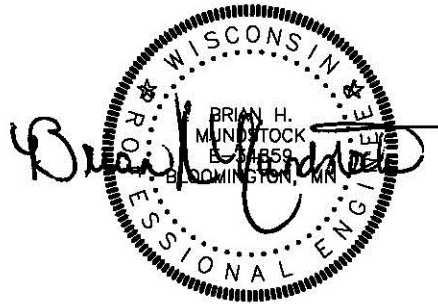


Kwik Trip
La Crosse, WI #762

Stormwater Management Calculations

1/17/2024



SUNDE ENGINEERING, PLLC.
10830 Nesbitt Avenue South
Bloomington, MN 55437-3100
Phone: (952) 881-3344
Fax: (952) 881-1913

Narrative

Kwik Trip is proposing a site redevelopment project on a 2.98 acre parcel located in the North quadrant of STH 35 and George Street in La Crosse, WI. The project includes the construction of a new station store with car wash, new fueling islands, associated parking areas, and stormwater ponds.

The existing site consists of existing paved parking lots, buildings, and small landscaped areas. Existing soils on site are unknown. Existing soils are assumed to be HSG 'A' soils for pre-development conditions and HSG 'C' for post-development conditions as a conservative precaution.

Stormwater management has been provided for this site in accordance with City and DNR requirements. The proposed Kwik Trip is a fueling station and therefore is exempt from infiltrating runoff from pavement areas exposed to fueling.

The proposed on-site stormwater management plan consists of a series of catch basins with HDPE storm sewer pipes that drain to two proposed wet stormwater ponds prior to discharge. The proposed ponds discharge to the city stormwater system.

The proposed stormwater management pond and BMPs were designed to reduce the rate of discharge of stormwater and also remove a minimum of 60% of total suspended solids (TSS) from the stormwater runoff prior to discharging offsite. TSS removal and rate control are provided with on-site stormwater treatment.

The site's hydrology was modeled using HydroCAD software, which utilizes the TR-55 methodology. The TSS removal was modeled using WINSLAMM software.

Existing Conditions

Area	Impervious (sf)	Pervious (sf)	Total (sf)
EX N	40,279	8,410	48,689
OS-N*	8,189	1,757	9,946
EX S	77,271	3,880	81,151
Total	125,739	14,047	139,786

See Attached Existing Conditions Drainage Area Map

*Offsite area

Proposed Conditions

Area	Impervious (sf)	Pervious (sf)	Total (sf)
1	0	15,890	15,890
2	12,529	1,317	13,846
3	14,366	1,293	15,659
4*	4,800	0	4,800
5	8,831	0	8,831
6	2,199	71	2,270
7	2,492	116	2,608
8	2,703	0	2,703
9	10,182	426	10,608
10	4,165	685	4,850
11*	9,454	0	9,454
12*	1,661	0	1,661
13	0	5,981	5,981
14a	0	5,685	5,685
14b***	8,189	1,757	9,946
15**	0	6,543	6,543
16**	2,400	4,802	7,202
17	3,155	1,929	5,084
18**	1,421	2,420	3,841
19**	139	2,185	2,324
Total	88,686	51,099	139,786

See Attached Proposed Conditions Drainage Area Map.

*Roof Area

**Untreated area to offsite

***Offsite area

HydroCAD Results

Peak Discharge Summary Table: Total Drainage

24-HR, Event	Existing Runoff (cfs): Link TEX		Proposed Runoff (cfs): Link TP
2-YR	11.87	>	3.94
10-YR	18.91	>	6.17
25-YR	24.28	>	7.66
100-YR	33.84	>	12.45

Peak Discharge Summary Table: Ex. north to Mulberry Lane

24-HR, Event	Existing Runoff (cfs): Link TEX-N		Proposed Runoff (cfs): Link P-N
2-YR	4.34	>	2.89
10-YR	7.33	>	4.34
25-YR	9.62	>	5.20
100-YR	13.70	>	6.40

Peak Discharge Summary Table: Ex. South to STH 35

24-HR, Event	Existing Runoff (cfs): Node EX S		Proposed Runoff (cfs): Link P-S
2-YR	7.53	>	1.07
10-YR	11.58	>	1.91
25-YR	14.66	>	2.58
100-YR	20.14	>	6.08

*See attached HydroCAD output.

TSS Removal

WinSLAMM Input

Areas	Total	Paved Parking	Roof	Pervious
To Pond 4P	70,649 sf = 1.622 acres	44,573 sf = 1.02 acres	5461 sf = 0.125 acres	20,615 sf = 0.473 acres
To Pond 17P	33,596 sf = 0.771 acres	17,050 sf = 0.391 acres	9,454 sf = 0.217 acres	7,092 sf = 0.163 acres
To Pond 15P	15,631 sf = 0.359 acres	8,189 sf = 0.188 acres	n/a	7,442 sf = 0.171 acres
Untreated (Areas 15, 16, 18, 19)	19,910 sf = 0.457 acres	3,960 sf = 0.091 acres	n/a	15,950 sf = 0.366 acres

Wet Pond 4P Stage Storage Table:

Elevation	Area (sq. ft.)	Area (ac)	Cum. Storage (cf)	Cum. Storage (ac-ft)
634	698	0.0160	0	0.0000
635	1,126	0.0258	912	0.0209
636	1,652	0.0379	1389	0.0319
637	2,272	0.0522	1,962	0.0450
638	2,980	0.0684	2,626	0.0603
638.5	3,380	0.0776	1,590	0.0365
639	4,759	0.1092	2,035	0.0467
639.5	6,295	0.1445	2,764	0.0635
640	6,787	0.1558	3,271	0.0751
641	7,812	0.1793	7,300	0.1676
642	8,895	0.2042	8,354	0.1918
643	10,033	0.2303	9,464	0.2173
644	11,228	0.2578	10,631	0.2441

Wet Pond 17P Stage Storage Table:

Elevation	Area (sq. ft.)	Area (ac)	Cum. Storage (cf)	Cum. Storage (ac-ft)
639	43	0.0010	0	0.0000
640	169	0.0039	912	0.0209
640.5	263	0.0060	1389	0.0319
641	720	0.0165	1,962	0.0450
641.5	1,400	0.0322	2,626	0.0603
642	1,648	0.0378	1,590	0.0365
643	2,200	0.0505	2,035	0.0467
644	2,830	0.0650	2,764	0.0635
645	3,536	0.0812	3,271	0.0751
646	4,320	0.0992	7,300	0.1676

Dry Pond 15P Stage Storage Table:

Elevation	Area (sq. ft.)	Area (ac)	Cum. Storage (cf)	Cum. Storage (ac-ft)
639	0	0.0000	0	0.0000
640	250	0.0057	240	0.0055
641	545	0.0125	755	0.0173
642	912	0.0209	1,619	0.0372
643	1,350	0.0310	2,904	0.0667
644	1,930	0.0443	4,689	0.1076

Total Average for Entire Site = 60.36% > 60% TSS Required

*See attached WinSLAMM Input and Output for TSS removal.

Pond Data

Pond 4P: Wet Detention Basin

NWL = 639.50

EOF = 643.50

Pond 4P: HydroCAD Summary Table

24-HR, Event	Peak Discharge Pond 4P (cfs)	HWL
2-YR	0.41	640.63
10-YR	0.54	641.29
25-YR	1.33	641.64
100-YR	4.54	642.03

Pond 17P: Wet Detention Basin

NWL = 641.5

EOF = 645.50

Pond 17P: HydroCAD Summary Table

24-HR, Event	Peak Discharge Pond 17P (cfs)	HWL
2-YR	2.01	642.29
10-YR	2.94	642.61
25-YR	3.52	642.87
100-YR	4.40	643.35

Pond 15P: Dry Detention Basin

EOF = 646.0

Pond 15P: HydroCAD Summary Table

24-HR, Event	Peak Discharge Pond 15P (cfs)	HWL
2-YR	2.72	640.02
10-YR	4.06	640.65
25-YR	485	641.15
100-YR	5.93	640.99

