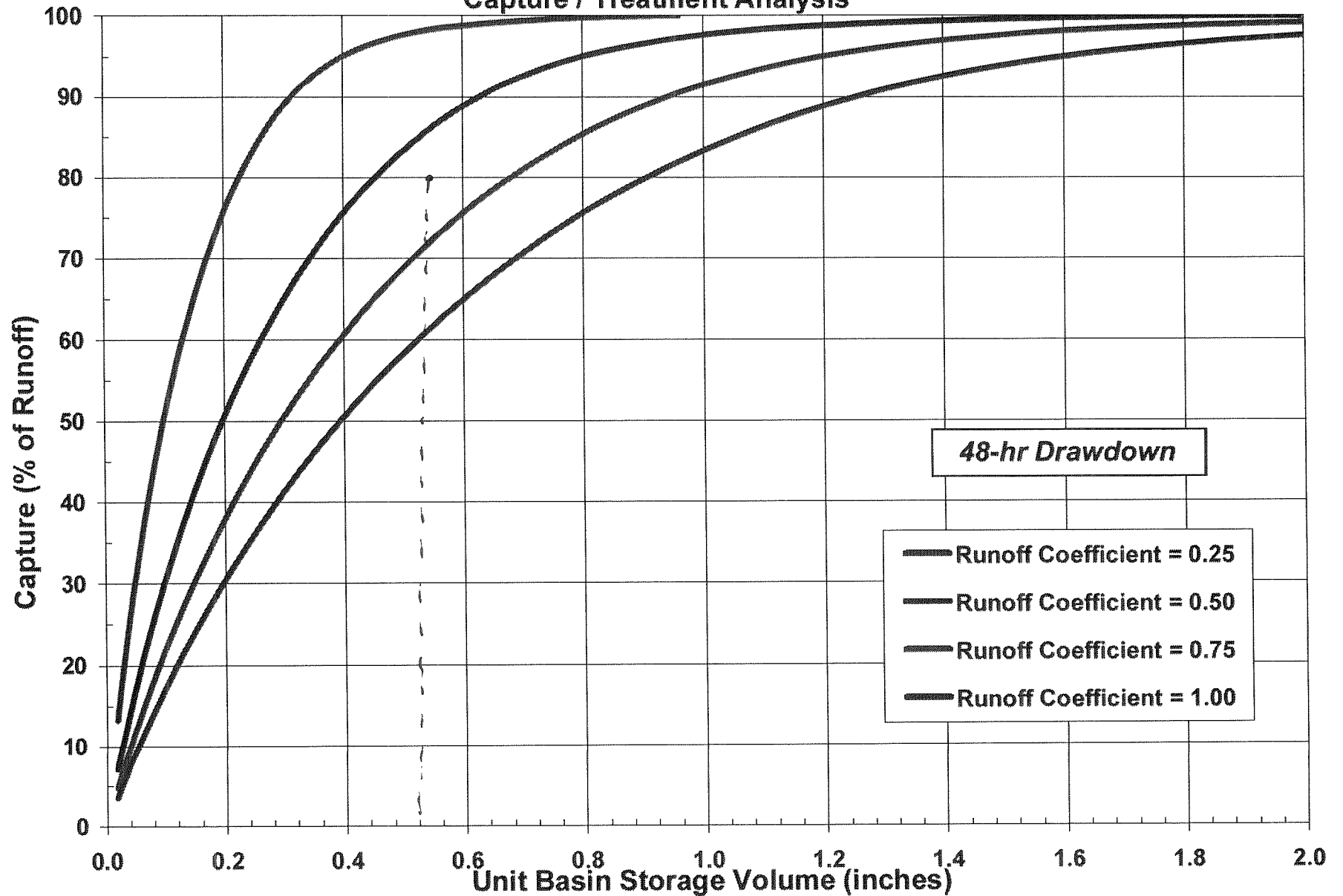
Storage required

Sacramento 5 ESE (7633) - Sacramento County, California
Capture / Treatment Analysis



Truckee Ranger Station (9043) - Nevada County, California

Capture / Treatment Analysis



Project Description

File Name Pre Developed Dorsey.SPF
Description S:\GENESIS JOB FILES\07-109 Dorsey Drive-GV\dwg\Dorsey site plan 10-30-14.dwg

Project Options

Flow Units CFS
Elevation Type Elevation
Hydrology Method Rational
Time of Concentration (TOC) Method SCS TR-55
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On Nov 04, 2014 00:00:00
End Analysis On Nov 05, 2014 00:00:00
Start Reporting On Nov 04, 2014 00:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

Qty
Rain Gages 0
Subbasins 4
Nodes 5
 Junctions 2
 Outfalls 3
 Flow Diversions 0
 Inlets 0
 Storage Nodes 0
Links 2
 Channels 1
 Pipes 1
 Pumps 0
 Orifices 0
 Weirs 0
 Outlets 0
Pollutants 0
Land Uses 0

Rainfall Details

Return Period 25 year(s)

Subbasin Summary

SN	Subbasin ID	Area	Weighted Runoff Coefficient	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-01	3.98	0.2000	0.55	0.11	0.43	1.32	0 00:19:47
2	Sub-02	3.86	0.2000	0.65	0.13	0.50	1.10	0 00:27:07
3	Sub-03	12.18	0.2000	0.73	0.15	1.77	3.04	0 00:34:46
4	Sub-04	5.10	0.2000	0.66	0.13	0.67	1.42	0 00:28:31

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft ²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	Jun-01	Junction	0.00	6.00	0.00	6.00	0.00	3.49	0.59	0.00	5.41	0 00:00	0.00	0.00
2	Jun-02	Junction	0.00	6.00	0.00	6.00	0.00	1.31	10.60	0.00	1.40	0 00:00	0.00	0.00
3	Out-02	Outfall	-0.20					3.49	0.37					
4	Out-03	Outfall	0.00					1.42	0.00					
5	Out-04	Outfall	0.00					1.10	0.00					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported	Surcharged Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	Link-01	Pipe	Jun-01	Out-02	20.00	0.00	-0.20	1.0000	24.000	0.0150	3.49	19.61	0.18	4.71	0.57	0.29	0.00	Calculated
2	Link-02	Channel	Jun-02	Jun-01	350.00	10.00	0.00	2.8600	24.000	0.0320	1.28	33.28	0.04	7.24	0.59	0.29	0.00	

Junction Input

SN	Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft²)	(in)
1	Jun-01	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00	0.00
2	Jun-02	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1	Jun-01	3.49	3.04	0.59	0.59	0.00	5.41	0.02	0.02	0 00:21	0 00:00	0.00	0.00
2	Jun-02	1.31	1.31	10.60	10.60	0.00	1.40	10.01	10.01	0 00:20	0 00:00	0.00	0.00

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Slope	Shape	Height	Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(ft)	(ft)					(cfs)	
1 Link-02	350.00	10.00	10.00	0.00	0.00	10.00	2.8600	Triangular	2.000	5.000	0.0320	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-02	1.28	0 00:21	33.28	0.04	7.24	0.81	0.59	0.29	0.00		

Pipe Input

SN	Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Pipe Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(in)	(in)					(cfs)		
1	Link-01	20.00	0.00	0.00	-0.20	0.00	0.20	1.0000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-01	3.49	0 00:35	19.61	0.18	4.71	0.07	0.57	0.29	0.00		Calculated

Project Description

File Name post developed dorsey-scs-detention pond-9-14-16.SPF
Description 25 Year Storm

Project Options

Flow Units CFS
Elevation Type Elevation
Hydrology Method HEC-1
Time of Concentration (TOC) Method SCS TR-55
HEC-1 unit hydrograph method Clark
HEC-1 loss method SCS Curve Number
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods ... NO

Analysis Options

Start Analysis On Nov 10, 2014 00:00:00
End Analysis On Nov 12, 2014 00:00:00
Start Reporting On Nov 10, 2014 00:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

Qty
Rain Gages 1
Subbasins..... 16
Nodes..... 29
 Junctions 21
 Outfalls 3
 Flow Diversions 0
 Inlets 0
 Storage Nodes 5
Links..... 26
 Channels 2
 Pipes 19
 Pumps 0
 Orifices 2
 Weirs 3
 Outlets 0
Pollutants 0
Land Uses 0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	25 Year	Time Series	25 Year	Intensity	inches	California	Nevada (Nevada City)	25	6.43	SCS Type IA 24-hr

Subbasin Summary

SN	Subbasin ID	Area	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)	(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-01	2.39	6.42	3.69	8.83	3.60	0 00:09:37
2	Sub-02	1.52	6.42	3.80	5.78	2.35	0 00:12:12
3	Sub-03	2.09	6.42	3.77	7.87	3.21	0 00:14:18
4	Sub-04	1.71	6.42	3.80	6.50	2.64	0 00:12:09
5	Sub-05	1.64	6.42	3.82	6.26	2.54	0 00:12:29
6	Sub-08	0.93	6.42	3.89	3.61	1.46	0 00:15:00
7	Sub-10	0.70	6.42	3.79	2.65	1.08	0 00:13:46
8	Sub-11	0.66	6.42	3.63	2.40	0.97	0 00:10:20
9	Sub-12	3.52	6.42	3.76	13.25	5.38	0 00:11:18
10	Sub-16	2.55	6.42	2.36	6.02	2.43	0 00:13:09
11	Sub-17	0.87	6.42	3.88	3.37	1.37	0 00:10:30
12	Sub-18	1.49	6.42	3.72	5.54	2.25	0 00:12:09
13	Sub-20	3.59	6.42	3.76	13.49	5.47	0 00:10:30
14	Sub-21	0.75	6.42	3.84	2.88	1.17	0 00:10:20
15	Sub-23	1.09	6.42	3.76	4.09	1.67	0 00:07:42
16	Sub-24	0.63	6.42	3.82	2.41	0.98	0 00:08:47

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	Jun-01	Junction	2657.00	2661.00	0.00	6.00	0.00	3.60	2657.64	0.00	3.36	0 00:00	0.00	0.00
2	Jun-02	Junction	2653.00	2663.00	0.00	6.00	0.00	7.41	2653.82	0.00	9.18	0 00:00	0.00	0.00
3	Jun-03	Junction	2650.00	2656.00	0.00	6.00	0.00	9.94	2650.86	0.00	5.14	0 00:00	0.00	0.00
4	Jun-04	Junction	2645.00	2651.00	0.00	6.00	0.00	12.57	2651.00	0.00	0.00	0 04:49	0.00	3.00
5	Jun-05	Junction	2641.00	2647.00	0.00	6.00	0.00	13.01	2642.29	0.00	4.71	0 00:00	0.00	0.00
6	Jun-08	Junction	2645.00	2649.50	0.00	6.00	0.00	5.47	2645.78	0.00	3.72	0 00:00	0.00	0.00
7	Jun-09	Junction	2665.00	2670.00	0.00	6.00	0.00	1.66	2665.41	0.00	4.59	0 00:00	0.00	0.00
8	Jun-10	Junction	2667.00	2669.00	0.00	6.00	0.00	1.67	2667.41	0.00	1.59	0 00:00	0.00	0.00
9	Jun-12	Junction	2652.00	2658.00	0.00	6.00	0.00	1.66	2652.38	0.00	5.62	0 00:00	0.00	0.00
10	Jun-13	Junction	2645.00	2652.00	0.00	6.00	0.00	2.64	2645.40	0.00	6.60	0 00:00	0.00	0.00
11	Jun-14	Junction	2635.00	2641.00	0.00	6.00	0.00	1.08	2635.24	0.00	5.76	0 00:00	0.00	0.00
12	Jun-15	Junction	2628.00	2634.00	0.00	6.00	0.00	6.45	2628.46	0.00	5.54	0 00:00	0.00	0.00
13	Jun-16	Junction	2615.50	2625.00	0.00	6.00	0.00	6.44	2616.25	0.00	8.75	0 00:00	0.00	0.00
14	Jun-18	Junction	2632.00	2640.00	0.00	6.00	0.00	16.01	2633.49	0.00	6.51	0 00:00	0.00	0.00
15	Jun-20	Junction	2634.00	2646.00	0.00	6.00	0.00	15.09	2635.19	0.00	10.81	0 00:00	0.00	0.00
16	Jun-22	Junction	2644.00	2646.00	0.00	6.00	0.00	8.66	2644.88	0.00	1.12	0 00:00	0.00	0.00
17	Jun-23	Junction	2641.00	2643.00	0.00	0.00	0.00	9.82	2642.11	0.00	0.89	0 00:00	0.00	0.00
18	Jun-24	Junction	2625.00	2647.00	0.00	0.00	0.00	2.63	2625.40	0.00	21.60	0 00:00	0.00	0.00
19	Jun-26	Junction	2667.00	2677.00	0.00	0.00	0.00	1.46	2667.29	0.00	9.71	0 00:00	0.00	0.00
20	Out-01	Junction	2643.00	2645.00	0.00	0.00	0.00	9.82	2644.11	0.00	0.89	0 00:00	0.00	0.00
21	Out-02	Junction	2657.00	2659.00	0.00	0.00	0.00	3.21	2657.56	0.00	1.44	0 00:00	0.00	0.00
22	Out-04	Outfall	2571.50					3.59	2571.50					
23	Out-05	Outfall	2604.00					1.41	2604.00					
24	Out-06	Outfall	2605.00					2.63	2605.39					
25	Stor-02	Storage Node	2615.00	2620.00	0.00		0.00	6.44	2619.62				0.00	0.00
26	Stor-06	Storage Node	2604.00	2609.00	0.00		0.00	9.82	2608.21				0.00	0.00
27	Stor-07	Storage Node	2588.00	2593.00	0.00		0.00	9.81	2592.09				0.00	0.00
28	Stor-08	Storage Node	2574.00	2582.00	0.00		0.00	15.16	2578.68				0.00	0.00
29	Stor-09	Storage Node	2585.00	2590.00	0.00		0.00	15.99	2589.20				0.00	0.00