STORM SEWER DESIGN

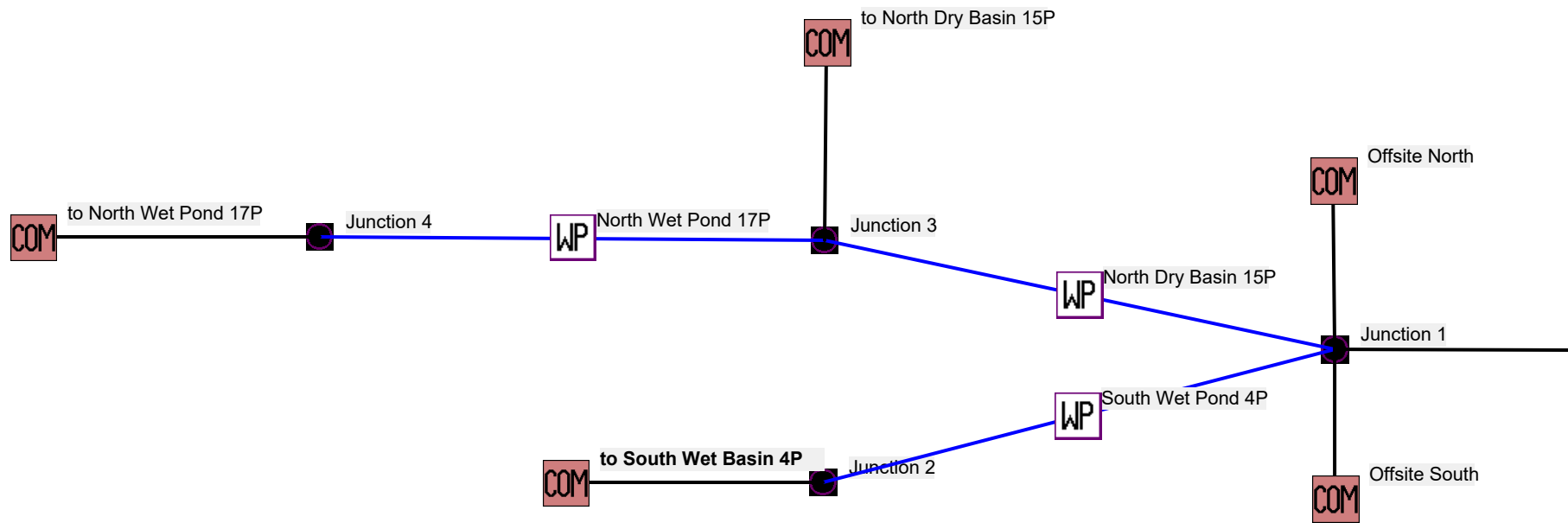
Client: Kwik Trip
Project: La Crosse, WI #762
Design Basis: 10 year event

Pipe Location		Contributing Area			Pipe Flow				Pipe Data					Elevations				Checks:		
Upstream Structure	Downstream Structure	Roof (sq ft)	Paved (sq ft)	Pervious (sq ft)	Area Runoff**		Total Flow		Length (ft)	Diameter (in)	Slope (%)	Capacity * (GPM)	Capacity * (cfs)	Velocity (ft/s)	Rim Elev. Up (feet)	Inv. Elev. Up (feet)	Inv. Elev. Down (feet)	Cover to Crown (feet)	Capacity	Cover
CB 23	CB 10	0	2,492	116	171	0.38	171	0.38	99	12	0.30	878	1.96	0.48	644.70	641.40	641.10	2.30	YES	YES
CB 11	CB 10	1,661	2,199	71	260	0.58	260	0.58	76	12	0.30	878	1.96	0.74	645.90	641.33	641.10	3.57	YES	YES
CB 10	MH 9	0	8,831	0	583	1.30	1014	2.26	176	15	0.41	1851	4.12	1.84	645.50	641.10	640.38	3.15	YES	YES
MH 9	CB 8	3,800	0	0	251	0.56	1266	2.82	38	15	0.58	2220	4.95	2.30	644.83	640.40	640.18	3.18	YES	YES
CB 8	CB 7	0	15,366	1,293	1082	2.41	2347	5.23	107	18	0.50	3343	7.45	2.96	643.85	640.18	639.64	2.17	YES	YES
CB 7	Apron 6	0	12,529	1,317	898	2.00	3245	7.23	25	18	0.52	3409	7.60	4.09	643.80	639.63	639.50	2.67	YES	YES
CB 13	Apron 12	0	3,155	1,929	292	0.65	292	0.65	30	12	0.30	878	1.96	0.83	642.60	639.59	639.50	2.01	YES	YES
CB 22	Apon 21	0	4,165	685	310	0.69	310	0.69	22	12	0.33	921	2.05	0.88	645.50	641.57	641.50	2.93	YES	YES
CB 20	CB 19	0	2,703	0	180	0.40	180	0.40	106	12	0.31	886	1.97	0.51	646.25	642.08	641.76	3.17	YES	YES
CB 19	Apron 18	0	10,182	426	696	1.55	875	1.95	86	12	0.30	878	1.96	2.48	645.00	641.76	641.50	2.24	YES	YES

* Pipe capacity is computed using mannings equation with n = 0.013

** Runoff values are from HydroCAD output for a 10 year event





Data file name: \\server\Projects\INSITES\Kwik Trip\Kwik Trip-LaCrosse, WI #762 (George Street & US Hwy 53)\Hydro\2024-01-04\WinSLAMM - LaCrosse, WI #762.mdl
WinSLAMM Version 10.4.1

Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Minneapolis MN 1959.RAN

Particulate Solids Concentration file name: C:\WinSLAMM Files\10.1 WI_AVG01.pscx

Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx

Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std

Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std

Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std

Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False

Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx

Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv

Cost Data file name:

If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations

Seed for random number generator: -42

Study period starting date: 01/02/59 Study period ending date: 12/28/59

Start of Winter Season: 11/04 End of Winter Season: 03/13

Date: 01-17-2024 Time: 15:15:09

Site information:

LU# 1 - Commercial: to South Wet Basin 4P Total area (ac): 1.618
1 - Roofs 1: 0.125 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 1.020 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.473 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Commercial: to North Wet Pond 17P Total area (ac): 0.771
1 - Roofs 1: 0.217 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 0.391 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.163 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Commercial: to North Dry Basin 15P Total area (ac): 0.359
13 - Paved Parking 1: 0.188 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.171 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Commercial: Offsite South Total area (ac): 0.404
13 - Paved Parking 1: 0.088 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.316 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Commercial: Offsite North Total area (ac): 0.053
13 - Paved Parking 1: 0.003 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.050 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - South Wet Pond 4P

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5.5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.25

2. Number of orifices: 1

3. Invert elevation above datum (ft): 5.5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5

2. Weir crest width (ft): 3

3. Height from datum to bottom of weir opening: 9.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	1.00	0.0258	0.00	0.00
2	2.00	0.0379	0.00	0.00
3	3.00	0.0522	0.00	0.00
4	4.00	0.0684	0.00	0.00
5	4.50	0.0776	0.00	0.00
6	5.00	0.1092	0.00	0.00
7	5.50	0.1445	0.00	0.00
8	6.00	0.1558	0.00	0.00
9	7.00	0.1793	0.00	0.00
10	8.00	0.2042	0.00	0.00
11	9.00	0.2303	0.00	0.00
12	10.00	0.2578	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - North Wet Pond 17P
 Particle Size Distribution file name: Not needed - calculated by program
 Initial stage elevation (ft): 2.5
 Peak to Average Flow Ratio: 3.8
 Maximum flow allowed into pond (cfs): No maximum value entered
 Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 2.5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 3
3. Height from datum to bottom of weir opening: 6.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	1.00	0.0039	0.00	0.00
2	1.50	0.0060	0.00	0.00
3	2.00	0.0165	0.00	0.00
4	2.50	0.0322	0.00	0.00
5	3.00	0.0378	0.00	0.00
6	4.00	0.0505	0.00	0.00
7	5.00	0.0650	0.00	0.00
8	6.00	0.0812	0.00	0.00
9	7.00	0.0992	0.00	0.00

Control Practice 3: Wet Detention Pond CP# 3 (DS) - North Dry Basin 15P
 Particle Size Distribution file name: Not needed - calculated by program
 Initial stage elevation (ft): 0
 Peak to Average Flow Ratio: 3.8
 Maximum flow allowed into pond (cfs): No maximum value entered
 Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 0

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 3
3. Height from datum to bottom of weir opening: 4.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	1.00	0.0082	0.00	0.00
2	2.00	0.0154	0.00	0.00
3	3.00	0.0243	0.00	0.00
4	4.00	0.0347	0.00	0.00
5	5.00	0.0472	0.00	0.00

SLAMM for Windows Version 10.4.1
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Data file name: \\server\Projects\INSITES\Kwik Trip\Kwik Trip-LaCrosse, WI #762 (George Street & US Hwy 53)\Hydro\2024-01-04\WinSLAMM - LaCrosse, WI #762.mdl
WinSLAMM Version 10.4.1

Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Minneapolis MN 1959.RAN

Particulate Solids Concentration file name: C:\WinSLAMM Files\10.1 WI_AVG01.pscx

Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx

Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx

Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std

Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std

Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std

Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False

Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv

Cost Data file name:

If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations

Seed for random number generator: -42

Study period starting date: 01/02/59 Study period ending date: 12/28/59

Start of Winter Season: 11/04 End of Winter Season: 03/13

Model Run Start Date: 01/02/59 Model Run End Date: 12/28/59

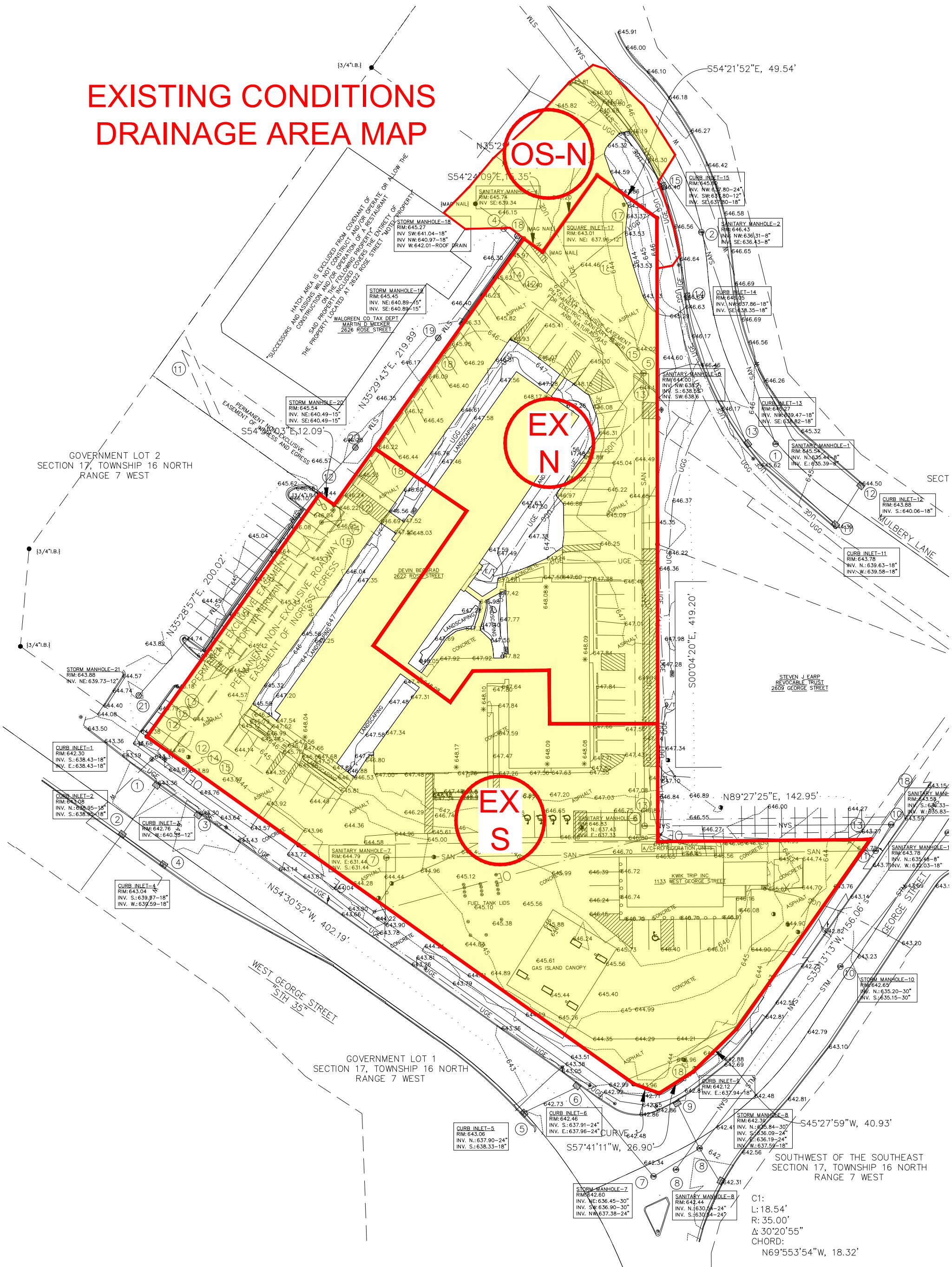
Date of run: 01-17-2024 Time of run: 15:14:49

Total Area Modeled (acres): 3.205

Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	133843	-	118.1	986.9	-
Outfall Total with Controls:	122039	8.82%	51.35	391.2	60.36%
Annualized Total After Outfall Controls:	123734			396.7	