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported (min)	Surcharged Condition
1 Link-03	Pipe	Jun-04	Jun-05	212.00	2645.00	2641.00	1.8900	18.000	0.0150	13.01	12.50	1.04	8.22	1.36	0.91	0.00	> CAPACITY
2 Link-04	Pipe	Jun-03	Jun-04	161.00	2650.00	2645.00	3.1100	18.000	0.0150	9.94	16.04	0.62	9.56	0.85	0.57	0.00	Calculated
3 Link-05	Pipe	Jun-02	Jun-03	150.00	2653.00	2650.00	2.0000	18.000	0.0150	7.41	12.87	0.58	7.54	0.81	0.54	0.00	Calculated
4 Link-06	Pipe	Jun-01	Jun-02	161.00	2657.00	2653.00	2.4800	12.000	0.0150	3.60	4.87	0.74	6.82	0.64	0.64	0.00	Calculated
5 Link-07	Pipe	Jun-10	Jun-09	83.00	2667.00	2665.00	2.4100	12.000	0.0150	1.66	4.79	0.35	5.55	0.40	0.41	0.00	Calculated
6 Link-08	Pipe	Jun-09	Jun-12	244.00	2665.00	2652.00	5.3300	12.000	0.0150	1.66	7.13	0.23	7.40	0.33	0.33	0.00	Calculated
7 Link-10	Pipe	Jun-12	Jun-13	232.00	2652.00	2645.00	3.0200	12.000	0.0150	1.66	5.36	0.31	6.04	0.38	0.38	0.00	Calculated
8 Link-13	Pipe	Jun-15	Jun-16	102.00	2628.00	2615.50	12.2500	18.000	0.0150	6.44	31.87	0.20	14.12	0.46	0.31	0.00	Calculated
9 Link-15	Pipe	Jun-18	Stor-09	130.00	2633.00	2585.00	36.9200	24.000	0.0150	15.99	119.14	0.13	26.42	0.49	0.25	0.00	Calculated
10 Link-20	Pipe	Jun-20	Jun-18	150.00	2634.00	2632.00	1.3300	24.000	0.0150	15.05	22.64	0.66	7.73	1.18	0.59	0.00	Calculated
11 Link-22	Pipe	Jun-16	Stor-02	40.85	2605.50	2605.00	1.2200	24.000	0.0150	6.44	21.69	0.30	6.02	0.74	0.37	0.00	Calculated
12 Link-23	Pipe	Jun-08	Jun-22	80.00	2645.00	2644.00	1.2500	18.000	0.0150	5.47	10.18	0.54	5.86	0.78	0.52	0.00	Calculated
13 Link-29	Pipe	Jun-23	Stor-06	128.00	2641.00	2606.00	27.3400	18.000	0.0150	9.82	47.60	0.21	21.21	0.46	0.31	0.00	Calculated
14 Link-30	Pipe	Jun-14	Jun-15	163.89	2635.00	2628.00	4.2700	18.000	0.0150	1.07	18.81	0.06	5.79	0.24	0.16	0.00	Calculated
15 Link-32	Pipe	Jun-24	Out-06	275.57	2625.00	2605.00	7.2600	12.000	0.0150	2.63	8.32	0.32	9.39	0.39	0.39	0.00	Calculated
16 Link-33	Pipe	Jun-13	Jun-24	303.56	2645.00	2625.00	6.5900	12.000	0.0150	2.63	7.93	0.33	9.07	0.40	0.40	0.00	Calculated
17 Link-34	Pipe	Jun-26	Jun-02	200.00	2667.00	2653.00	7.0000	12.000	0.0150	1.46	8.17	0.18	7.86	0.29	0.29	0.00	Calculated
18 Link-35	Pipe	Jun-05	Jun-20	103.86	2641.00	2634.00	6.7400	18.000	0.0150	12.87	23.63	0.54	13.68	0.78	0.53	0.00	Calculated
19 Link-38	Pipe	Jun-22	Out-01	30.00	2644.00	2643.00	3.3300	15.000	0.0150	8.66	10.22	0.85	9.34	0.88	0.71	0.00	Calculated
20 Link-24	Channel	Out-01	Jun-23	175.08	2643.00	2640.00	1.7100	24.000	0.0320	9.82	47.24	0.21	3.23	1.11	0.55	0.00	
21 Link-25	Channel	Out-02	Jun-22	270.24	2657.00	2643.00	5.1800	24.000	0.0320	3.20	96.93	0.03	4.78	0.56	0.28	0.00	
22 Orifice-04	Orifice	Stor-02	Out-05		2615.00	2604.00		5.000		1.41							
23 Orifice-05	Orifice	Stor-08	Out-04		2574.00	2571.50		8.000		3.59							
24 Weir-01	Weir	Stor-06	Stor-07		2604.00	2588.00				9.81							
25 Weir-02	Weir	Stor-07	Stor-08		2588.00	2574.00				3.85							
26 Weir-03	Weir	Stor-09	Stor-08		2585.00	2574.00				12.27							

Junction Input

SN Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft²)	(in)
1 Jun-01	2657.00	2661.00	4.00	0.00	-2657.00	6.00	-2655.00	0.00	0.00
2 Jun-02	2653.00	2663.00	10.00	0.00	-2653.00	6.00	-2657.00	0.00	0.00
3 Jun-03	2650.00	2656.00	6.00	0.00	-2650.00	6.00	-2650.00	0.00	0.00
4 Jun-04	2645.00	2651.00	6.00	0.00	-2645.00	6.00	-2645.00	0.00	0.00
5 Jun-05	2641.00	2647.00	6.00	0.00	-2641.00	6.00	-2641.00	0.00	0.00
6 Jun-08	2645.00	2649.50	4.50	0.00	-2645.00	6.00	-2643.50	0.00	0.00
7 Jun-09	2665.00	2670.00	5.00	0.00	-2665.00	6.00	-2664.00	0.00	0.00
8 Jun-10	2667.00	2669.00	2.00	0.00	-2667.00	6.00	-2663.00	0.00	0.00
9 Jun-12	2652.00	2658.00	6.00	0.00	-2652.00	6.00	-2652.00	0.00	0.00
10 Jun-13	2645.00	2652.00	7.00	0.00	-2645.00	6.00	-2646.00	0.00	0.00
11 Jun-14	2635.00	2641.00	6.00	0.00	-2635.00	6.00	-2635.00	0.00	0.00
12 Jun-15	2628.00	2634.00	6.00	0.00	-2628.00	6.00	-2628.00	0.00	0.00
13 Jun-16	2615.50	2625.00	9.50	0.00	-2615.50	6.00	-2619.00	0.00	0.00
14 Jun-18	2632.00	2640.00	8.00	0.00	-2632.00	6.00	-2634.00	0.00	0.00
15 Jun-20	2634.00	2646.00	12.00	0.00	-2634.00	6.00	-2640.00	0.00	0.00
16 Jun-22	2644.00	2646.00	2.00	0.00	-2644.00	6.00	-2640.00	0.00	0.00
17 Jun-23	2641.00	2643.00	2.00	0.00	-2641.00	0.00	-2643.00	0.00	0.00
18 Jun-24	2625.00	2647.00	22.00	0.00	-2625.00	0.00	-2647.00	0.00	0.00
19 Jun-26	2667.00	2677.00	10.00	0.00	-2667.00	0.00	-2677.00	0.00	0.00
20 Out-01	2643.00	2645.00	2.00	0.00	-2643.00	0.00	-2645.00	0.00	0.00
21 Out-02	2657.00	2659.00	2.00	0.00	-2657.00	0.00	-2659.00	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1	Jun-01	3.60	3.60	2657.64	0.64	0.00	3.36	2657.07	0.07	0 04:48	0 00:00	0.00	0.00
2	Jun-02	7.41	2.35	2653.82	0.82	0.00	9.18	2653.09	0.09	0 04:48	0 00:00	0.00	0.00
3	Jun-03	9.94	2.54	2650.86	0.86	0.00	5.14	2650.10	0.10	0 04:48	0 00:00	0.00	0.00
4	Jun-04	12.57	2.64	2651.00	6.00	0.00	0.00	2645.13	0.13	0 04:48	0 04:49	0.00	3.00
5	Jun-05	13.01	0.00	2642.29	1.29	0.00	4.71	2641.12	0.12	0 04:50	0 00:00	0.00	0.00
6	Jun-08	5.47	5.47	2645.78	0.78	0.00	3.72	2645.09	0.09	0 04:48	0 00:00	0.00	0.00
7	Jun-09	1.66	0.00	2665.41	0.41	0.00	4.59	2665.05	0.05	0 04:47	0 00:00	0.00	0.00
8	Jun-10	1.67	1.67	2667.41	0.41	0.00	1.59	2667.05	0.05	0 04:47	0 00:00	0.00	0.00
9	Jun-12	1.66	0.00	2652.38	0.38	0.00	5.62	2652.05	0.05	0 04:47	0 00:00	0.00	0.00
10	Jun-13	2.64	0.97	2645.40	0.40	0.00	6.60	2645.05	0.05	0 04:48	0 00:00	0.00	0.00
11	Jun-14	1.08	1.08	2635.24	0.24	0.00	5.76	2635.03	0.03	0 04:48	0 00:00	0.00	0.00
12	Jun-15	6.45	5.38	2628.46	0.46	0.00	5.54	2628.06	0.06	0 04:48	0 00:00	0.00	0.00
13	Jun-16	6.44	0.00	2616.25	0.75	0.00	8.75	2615.59	0.09	0 04:48	0 00:00	0.00	0.00
14	Jun-18	16.01	0.98	2633.49	1.49	0.00	6.51	2633.06	1.06	0 04:51	0 00:00	0.00	0.00
15	Jun-20	15.09	2.25	2635.19	1.19	0.00	10.81	2634.13	0.13	0 04:50	0 00:00	0.00	0.00
16	Jun-22	8.66	0.00	2644.88	0.88	0.00	1.12	2644.09	0.09	0 04:48	0 00:00	0.00	0.00
17	Jun-23	9.82	0.00	2642.11	1.11	0.00	0.89	2641.17	0.17	0 04:49	0 00:00	0.00	0.00
18	Jun-24	2.63	0.00	2625.40	0.40	0.00	21.60	2625.05	0.05	0 04:48	0 00:00	0.00	0.00
19	Jun-26	1.46	1.46	2667.29	0.29	0.00	9.71	2667.04	0.04	0 04:48	0 00:00	0.00	0.00
20	Out-01	9.82	1.17	2644.11	1.11	0.00	0.89	2643.17	0.17	0 04:48	0 00:00	0.00	0.00
21	Out-02	3.21	3.21	2657.56	0.56	0.00	1.44	2657.08	0.08	0 04:48	0 00:00	0.00	0.00

Channel Input

SN	Element ID	Length	Inlet Invert	Inlet Invert Offset	Outlet Invert	Outlet Invert Offset	Total Drop	Average Slope	Shape	Height	Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(ft)	(ft)					(cfs)	
1	Link-24	175.08	2643.00	0.00	2640.00	-1.00	3.00	1.7100	Triangular	2.000	10.000	0.0320	0.5000	0.5000	0.0000	0.00	No
2	Link-25	270.24	2657.00	0.00	2643.00	-1.00	14.00	5.1800	Triangular	2.000	10.000	0.0320	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-24	9.82	0 04:49	47.24	0.21	3.23	0.90	1.11	0.55	0.00		
2 Link-25	3.20	0 04:49	96.93	0.03	4.78	0.94	0.56	0.28	0.00		

Pipe Input

SN	Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Pipe Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(in)	(in)					(cfs)		
1	Link-03	212.00	2645.00	0.00	2641.00	0.00	4.00	1.8900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
2	Link-04	161.00	2650.00	0.00	2645.00	0.00	5.00	3.1100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
3	Link-05	150.00	2653.00	0.00	2650.00	0.00	3.00	2.0000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
4	Link-06	161.00	2657.00	0.00	2653.00	0.00	4.00	2.4800	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
5	Link-07	83.00	2667.00	0.00	2665.00	0.00	2.00	2.4100	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
6	Link-08	244.00	2665.00	0.00	2652.00	0.00	13.00	5.3300	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
7	Link-10	232.00	2652.00	0.00	2645.00	0.00	7.00	3.0200	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
8	Link-13	102.00	2628.00	0.00	2615.50	0.00	12.50	12.2500	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
9	Link-15	130.00	2633.00	1.00	2585.00	0.00	48.00	36.9200	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
10	Link-20	150.00	2634.00	0.00	2632.00	0.00	2.00	1.3300	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
11	Link-22	40.85	2605.50	-10.00	2605.00	-10.00	0.50	1.2200	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
12	Link-23	80.00	2645.00	0.00	2644.00	0.00	1.00	1.2500	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
13	Link-29	128.00	2641.00	0.00	2606.00	2.00	35.00	27.3400	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
14	Link-30	163.89	2635.00	0.00	2628.00	0.00	7.00	4.2700	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
15	Link-32	275.57	2625.00	0.00	2605.00	0.00	20.00	7.2600	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
16	Link-33	303.56	2645.00	0.00	2625.00	0.00	20.00	6.5900	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
17	Link-34	200.00	2667.00	0.00	2653.00	0.00	14.00	7.0000	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
18	Link-35	103.86	2641.00	0.00	2634.00	0.00	7.00	6.7400	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1
19	Link-38	30.00	2644.00	0.00	2643.00	0.00	1.00	3.3300	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-03	13.01	0 04:50	12.50	1.04	8.22	0.43	1.36	0.91	0.00		> CAPACITY
2 Link-04	9.94	0 04:49	16.04	0.62	9.56	0.28	0.85	0.57	0.00		Calculated
3 Link-05	7.41	0 04:48	12.87	0.58	7.54	0.33	0.81	0.54	0.00		Calculated
4 Link-06	3.60	0 04:48	4.87	0.74	6.82	0.39	0.64	0.64	0.00		Calculated
5 Link-07	1.66	0 04:47	4.79	0.35	5.55	0.25	0.40	0.41	0.00		Calculated
6 Link-08	1.66	0 04:47	7.13	0.23	7.40	0.55	0.33	0.33	0.00		Calculated
7 Link-10	1.66	0 04:48	5.36	0.31	6.04	0.64	0.38	0.38	0.00		Calculated
8 Link-13	6.44	0 04:48	31.87	0.20	14.12	0.12	0.46	0.31	0.00		Calculated
9 Link-15	15.99	0 04:51	119.14	0.13	26.42	0.08	0.49	0.25	0.00		Calculated
10 Link-20	15.05	0 04:51	22.64	0.66	7.73	0.32	1.18	0.59	0.00		Calculated
11 Link-22	6.44	0 04:48	21.69	0.30	6.02	0.11	0.74	0.37	0.00		Calculated
12 Link-23	5.47	0 04:48	10.18	0.54	5.86	0.23	0.78	0.52	0.00		Calculated
13 Link-29	9.82	0 04:49	47.60	0.21	21.21	0.10	0.46	0.31	0.00		Calculated
14 Link-30	1.07	0 04:48	18.81	0.06	5.79	0.47	0.24	0.16	0.00		Calculated
15 Link-32	2.63	0 04:48	8.32	0.32	9.39	0.49	0.39	0.39	0.00		Calculated
16 Link-33	2.63	0 04:48	7.93	0.33	9.07	0.56	0.40	0.40	0.00		Calculated
17 Link-34	1.46	0 04:48	8.17	0.18	7.86	0.42	0.29	0.29	0.00		Calculated
18 Link-35	12.87	0 04:50	23.63	0.54	13.68	0.13	0.78	0.53	0.00		Calculated
19 Link-38	8.66	0 04:49	10.22	0.85	9.34	0.05	0.88	0.71	0.00		Calculated