EXISTING CONDITIONS DRAINAGE AREA MAP

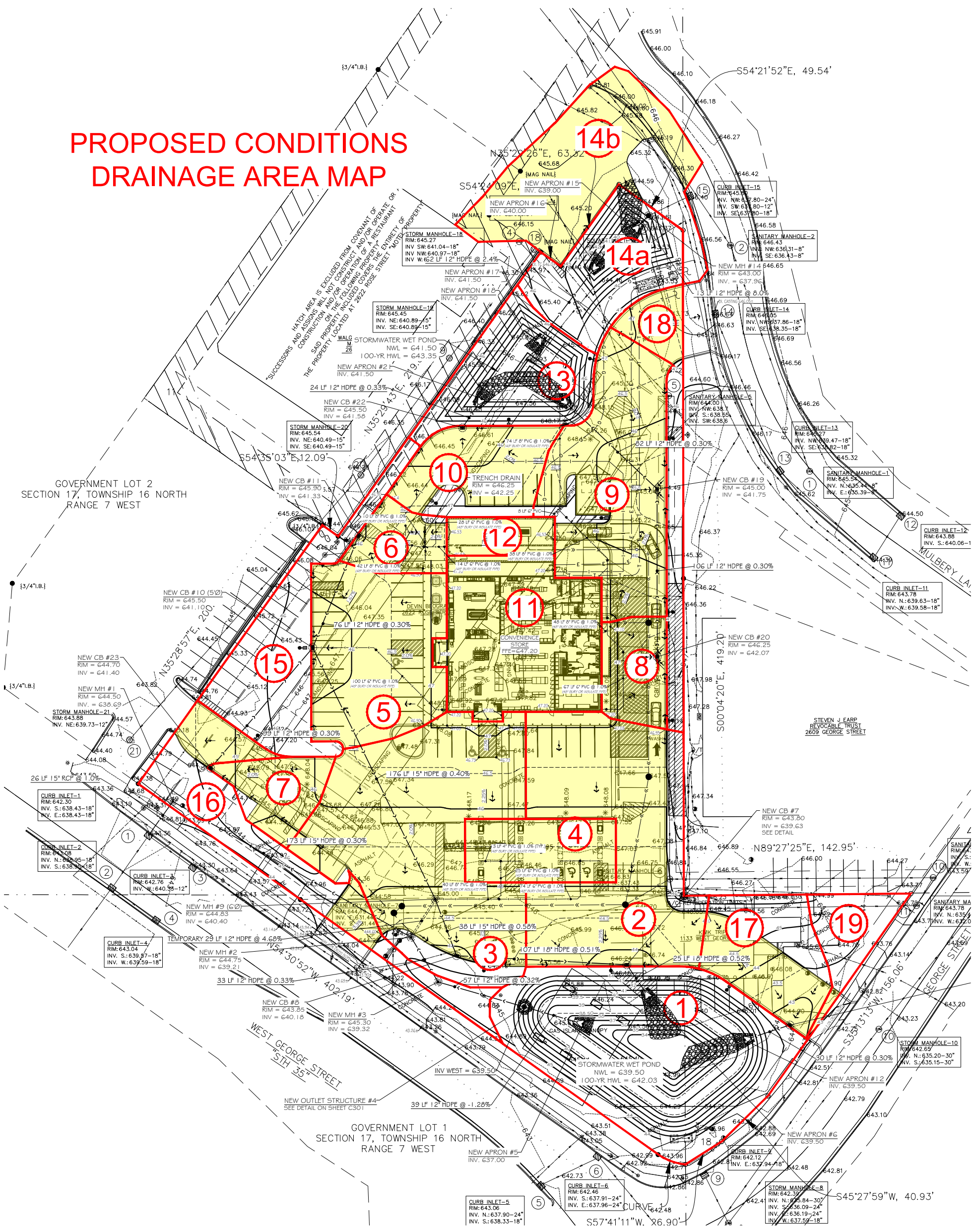


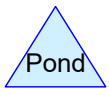
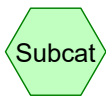
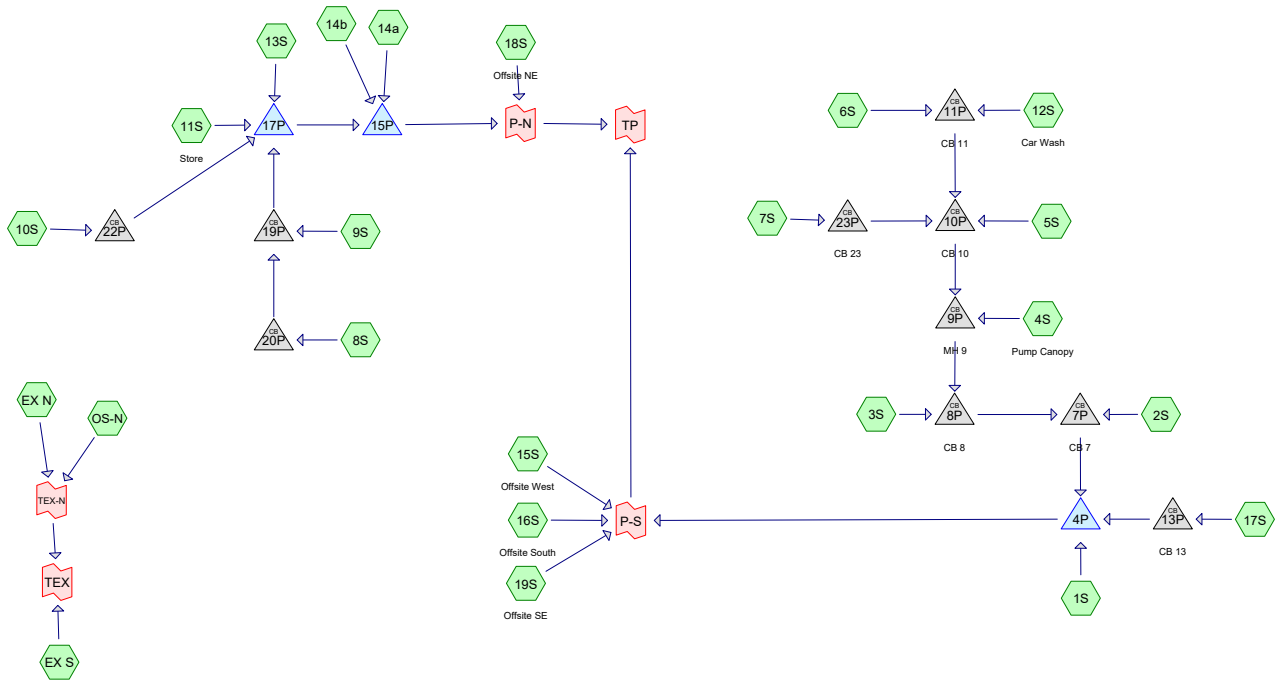
GOVERNMENT LOT 2
SECTION 17, TOWNSHIP 16 NORTH
RANGE 7 WEST

GOVERNMENT LOT 1
SECTION 17, TOWNSHIP 16 NORTH
RANGE 7 WEST

C1:
L: 18.54'
R: 35.00'
Δ: 30°20'55"
CHORD:
N69°53'54"W, 18.32'

PROPOSED CONDITIONS DRAINAGE AREA MAP





Routing Diagram for Kwik Trip - La Crosse, WI #762
 Prepared by Sunde Engineering PLLC, Printed 1/17/2024
 HydroCAD® 10.20-4a s/n 02350 © 2023 HydroCAD Software Solutions LLC

Kwik Trip - La Crosse, WI #762

Prepared by Sunde Engineering PLLC

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Printed 1/17/2024

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	MSE 24-hr	3	Default	24.00	1	3.01	2
2	10-yr	MSE 24-hr	3	Default	24.00	1	4.47	2
3	25-yr	MSE 24-hr	3	Default	24.00	1	5.59	2
4	100-yr	MSE 24-hr	3	Default	24.00	1	7.60	2

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S:	Runoff Area=15,890 sf 0.00% Impervious Runoff Depth=0.91" Tc=6.0 min CN=74 Runoff=0.587 cfs 1,211 cf
Subcatchment 2S:	Runoff Area=13,846 sf 90.49% Impervious Runoff Depth=2.56" Tc=6.0 min CN=96 Runoff=1.315 cfs 2,956 cf
Subcatchment 3S:	Runoff Area=16,659 sf 92.24% Impervious Runoff Depth=2.56" Tc=6.0 min CN=96 Runoff=1.582 cfs 3,557 cf
Subcatchment 4S: Pump Canopy	Runoff Area=3,800 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.374 cfs 880 cf
Subcatchment 5S:	Runoff Area=8,831 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.868 cfs 2,045 cf
Subcatchment 6S:	Runoff Area=2,270 sf 96.87% Impervious Runoff Depth=2.67" Tc=6.0 min CN=97 Runoff=0.220 cfs 505 cf
Subcatchment 7S:	Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=2.67" Tc=6.0 min CN=97 Runoff=0.253 cfs 580 cf
Subcatchment 8S:	Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.266 cfs 626 cf
Subcatchment 9S:	Runoff Area=10,608 sf 95.98% Impervious Runoff Depth=2.67" Tc=6.0 min CN=97 Runoff=1.027 cfs 2,359 cf
Subcatchment 10S:	Runoff Area=4,850 sf 85.88% Impervious Runoff Depth=2.46" Tc=6.0 min CN=95 Runoff=0.450 cfs 994 cf
Subcatchment 11S: Store	Runoff Area=9,454 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.930 cfs 2,189 cf
Subcatchment 12S: Car Wash	Runoff Area=1,661 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.163 cfs 385 cf
Subcatchment 13S:	Runoff Area=5,981 sf 0.00% Impervious Runoff Depth=0.91" Tc=6.0 min CN=74 Runoff=0.221 cfs 456 cf
Subcatchment 14a:	Runoff Area=5,685 sf 0.00% Impervious Runoff Depth=0.91" Tc=6.0 min CN=74 Runoff=0.210 cfs 433 cf
Subcatchment 14b:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=1.83" Tc=6.0 min CN=88 Runoff=0.736 cfs 1,514 cf
Subcatchment 15S: Offsite West	Runoff Area=6,543 sf 0.00% Impervious Runoff Depth=0.91" Tc=6.0 min CN=74 Runoff=0.242 cfs 499 cf

Subcatchment 16S: Offsite South	Runoff Area=7,202 sf 33.32% Impervious Runoff Depth=1.39" Tc=6.0 min CN=82 Runoff=0.412 cfs 832 cf
Subcatchment 17S:	Runoff Area=5,084 sf 62.06% Impervious Runoff Depth=1.91" Tc=6.0 min CN=89 Runoff=0.391 cfs 809 cf
Subcatchment 18S: Offsite NE	Runoff Area=3,841 sf 37.00% Impervious Runoff Depth=1.45" Tc=6.0 min CN=83 Runoff=0.230 cfs 466 cf
Subcatchment 19S: Offsite SE	Runoff Area=2,324 sf 5.98% Impervious Runoff Depth=0.97" Tc=6.0 min CN=75 Runoff=0.091 cfs 187 cf
Subcatchment EX N:	Runoff Area=48,689 sf 82.73% Impervious Runoff Depth=1.83" Tc=6.0 min CN=88 Runoff=3.605 cfs 7,413 cf
Subcatchment EX S:	Runoff Area=81,151 sf 95.22% Impervious Runoff Depth=2.46" Tc=6.0 min CN=95 Runoff=7.534 cfs 16,630 cf
Subcatchment OS-N:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=1.83" Tc=6.0 min CN=88 Runoff=0.736 cfs 1,514 cf
Pond 4P:	Peak Elev=640.63' Storage=20,992 cf Inflow=5.746 cfs 12,926 cf Outflow=0.411 cfs 12,926 cf
Pond 7P: CB 7	Peak Elev=640.93' Inflow=4.775 cfs 10,906 cf 18.0" Round Culvert n=0.013 L=25.0' S=0.0052 '/' Outflow=4.775 cfs 10,906 cf
Pond 8P: CB 8	Peak Elev=641.19' Inflow=3.460 cfs 7,950 cf 18.0" Round Culvert n=0.013 L=107.0' S=0.0051 '/' Outflow=3.460 cfs 7,950 cf
Pond 9P: MH 9	Peak Elev=641.18' Inflow=1.878 cfs 4,394 cf 15.0" Round Culvert n=0.013 L=38.0' S=0.0058 '/' Outflow=1.878 cfs 4,394 cf
Pond 10P: CB 10	Peak Elev=641.81' Inflow=1.504 cfs 3,514 cf 15.0" Round Culvert n=0.013 L=176.0' S=0.0040 '/' Outflow=1.504 cfs 3,514 cf
Pond 11P: CB 11	Peak Elev=641.73' Inflow=0.383 cfs 889 cf 12.0" Round Culvert n=0.013 L=76.0' S=0.0030 '/' Outflow=0.383 cfs 889 cf
Pond 13P: CB 13	Peak Elev=640.05' Inflow=0.391 cfs 809 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0115 '/' Outflow=0.391 cfs 809 cf
Pond 15P:	Peak Elev=640.02' Storage=129 cf Inflow=2.819 cfs 8,571 cf 12.0" Round Culvert n=0.013 L=15.0' S=0.0693 '/' Outflow=2.718 cfs 8,571 cf
Pond 17P:	Peak Elev=642.29' Storage=2,267 cf Inflow=2.891 cfs 6,623 cf 12.0" Round Culvert n=0.013 L=62.0' S=0.0242 '/' Outflow=2.011 cfs 6,623 cf
Pond 19P:	Peak Elev=642.53' Inflow=1.293 cfs 2,985 cf 12.0" Round Culvert n=0.013 L=86.0' S=0.0030 '/' Outflow=1.293 cfs 2,985 cf
Pond 20P:	Peak Elev=642.41' Inflow=0.266 cfs 626 cf 12.0" Round Culvert n=0.013 L=106.0' S=0.0030 '/' Outflow=0.266 cfs 626 cf