Storage Nodes

Storage Node : Stor-02

Input Data

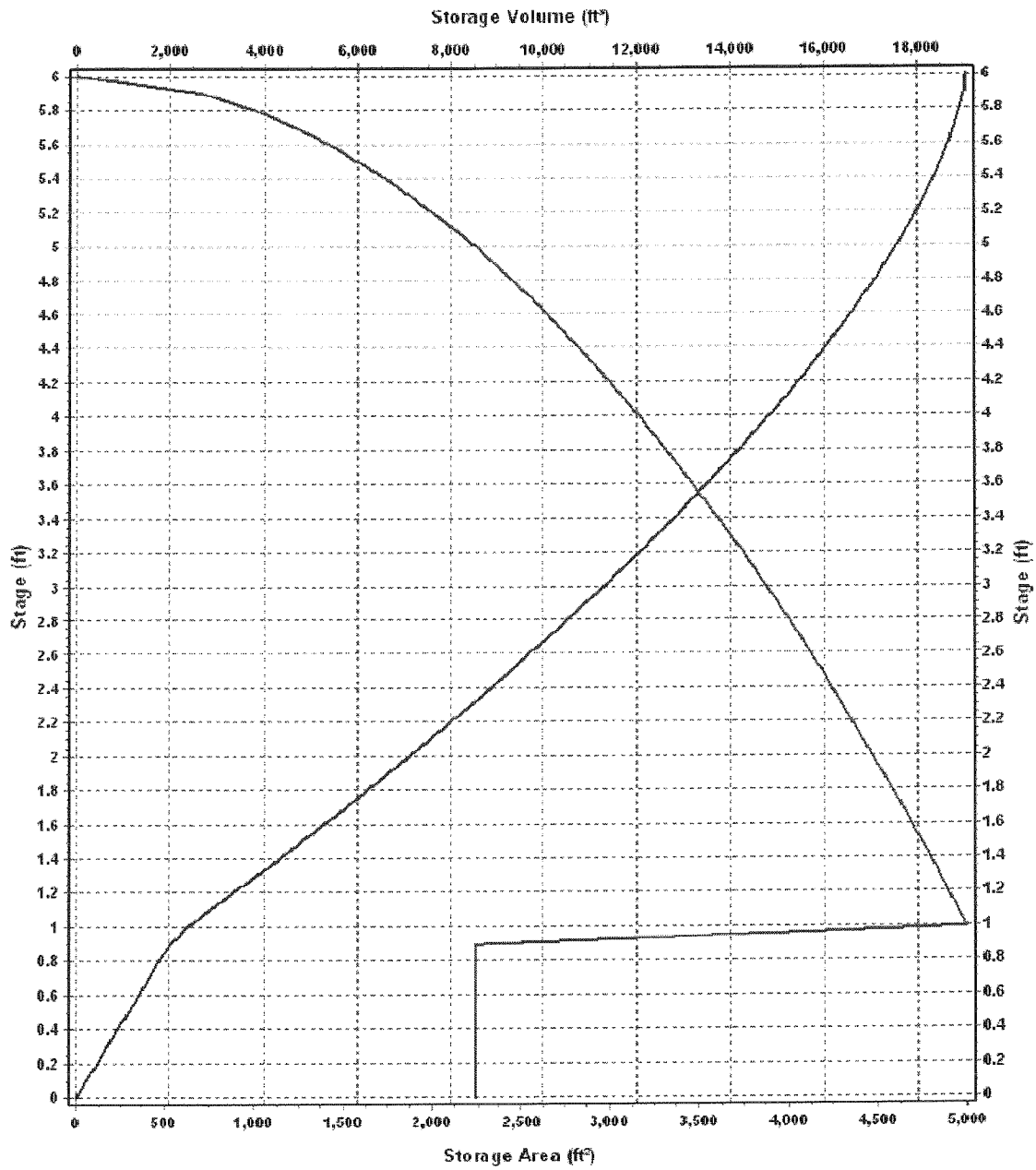
Invert Elevation (ft)	2615.00
Max (Rim) Elevation (ft)	2620.00
Max (Rim) Offset (ft)	5.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-2615.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : Southeast storage

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	2239.9999	0.000
0.1	2239.9999	224.00
0.2	2239.9999	448.00
0.3	2239.9999	672.00
0.4	2239.9999	896.00
0.5	2239.9999	1120.00
0.6	2239.9999	1344.00
0.7	2239.9999	1568.00
0.8	2239.9999	1792.00
0.9	2239.9999	2016.00
1	4999.9998	2378.00
1.2	4898.9793	3367.90
1.3	4847.6797	3855.23
1.4	4795.8313	4337.41
1.5	4743.4163	4814.37
1.6	4690.4156	5286.06
1.7	4636.8091	5752.42
1.8	4582.5755	6213.39
1.9	4527.6924	6668.90
2	4472.1358	7118.89
2.1	4415.8803	7563.29
2.2	4358.8988	8002.03
2.3	4301.1625	8435.03
2.4	4242.6405	8862.22
2.5	4183.3000	9283.52
2.6	4123.1055	9698.84
2.7	4062.0190	10108.10
2.8	3999.9998	10511.20
2.9	3937.0038	10908.05
3	3872.9832	11298.55
3.1	3807.8864	11682.59
3.2	3741.6572	12060.07
3.3	3674.2345	12430.86
3.4	3605.5511	12794.85
3.5	3535.5338	13151.90
3.6	3464.1015	13501.88
3.7	3391.1649	13844.64
3.8	3316.6247	14180.03
3.9	3240.3702	14507.88
4	3162.2775	14828.01
4.1	3082.2069	15140.23
4.2	2999.9999	15444.34
4.3	2915.4758	15740.11
4.4	2828.4270	16027.31
4.5	2738.6127	16305.66
4.6	2645.7512	16574.88
4.7	2549.5097	16834.64
4.8	2449.4896	17084.59
4.9	2345.2078	17324.32
5	2236.0679	17553.38
5.1	2121.3203	17771.25
5.2	1999.9999	17977.32
5.3	1870.8286	18170.86
5.4	1732.0507	18351.00
5.5	1581.1388	18516.66
5.6	1414.2135	18666.43
5.7	1224.7448	18798.38
5.8	1000.0000	18909.62
5.9	707.1068	18994.98
6	0.0000	19030.34

Storage Area Volume Curves



— Storage Area — Storage Volume

Storage Node : Stor-02 (continued)

Outflow Orifices

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 Orifice-04	Side	CIRCULAR	No	5.00			2605.00	0.61

Output Summary Results

Peak Inflow (cfs)	6.44
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	1.41
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	2619.62
Max HGL Depth Attained (ft)	4.62
Average HGL Elevation Attained (ft)	2615.86
Average HGL Depth Attained (ft)	0.86
Time of Max HGL Occurrence (days hh:mm)	0 06:06
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Stor-06

Input Data

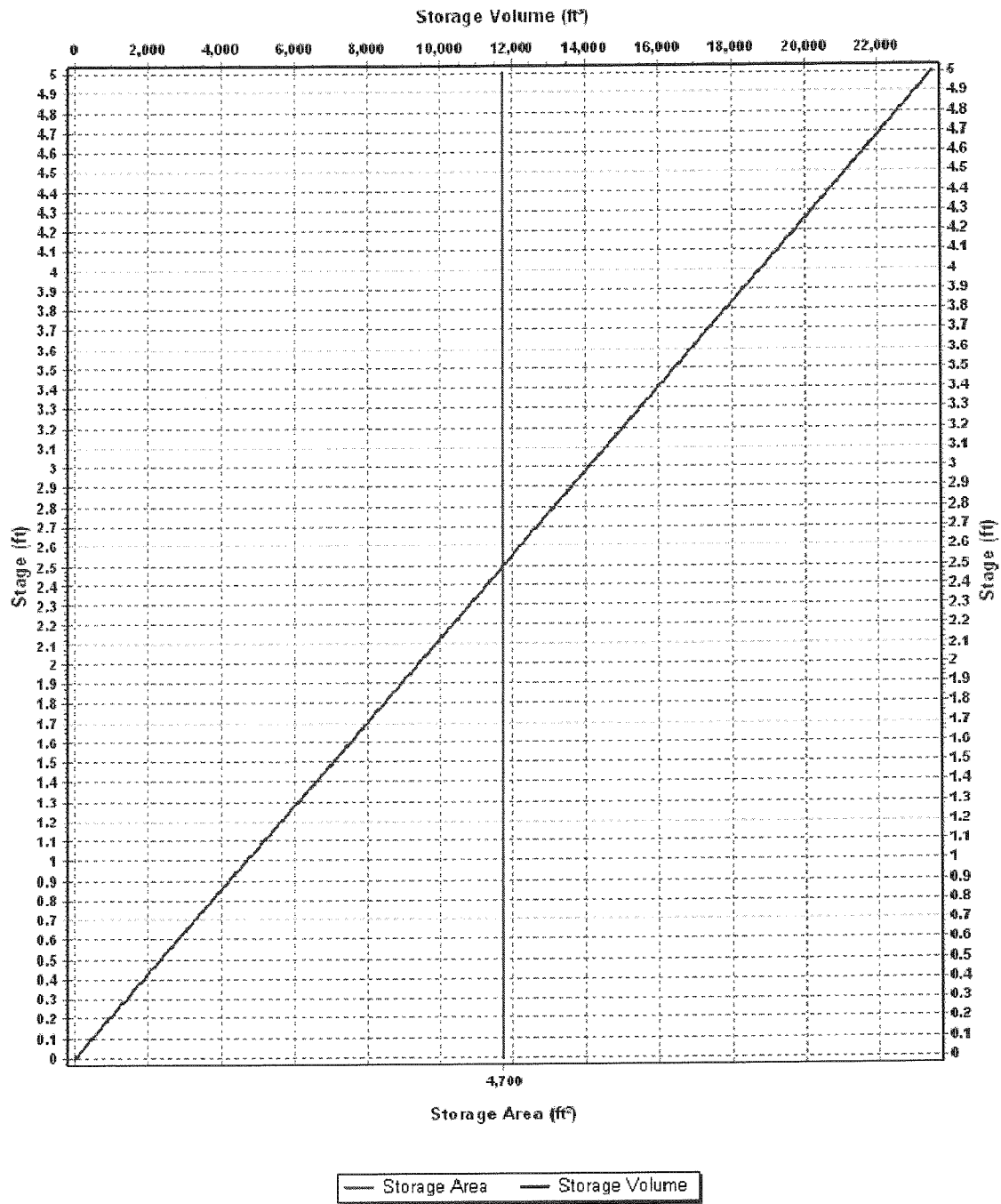
Invert Elevation (ft)	2604.00
Max (Rim) Elevation (ft)	2609.00
Max (Rim) Offset (ft)	5.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-2604.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : 4700 area

Stage	Storage Area	Storage Volume
(ft)	(ft²)	(ft³)
0	4700	0.000
5	4700	23500.00

Storage Area Volume Curves



Storage Node : Stor-06 (continued)

Outflow Weirs

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 Weir-01	Rectangular	No	2608.00	4.00	30.00	1.00	3.33

Output Summary Results

Peak Inflow (cfs)	9.82
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	9.81
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	2608.21
Max HGL Depth Attained (ft)	4.21
Average HGL Elevation Attained (ft)	2607.81
Average HGL Depth Attained (ft)	3.81
Time of Max HGL Occurrence (days hh:mm)	0 04:50
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Stor-07