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Pond 22P:

Peak Elev=641.99' Inflow=0.450 cfs 994 cf
12.0" Round Culvert n=0.013 L=22.0' S=0.0032 '/ Outflow=0.450 cfs 994 cf

Pond 23P: CB 23

Peak Elev=641.72' Inflow=0.253 cfs 580 cf
12.0" Round Culvert n=0.013 L=99.0' S=0.0030 '/ Outflow=0.253 cfs 580 cf

Link P-N:

Inflow=2.891 cfs 9,036 cf
Primary=2.891 cfs 9,036 cf

Link P-S:

Inflow=1.070 cfs 14,444 cf
Primary=1.070 cfs 14,444 cf

Link TEX:

Inflow=11.872 cfs 25,558 cf
Primary=11.872 cfs 25,558 cf

Link TEX-N:

Inflow=4.341 cfs 8,928 cf
Primary=4.341 cfs 8,928 cf

Link TP:

Inflow=3.939 cfs 23,480 cf
Primary=3.939 cfs 23,480 cf

Total Runoff Area = 279,572 sf Runoff Volume = 49,038 cf Average Runoff Depth = 2.10"
23.30% Pervious = 65,147 sf 76.70% Impervious = 214,425 sf

Summary for Subcatchment 1S:

Runoff = 0.587 cfs @ 12.14 hrs, Volume= 1,211 cf, Depth= 0.91"
 Routed to Pond 4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
15,890	74	>75% Grass cover, Good, HSG C
15,890	74	Weighted Average
15,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 2S:

Runoff = 1.315 cfs @ 12.13 hrs, Volume= 2,956 cf, Depth= 2.56"
 Routed to Pond 7P : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
12,529	98	Paved parking, HSG C
1,317	74	>75% Grass cover, Good, HSG C
13,846	96	Weighted Average
1,317		9.51% Pervious Area
12,529		90.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 3S:

Runoff = 1.582 cfs @ 12.13 hrs, Volume= 3,557 cf, Depth= 2.56"
 Routed to Pond 8P : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Area (sf)	CN	Description
15,366	98	Paved parking, HSG C
1,293	74	>75% Grass cover, Good, HSG C
16,659	96	Weighted Average
1,293		7.76% Pervious Area
15,366		92.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 4S: Pump Canopy

Runoff = 0.374 cfs @ 12.13 hrs, Volume= 880 cf, Depth= 2.78"
 Routed to Pond 9P : MH 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
3,800	98	Weighted Average
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 5S:

Runoff = 0.868 cfs @ 12.13 hrs, Volume= 2,045 cf, Depth= 2.78"
 Routed to Pond 10P : CB 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
8,831	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
8,831	98	Weighted Average
8,831		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 6S:

Runoff = 0.220 cfs @ 12.13 hrs, Volume= 505 cf, Depth= 2.67"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
2,199	98	Paved parking, HSG C
71	74	>75% Grass cover, Good, HSG C
2,270	97	Weighted Average
71		3.13% Pervious Area
2,199		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 7S:

Runoff = 0.253 cfs @ 12.13 hrs, Volume= 580 cf, Depth= 2.67"
 Routed to Pond 23P : CB 23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
2,492	98	Paved parking, HSG C
116	74	>75% Grass cover, Good, HSG C
2,608	97	Weighted Average
116		4.45% Pervious Area
2,492		95.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 8S:

Runoff = 0.266 cfs @ 12.13 hrs, Volume= 626 cf, Depth= 2.78"
 Routed to Pond 20P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Area (sf)	CN	Description
2,703	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
2,703	98	Weighted Average
2,703		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 9S:

Runoff = 1.027 cfs @ 12.13 hrs, Volume= 2,359 cf, Depth= 2.67"
 Routed to Pond 19P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
10,182	98	Paved parking, HSG C
426	74	>75% Grass cover, Good, HSG C
10,608	97	Weighted Average
426		4.02% Pervious Area
10,182		95.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 10S:

Runoff = 0.450 cfs @ 12.13 hrs, Volume= 994 cf, Depth= 2.46"
 Routed to Pond 22P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
4,165	98	Paved parking, HSG C
685	74	>75% Grass cover, Good, HSG C
4,850	95	Weighted Average
685		14.12% Pervious Area
4,165		85.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 11S: Store

Runoff = 0.930 cfs @ 12.13 hrs, Volume= 2,189 cf, Depth= 2.78"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
9,454	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
9,454	98	Weighted Average
9,454		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 12S: Car Wash

Runoff = 0.163 cfs @ 12.13 hrs, Volume= 385 cf, Depth= 2.78"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
1,661	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
1,661	98	Weighted Average
1,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 13S:

Runoff = 0.221 cfs @ 12.14 hrs, Volume= 456 cf, Depth= 0.91"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,981	74	>75% Grass cover, Good, HSG C
5,981	74	Weighted Average
5,981		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14a:

Runoff = 0.210 cfs @ 12.14 hrs, Volume= 433 cf, Depth= 0.91"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,685	74	>75% Grass cover, Good, HSG C
5,685	74	Weighted Average
5,685		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14b:

Runoff = 0.736 cfs @ 12.13 hrs, Volume= 1,514 cf, Depth= 1.83"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 15S: Offsite West

Runoff = 0.242 cfs @ 12.14 hrs, Volume= 499 cf, Depth= 0.91"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Area (sf)	CN	Description
0	98	Paved parking, HSG C
6,543	74	>75% Grass cover, Good, HSG C
6,543	74	Weighted Average
6,543		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 16S: Offsite South

Runoff = 0.412 cfs @ 12.14 hrs, Volume= 832 cf, Depth= 1.39"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG C
4,802	74	>75% Grass cover, Good, HSG C
7,202	82	Weighted Average
4,802		66.68% Pervious Area
2,400		33.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 17S:

Runoff = 0.391 cfs @ 12.13 hrs, Volume= 809 cf, Depth= 1.91"
 Routed to Pond 13P : CB 13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
3,155	98	Paved parking, HSG C
1,929	74	>75% Grass cover, Good, HSG C
5,084	89	Weighted Average
1,929		37.94% Pervious Area
3,155		62.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 18S: Offsite NE

Runoff = 0.230 cfs @ 12.13 hrs, Volume= 466 cf, Depth= 1.45"
 Routed to Link P-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
1,421	98	Paved parking, HSG C
2,420	74	>75% Grass cover, Good, HSG C
3,841	83	Weighted Average
2,420		63.00% Pervious Area
1,421		37.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 19S: Offsite SE

Runoff = 0.091 cfs @ 12.14 hrs, Volume= 187 cf, Depth= 0.97"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
139	98	Paved parking, HSG C
2,185	74	>75% Grass cover, Good, HSG C
2,324	75	Weighted Average
2,185		94.02% Pervious Area
139		5.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX N:

Runoff = 3.605 cfs @ 12.13 hrs, Volume= 7,413 cf, Depth= 1.83"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Area (sf)	CN	Description
40,279	98	Paved parking, HSG A
8,410	39	>75% Grass cover, Good, HSG A
48,689	88	Weighted Average
8,410		17.27% Pervious Area
40,279		82.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX S:

Runoff = 7.534 cfs @ 12.13 hrs, Volume= 16,630 cf, Depth= 2.46"
 Routed to Link TEX :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
77,271	98	Paved parking, HSG A
3,880	39	>75% Grass cover, Good, HSG A
81,151	95	Weighted Average
3,880		4.78% Pervious Area
77,271		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment OS-N:

Runoff = 0.736 cfs @ 12.13 hrs, Volume= 1,514 cf, Depth= 1.83"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-yr Rainfall=3.01"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Pond 4P:

Inflow Area = 70,649 sf, 70.82% Impervious, Inflow Depth = 2.20" for 2-yr event
 Inflow = 5.746 cfs @ 12.13 hrs, Volume= 12,926 cf
 Outflow = 0.411 cfs @ 13.04 hrs, Volume= 12,926 cf, Atten= 93%, Lag= 54.9 min
 Primary = 0.411 cfs @ 13.04 hrs, Volume= 12,926 cf
 Routed to Link P-S :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 639.50' Surf.Area= 6,295 sf Storage= 13,277 cf
 Peak Elev= 640.63' @ 13.04 hrs Surf.Area= 7,428 sf Storage= 20,992 cf (7,715 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 278.6 min (1,049.0 - 770.4)

Volume	Invert	Avail.Storage	Storage Description
#1	634.00'	52,295 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
634.00	698	0	0
635.00	1,126	912	912
636.00	1,652	1,389	2,301
637.00	2,272	1,962	4,263
638.00	2,980	2,626	6,889
638.50	3,380	1,590	8,479
639.00	4,759	2,035	10,514
639.50	6,295	2,764	13,277
640.00	6,787	3,271	16,548
641.00	7,812	7,300	23,847
642.00	8,895	8,354	32,201
643.00	10,033	9,464	41,665
644.00	11,228	10,631	52,295

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	12.0" Round Culvert L= 57.0' Ke= 0.500 Inlet / Outlet Invert= 639.50' / 639.32' S= 0.0032 1/'' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	639.50'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	641.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.411 cfs @ 13.04 hrs HW=640.63' (Free Discharge)

- 1=Culvert (Passes 0.411 cfs of 2.271 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.411 cfs @ 4.71 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.000 cfs)

Summary for Pond 7P: CB 7

Inflow Area = 49,675 sf, 94.37% Impervious, Inflow Depth = 2.63" for 2-yr event
 Inflow = 4.775 cfs @ 12.13 hrs, Volume= 10,906 cf
 Outflow = 4.775 cfs @ 12.13 hrs, Volume= 10,906 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.775 cfs @ 12.13 hrs, Volume= 10,906 cf
 Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 640.93' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.63'	18.0" Round Culvert L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 639.63' / 639.50' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=4.564 cfs @ 12.13 hrs HW=640.89' (Free Discharge)
 ↑1=Culvert (Barrel Controls 4.564 cfs @ 3.90 fps)

Summary for Pond 8P: CB 8

Inflow Area = 35,829 sf, 95.87% Impervious, Inflow Depth = 2.66" for 2-yr event
 Inflow = 3.460 cfs @ 12.13 hrs, Volume= 7,950 cf
 Outflow = 3.460 cfs @ 12.13 hrs, Volume= 7,950 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.460 cfs @ 12.13 hrs, Volume= 7,950 cf
 Routed to Pond 7P : CB 7

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.19' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.18'	18.0" Round Culvert L= 107.0' Ke= 0.500 Inlet / Outlet Invert= 640.18' / 639.63' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=3.307 cfs @ 12.13 hrs HW=641.16' (Free Discharge)
 ↑1=Culvert (Barrel Controls 3.307 cfs @ 3.83 fps)

Summary for Pond 9P: MH 9

Inflow Area = 19,170 sf, 99.02% Impervious, Inflow Depth = 2.75" for 2-yr event
 Inflow = 1.878 cfs @ 12.13 hrs, Volume= 4,394 cf
 Outflow = 1.878 cfs @ 12.13 hrs, Volume= 4,394 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.878 cfs @ 12.13 hrs, Volume= 4,394 cf
 Routed to Pond 8P : CB 8

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.18' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.40'	15.0" Round Culvert L= 38.0' Ke= 0.500

Inlet / Outlet Invert= 640.40' / 640.18' S= 0.0058 '/ n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=1.795 cfs @ 12.13 hrs HW=641.16' (Free Discharge)

↑1=Culvert (Barrel Controls 1.795 cfs @ 3.28 fps)

Summary for Pond 10P: CB 10

Inflow Area = 15,370 sf, 98.78% Impervious, Inflow Depth = 2.74" for 2-yr event
 Inflow = 1.504 cfs @ 12.13 hrs, Volume= 3,514 cf
 Outflow = 1.504 cfs @ 12.13 hrs, Volume= 3,514 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.504 cfs @ 12.13 hrs, Volume= 3,514 cf
 Routed to Pond 9P : MH 9

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.81' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.10'	15.0" Round Culvert L= 176.0' Ke= 0.500 Inlet / Outlet Invert= 641.10' / 640.40' S= 0.0040 '/ n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=1.438 cfs @ 12.13 hrs HW=641.79' (Free Discharge)

↑1=Culvert (Barrel Controls 1.438 cfs @ 2.98 fps)

Summary for Pond 11P: CB 11

Inflow Area = 3,931 sf, 98.19% Impervious, Inflow Depth = 2.71" for 2-yr event
 Inflow = 0.383 cfs @ 12.13 hrs, Volume= 889 cf
 Outflow = 0.383 cfs @ 12.13 hrs, Volume= 889 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.383 cfs @ 12.13 hrs, Volume= 889 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.73' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.33'	12.0" Round Culvert L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 641.33' / 641.10' S= 0.0030 '/ n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.366 cfs @ 12.13 hrs HW=641.72' (Free Discharge)

↑1=Culvert (Barrel Controls 0.366 cfs @ 1.94 fps)

Summary for Pond 13P: CB 13

Inflow Area = 5,084 sf, 62.06% Impervious, Inflow Depth = 1.91" for 2-yr event
 Inflow = 0.391 cfs @ 12.13 hrs, Volume= 809 cf
 Outflow = 0.391 cfs @ 12.13 hrs, Volume= 809 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.391 cfs @ 12.13 hrs, Volume= 809 cf
 Routed to Pond 4P :

Kwik Trip - La Crosse, WI #762

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Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.05' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.73'	12.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 639.73' / 639.50' S= 0.0115 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.374 cfs @ 12.13 hrs HW=640.05' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.374 cfs @ 2.63 fps)**Summary for Pond 15P:**

Inflow Area = 49,227 sf, 70.48% Impervious, Inflow Depth = 2.09" for 2-yr event
 Inflow = 2.819 cfs @ 12.16 hrs, Volume= 8,571 cf
 Outflow = 2.718 cfs @ 12.19 hrs, Volume= 8,571 cf, Atten= 4%, Lag= 1.6 min
 Primary = 2.718 cfs @ 12.19 hrs, Volume= 8,571 cf
 Routed to Link P-N :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.02' @ 12.19 hrs Surf.Area= 255 sf Storage= 129 cf

Plug-Flow detention time= 0.6 min calculated for 8,566 cf (100% of inflow)

Center-of-Mass det. time= 0.6 min (795.8 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	4,022 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	0	0	0
640.00	250	125	125
641.00	545	398	523
642.00	912	729	1,251
643.00	1,350	1,131	2,382
644.00	1,930	1,640	4,022

Device	Routing	Invert	Outlet Devices
#1	Primary	639.00'	12.0" Round Culvert L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 639.00' / 637.96' S= 0.0693 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.686 cfs @ 12.19 hrs HW=640.00' (Free Discharge)↑**1=Culvert** (Inlet Controls 2.686 cfs @ 3.42 fps)

Summary for Pond 17P:

Inflow Area = 33,596 sf, 78.89% Impervious, Inflow Depth = 2.37" for 2-yr event
 Inflow = 2.891 cfs @ 12.13 hrs, Volume= 6,623 cf
 Outflow = 2.011 cfs @ 12.20 hrs, Volume= 6,623 cf, Atten= 30%, Lag= 4.2 min
 Primary = 2.011 cfs @ 12.20 hrs, Volume= 6,623 cf
 Routed to Pond 15P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 641.50' Surf.Area= 1,394 sf Storage= 1,002 cf
 Peak Elev= 642.29' @ 12.20 hrs Surf.Area= 1,819 sf Storage= 2,267 cf (1,265 cf above start)

Plug-Flow detention time= 113.2 min calculated for 5,621 cf (85% of inflow)
 Center-of-Mass det. time= 28.8 min (792.6 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	13,329 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	44	0	0
640.00	174	109	109
640.50	261	109	218
641.00	741	251	468
641.50	1,394	534	1,002
642.00	1,655	762	1,764
643.00	2,222	1,939	3,703
644.00	2,831	2,527	6,229
645.00	3,528	3,180	9,409
646.00	4,312	3,920	13,329