Input Data

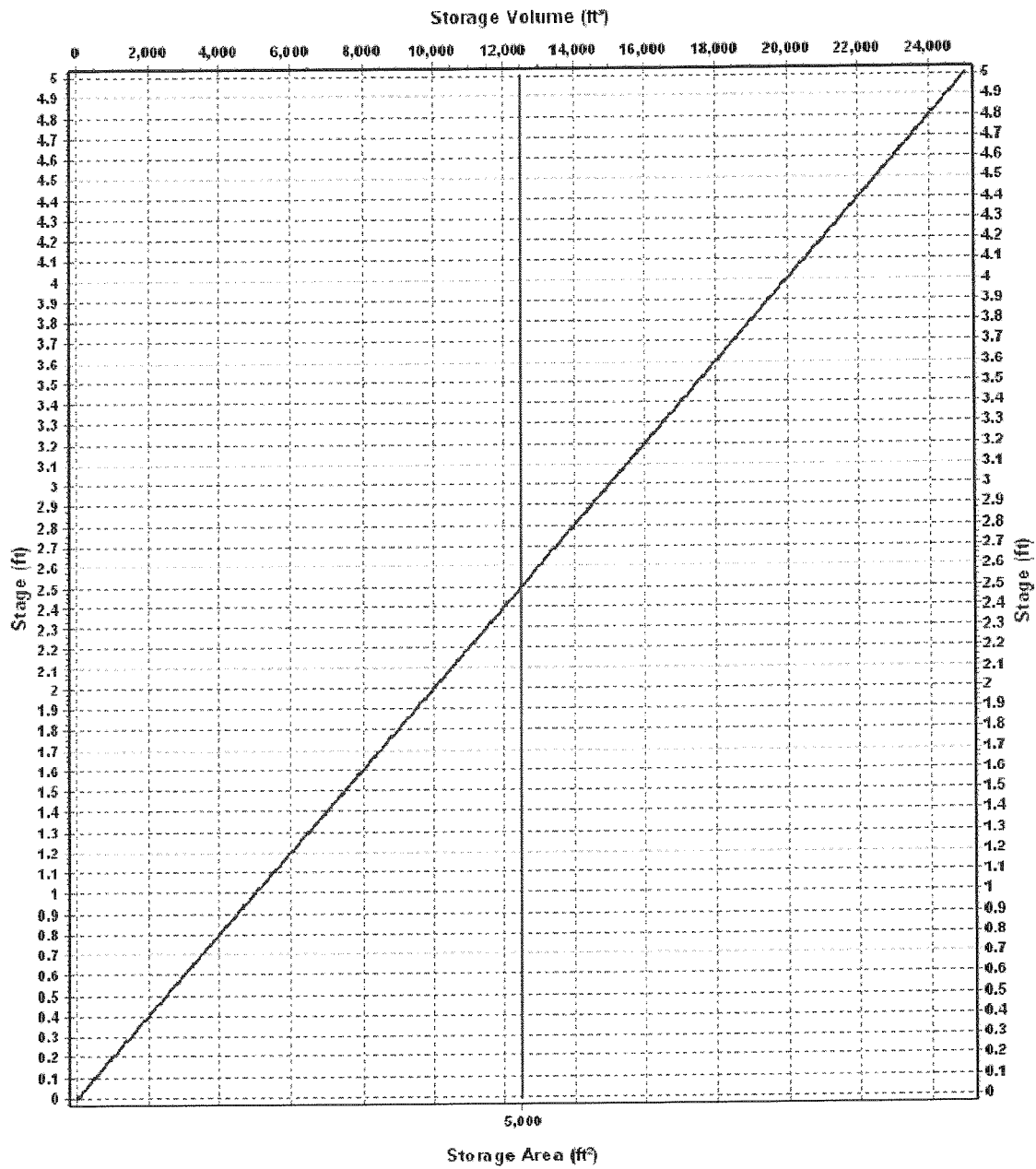
Invert Elevation (ft)	2588.00
Max (Rim) Elevation (ft)	2593.00
Max (Rim) Offset (ft)	5.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-2588.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : 5000 area

Stage	Storage	Storage
(ft)	Area	Volume
	(ft²)	(ft³)
0	5000	0.000
5	5000	25000.00

Storage Area Volume Curves



— Storage Area — Storage Volume

Storage Node : Stor-07 (continued)

Outflow Weirs

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 Weir-02	Rectangular	No	2592.00	4.00	40.00	1.00	3.33

Output Summary Results

Peak Inflow (cfs)	9.81
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	3.85
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	2592.09
Max HGL Depth Attained (ft)	4.09
Average HGL Elevation Attained (ft)	2591.62
Average HGL Depth Attained (ft)	3.62
Time of Max HGL Occurrence (days hh:mm)	0 05:14
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Stor-08

Input Data

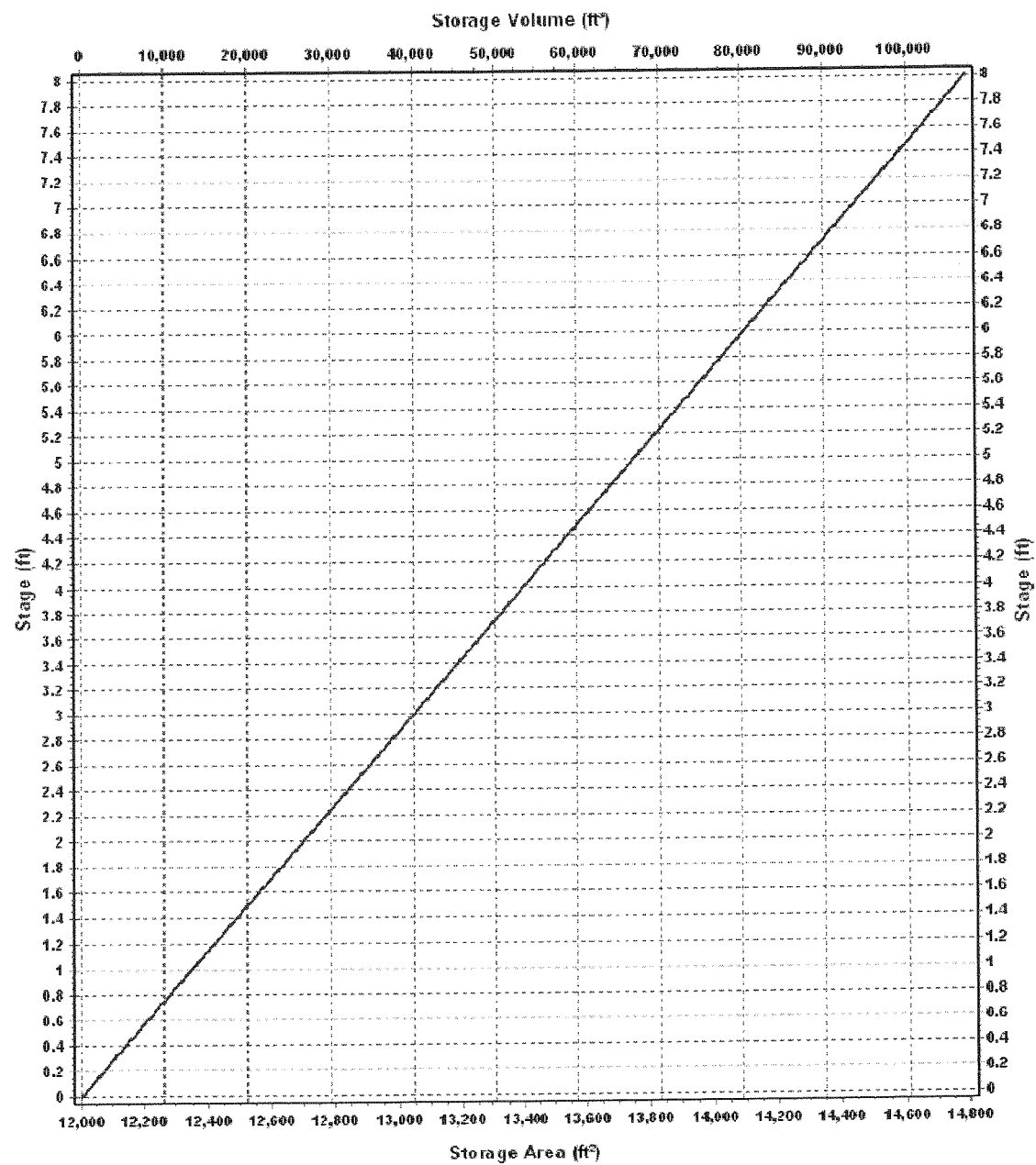
Invert Elevation (ft)	2574.00
Max (Rim) Elevation (ft)	2582.00
Max (Rim) Offset (ft)	8.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-2574.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : 12000 area