Device	Routing	Invert	Outlet Devices
#1	Primary	641.50'	12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 641.50' / 640.00' S= 0.0242 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.006 cfs @ 12.20 hrs HW=642.29' (Free Discharge)
 ↑1=Culvert (Inlet Controls 2.006 cfs @ 3.02 fps)

Summary for Pond 19P:

Inflow Area = 13,311 sf, 96.80% Impervious, Inflow Depth = 2.69" for 2-yr event
 Inflow = 1.293 cfs @ 12.13 hrs, Volume= 2,985 cf
 Outflow = 1.293 cfs @ 12.13 hrs, Volume= 2,985 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.293 cfs @ 12.13 hrs, Volume= 2,985 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.53' @ 12.13 hrs

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MSE 24-hr 3 2-yr Rainfall=3.01"

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Device	Routing	Invert	Outlet Devices
#1	Primary	641.76'	12.0" Round Culvert L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 641.76' / 641.50' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.236 cfs @ 12.13 hrs HW=642.51' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.236 cfs @ 2.70 fps)**Summary for Pond 20P:**

Inflow Area = 2,703 sf, 100.00% Impervious, Inflow Depth = 2.78" for 2-yr event
 Inflow = 0.266 cfs @ 12.13 hrs, Volume= 626 cf
 Outflow = 0.266 cfs @ 12.13 hrs, Volume= 626 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.266 cfs @ 12.13 hrs, Volume= 626 cf
 Routed to Pond 19P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.41' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	642.08'	12.0" Round Culvert L= 106.0' Ke= 0.500 Inlet / Outlet Invert= 642.08' / 641.76' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.254 cfs @ 12.13 hrs HW=642.40' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.254 cfs @ 1.74 fps)**Summary for Pond 22P:**

Inflow Area = 4,850 sf, 85.88% Impervious, Inflow Depth = 2.46" for 2-yr event
 Inflow = 0.450 cfs @ 12.13 hrs, Volume= 994 cf
 Outflow = 0.450 cfs @ 12.13 hrs, Volume= 994 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.450 cfs @ 12.13 hrs, Volume= 994 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 641.99' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.57'	12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 641.57' / 641.50' S= 0.0032 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.430 cfs @ 12.13 hrs HW=641.98' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.430 cfs @ 2.07 fps)

Summary for Pond 23P: CB 23

Inflow Area = 2,608 sf, 95.55% Impervious, Inflow Depth = 2.67" for 2-yr event
 Inflow = 0.253 cfs @ 12.13 hrs, Volume= 580 cf
 Outflow = 0.253 cfs @ 12.13 hrs, Volume= 580 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.253 cfs @ 12.13 hrs, Volume= 580 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.72' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.40'	12.0" Round Culvert L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 641.40' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.241 cfs @ 12.13 hrs HW=641.71' (Free Discharge)
 ↑1=Culvert (Barrel Controls 0.241 cfs @ 1.71 fps)

Summary for Link P-N:

Inflow Area = 53,068 sf, 68.05% Impervious, Inflow Depth = 2.04" for 2-yr event
 Inflow = 2.891 cfs @ 12.18 hrs, Volume= 9,036 cf
 Primary = 2.891 cfs @ 12.18 hrs, Volume= 9,036 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link P-S:

Inflow Area = 86,718 sf, 60.62% Impervious, Inflow Depth = 2.00" for 2-yr event
 Inflow = 1.070 cfs @ 12.14 hrs, Volume= 14,444 cf
 Primary = 1.070 cfs @ 12.14 hrs, Volume= 14,444 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX:

Inflow Area = 139,786 sf, 89.95% Impervious, Inflow Depth = 2.19" for 2-yr event
 Inflow = 11.872 cfs @ 12.13 hrs, Volume= 25,558 cf
 Primary = 11.872 cfs @ 12.13 hrs, Volume= 25,558 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX-N:

Inflow Area = 58,635 sf, 82.66% Impervious, Inflow Depth = 1.83" for 2-yr event
Inflow = 4.341 cfs @ 12.13 hrs, Volume= 8,928 cf
Primary = 4.341 cfs @ 12.13 hrs, Volume= 8,928 cf, Atten= 0%, Lag= 0.0 min
Routed to Link TEX :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TP:

Inflow Area = 139,786 sf, 63.44% Impervious, Inflow Depth = 2.02" for 2-yr event
Inflow = 3.939 cfs @ 12.16 hrs, Volume= 23,480 cf
Primary = 3.939 cfs @ 12.16 hrs, Volume= 23,480 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S:	Runoff Area=15,890 sf 0.00% Impervious Runoff Depth=1.95" Tc=6.0 min CN=74 Runoff=1.278 cfs 2,581 cf
Subcatchment 2S:	Runoff Area=13,846 sf 90.49% Impervious Runoff Depth=4.01" Tc=6.0 min CN=96 Runoff=2.001 cfs 4,622 cf
Subcatchment 3S:	Runoff Area=16,659 sf 92.24% Impervious Runoff Depth=4.01" Tc=6.0 min CN=96 Runoff=2.407 cfs 5,562 cf
Subcatchment 4S: Pump Canopy	Runoff Area=3,800 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=0.559 cfs 1,341 cf
Subcatchment 5S:	Runoff Area=8,831 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=1.299 cfs 3,116 cf
Subcatchment 6S:	Runoff Area=2,270 sf 96.87% Impervious Runoff Depth=4.12" Tc=6.0 min CN=97 Runoff=0.331 cfs 779 cf
Subcatchment 7S:	Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=4.12" Tc=6.0 min CN=97 Runoff=0.381 cfs 895 cf
Subcatchment 8S:	Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=0.398 cfs 954 cf
Subcatchment 9S:	Runoff Area=10,608 sf 95.98% Impervious Runoff Depth=4.12" Tc=6.0 min CN=97 Runoff=1.548 cfs 3,641 cf
Subcatchment 10S:	Runoff Area=4,850 sf 85.88% Impervious Runoff Depth=3.90" Tc=6.0 min CN=95 Runoff=0.692 cfs 1,574 cf
Subcatchment 11S: Store	Runoff Area=9,454 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=1.390 cfs 3,336 cf
Subcatchment 12S: Car Wash	Runoff Area=1,661 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=0.244 cfs 586 cf
Subcatchment 13S:	Runoff Area=5,981 sf 0.00% Impervious Runoff Depth=1.95" Tc=6.0 min CN=74 Runoff=0.481 cfs 972 cf
Subcatchment 14a:	Runoff Area=5,685 sf 0.00% Impervious Runoff Depth=1.95" Tc=6.0 min CN=74 Runoff=0.457 cfs 923 cf
Subcatchment 14b:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=3.17" Tc=6.0 min CN=88 Runoff=1.243 cfs 2,626 cf
Subcatchment 15S: Offsite West	Runoff Area=6,543 sf 0.00% Impervious Runoff Depth=1.95" Tc=6.0 min CN=74 Runoff=0.526 cfs 1,063 cf