Stage	Storage Area	Storage Volume
(ft)	(ft²)	(ft³)
0	12000	0.000
8	14800	107200.00

Storage Area Volume Curves



— Storage Area — Storage Volume

Storage Node : Stor-08 (continued)

Outflow Orifices

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 Orifice-05	Side	CIRCULAR	No	8.00			2574.00	0.61

Output Summary Results

Peak Inflow (cfs)	15.16
Peak Lateral Inflow (cfs)	3.77
Peak Outflow (cfs)	3.59
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	2578.68
Max HGL Depth Attained (ft)	4.68
Average HGL Elevation Attained (ft)	2575.16
Average HGL Depth Attained (ft)	1.16
Time of Max HGL Occurrence (days hh:mm)	0 11:03
Total Exfiltration Volume (1000-ft ³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Stor-09

Input Data

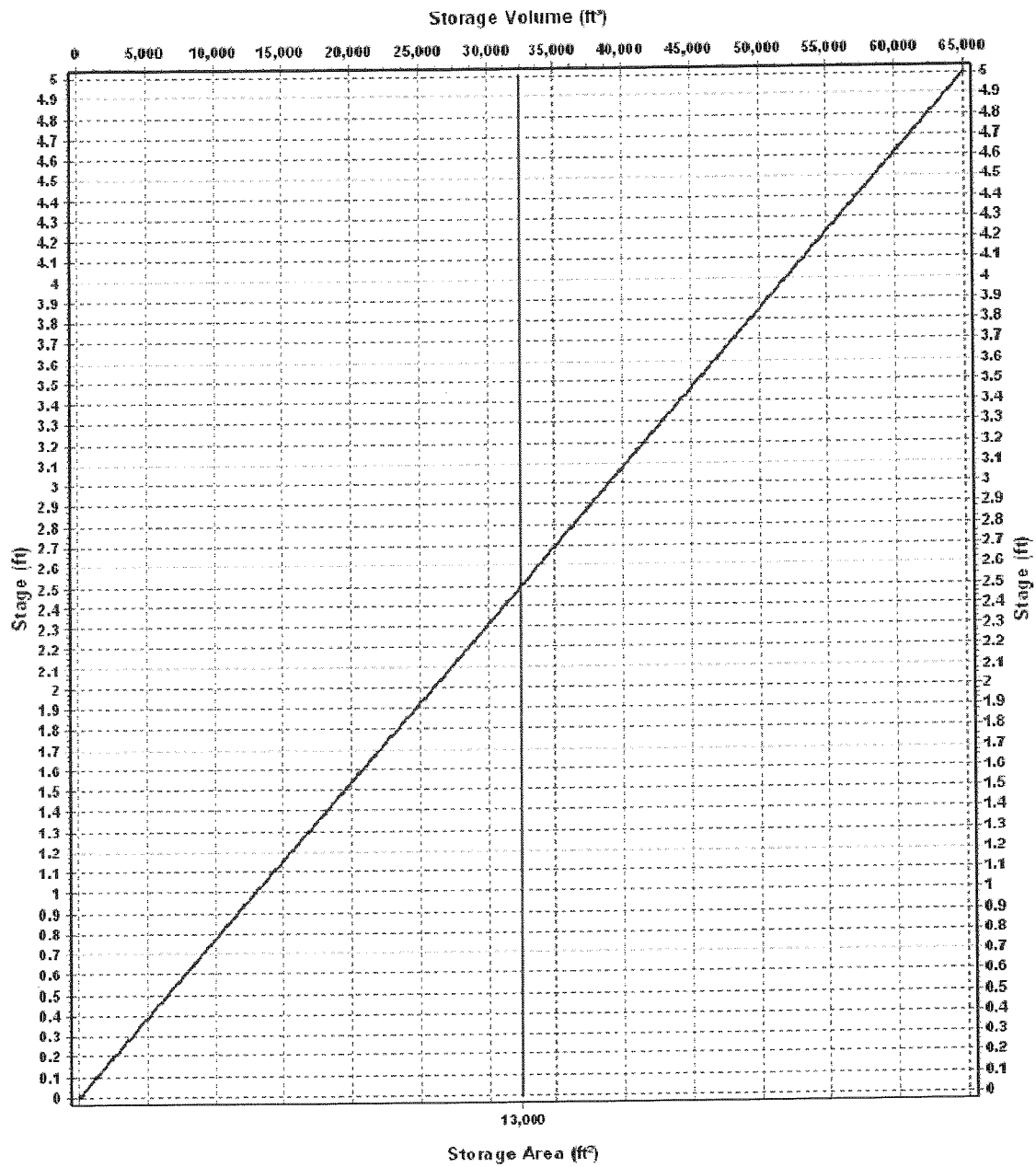
Invert Elevation (ft)	2585.00
Max (Rim) Elevation (ft)	2590.00
Max (Rim) Offset (ft)	5.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-2585.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : 13000 area

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	13000	0.000
5	13000	65000.00

Storage Area Volume Curves



— Storage Area — Storage Volume

Storage Node : Stor-09 (continued)

Outflow Weirs

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 Weir-03	Rectangular	No	2589.00	4.00	40.00	1.00	3.33

Output Summary Results

Peak Inflow (cfs)	15.99
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	12.27
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	2589.20
Max HGL Depth Attained (ft)	4.2
Average HGL Elevation Attained (ft)	2588.73
Average HGL Depth Attained (ft)	3.73
Time of Max HGL Occurrence (days hh:mm)	0 04:58
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00