Subcatchment 16S: Offsite South	Runoff Area=7,202 sf 33.32% Impervious Runoff Depth=2.61" Tc=6.0 min CN=82 Runoff=0.765 cfs 1,566 cf
Subcatchment 17S:	Runoff Area=5,084 sf 62.06% Impervious Runoff Depth=3.27" Tc=6.0 min CN=89 Runoff=0.650 cfs 1,384 cf
Subcatchment 18S: Offsite NE	Runoff Area=3,841 sf 37.00% Impervious Runoff Depth=2.70" Tc=6.0 min CN=83 Runoff=0.420 cfs 864 cf
Subcatchment 19S: Offsite SE	Runoff Area=2,324 sf 5.98% Impervious Runoff Depth=2.03" Tc=6.0 min CN=75 Runoff=0.194 cfs 393 cf
Subcatchment EX N:	Runoff Area=48,689 sf 82.73% Impervious Runoff Depth=3.17" Tc=6.0 min CN=88 Runoff=6.085 cfs 12,854 cf
Subcatchment EX S:	Runoff Area=81,151 sf 95.22% Impervious Runoff Depth=3.90" Tc=6.0 min CN=95 Runoff=11.582 cfs 26,341 cf
Subcatchment OS-N:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=3.17" Tc=6.0 min CN=88 Runoff=1.243 cfs 2,626 cf
Pond 4P:	Peak Elev=641.29' Storage=26,141 cf Inflow=9.143 cfs 20,866 cf Outflow=0.535 cfs 20,866 cf
Pond 7P: CB 7	Peak Elev=641.36' Inflow=7.221 cfs 16,901 cf 18.0" Round Culvert n=0.013 L=25.0' S=0.0052 '/' Outflow=7.221 cfs 16,901 cf
Pond 8P: CB 8	Peak Elev=641.49' Inflow=5.221 cfs 12,279 cf 18.0" Round Culvert n=0.013 L=107.0' S=0.0051 '/' Outflow=5.221 cfs 12,279 cf
Pond 9P: MH 9	Peak Elev=641.40' Inflow=2.814 cfs 6,717 cf 15.0" Round Culvert n=0.013 L=38.0' S=0.0058 '/' Outflow=2.814 cfs 6,717 cf
Pond 10P: CB 10	Peak Elev=642.00' Inflow=2.255 cfs 5,376 cf 15.0" Round Culvert n=0.013 L=176.0' S=0.0040 '/' Outflow=2.255 cfs 5,376 cf
Pond 11P: CB 11	Peak Elev=641.82' Inflow=0.576 cfs 1,365 cf 12.0" Round Culvert n=0.013 L=76.0' S=0.0030 '/' Outflow=0.576 cfs 1,365 cf
Pond 13P: CB 13	Peak Elev=640.16' Inflow=0.650 cfs 1,384 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0115 '/' Outflow=0.650 cfs 1,384 cf
Pond 15P:	Peak Elev=640.65' Storage=352 cf Inflow=4.433 cfs 14,026 cf 12.0" Round Culvert n=0.013 L=15.0' S=0.0693 '/' Outflow=4.063 cfs 14,026 cf
Pond 17P:	Peak Elev=642.61' Storage=2,870 cf Inflow=4.507 cfs 10,477 cf 12.0" Round Culvert n=0.013 L=62.0' S=0.0242 '/' Outflow=2.941 cfs 10,477 cf
Pond 19P:	Peak Elev=642.77' Inflow=1.946 cfs 4,595 cf 12.0" Round Culvert n=0.013 L=86.0' S=0.0030 '/' Outflow=1.946 cfs 4,595 cf
Pond 20P:	Peak Elev=642.49' Inflow=0.398 cfs 954 cf 12.0" Round Culvert n=0.013 L=106.0' S=0.0030 '/' Outflow=0.398 cfs 954 cf

Kwik Trip - La Crosse, WI #762

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Pond 22P:

Peak Elev=642.10' Inflow=0.692 cfs 1,574 cf
12.0" Round Culvert n=0.013 L=22.0' S=0.0032 '/ Outflow=0.692 cfs 1,574 cf

Pond 23P: CB 23

Peak Elev=641.80' Inflow=0.381 cfs 895 cf
12.0" Round Culvert n=0.013 L=99.0' S=0.0030 '/ Outflow=0.381 cfs 895 cf

Link P-N:

Inflow=4.344 cfs 14,890 cf
Primary=4.344 cfs 14,890 cf

Link P-S:

Inflow=1.911 cfs 23,888 cf
Primary=1.911 cfs 23,888 cf

Link TEX:

Inflow=18.908 cfs 41,820 cf
Primary=18.908 cfs 41,820 cf

Link TEX-N:

Inflow=7.328 cfs 15,480 cf
Primary=7.328 cfs 15,480 cf

Link TP:

Inflow=6.171 cfs 38,778 cf
Primary=6.171 cfs 38,778 cf

Total Runoff Area = 279,572 sf Runoff Volume = 80,598 cf Average Runoff Depth = 3.46"
23.30% Pervious = 65,147 sf 76.70% Impervious = 214,425 sf

Summary for Subcatchment 1S:

Runoff = 1.278 cfs @ 12.14 hrs, Volume= 2,581 cf, Depth= 1.95"
 Routed to Pond 4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
15,890	74	>75% Grass cover, Good, HSG C
15,890	74	Weighted Average
15,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 2S:

Runoff = 2.001 cfs @ 12.13 hrs, Volume= 4,622 cf, Depth= 4.01"
 Routed to Pond 7P : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
12,529	98	Paved parking, HSG C
1,317	74	>75% Grass cover, Good, HSG C
13,846	96	Weighted Average
1,317		9.51% Pervious Area
12,529		90.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 3S:

Runoff = 2.407 cfs @ 12.13 hrs, Volume= 5,562 cf, Depth= 4.01"
 Routed to Pond 8P : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

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MSE 24-hr 3 10-yr Rainfall=4.47"

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Area (sf)	CN	Description
15,366	98	Paved parking, HSG C
1,293	74	>75% Grass cover, Good, HSG C
16,659	96	Weighted Average
1,293		7.76% Pervious Area
15,366		92.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 4S: Pump Canopy

Runoff = 0.559 cfs @ 12.13 hrs, Volume= 1,341 cf, Depth= 4.23"
 Routed to Pond 9P : MH 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
3,800	98	Weighted Average
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 5S:

Runoff = 1.299 cfs @ 12.13 hrs, Volume= 3,116 cf, Depth= 4.23"
 Routed to Pond 10P : CB 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
8,831	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
8,831	98	Weighted Average
8,831		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 6S:

Runoff = 0.331 cfs @ 12.13 hrs, Volume= 779 cf, Depth= 4.12"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
2,199	98	Paved parking, HSG C
71	74	>75% Grass cover, Good, HSG C
2,270	97	Weighted Average
71		3.13% Pervious Area
2,199		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 7S:

Runoff = 0.381 cfs @ 12.13 hrs, Volume= 895 cf, Depth= 4.12"
 Routed to Pond 23P : CB 23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
2,492	98	Paved parking, HSG C
116	74	>75% Grass cover, Good, HSG C
2,608	97	Weighted Average
116		4.45% Pervious Area
2,492		95.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 8S:

Runoff = 0.398 cfs @ 12.13 hrs, Volume= 954 cf, Depth= 4.23"
 Routed to Pond 20P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

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MSE 24-hr 3 10-yr Rainfall=4.47"

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Area (sf)	CN	Description
2,703	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
2,703	98	Weighted Average
2,703		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 9S:

Runoff = 1.548 cfs @ 12.13 hrs, Volume= 3,641 cf, Depth= 4.12"
 Routed to Pond 19P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
10,182	98	Paved parking, HSG C
426	74	>75% Grass cover, Good, HSG C
10,608	97	Weighted Average
426		4.02% Pervious Area
10,182		95.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 10S:

Runoff = 0.692 cfs @ 12.13 hrs, Volume= 1,574 cf, Depth= 3.90"
 Routed to Pond 22P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
4,165	98	Paved parking, HSG C
685	74	>75% Grass cover, Good, HSG C
4,850	95	Weighted Average
685		14.12% Pervious Area
4,165		85.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 11S: Store

Runoff = 1.390 cfs @ 12.13 hrs, Volume= 3,336 cf, Depth= 4.23"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
9,454	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
9,454	98	Weighted Average
9,454		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 12S: Car Wash

Runoff = 0.244 cfs @ 12.13 hrs, Volume= 586 cf, Depth= 4.23"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
1,661	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
1,661	98	Weighted Average
1,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 13S:

Runoff = 0.481 cfs @ 12.14 hrs, Volume= 972 cf, Depth= 1.95"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,981	74	>75% Grass cover, Good, HSG C
5,981	74	Weighted Average
5,981		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14a:

Runoff = 0.457 cfs @ 12.14 hrs, Volume= 923 cf, Depth= 1.95"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,685	74	>75% Grass cover, Good, HSG C
5,685	74	Weighted Average
5,685		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14b:

Runoff = 1.243 cfs @ 12.13 hrs, Volume= 2,626 cf, Depth= 3.17"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 15S: Offsite West

Runoff = 0.526 cfs @ 12.14 hrs, Volume= 1,063 cf, Depth= 1.95"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

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MSE 24-hr 3 10-yr Rainfall=4.47"

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Area (sf)	CN	Description
0	98	Paved parking, HSG C
6,543	74	>75% Grass cover, Good, HSG C
6,543	74	Weighted Average
6,543		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 16S: Offsite South

Runoff = 0.765 cfs @ 12.13 hrs, Volume= 1,566 cf, Depth= 2.61"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG C
4,802	74	>75% Grass cover, Good, HSG C
7,202	82	Weighted Average
4,802		66.68% Pervious Area
2,400		33.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 17S:

Runoff = 0.650 cfs @ 12.13 hrs, Volume= 1,384 cf, Depth= 3.27"
 Routed to Pond 13P : CB 13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
3,155	98	Paved parking, HSG C
1,929	74	>75% Grass cover, Good, HSG C
5,084	89	Weighted Average
1,929		37.94% Pervious Area
3,155		62.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 18S: Offsite NE

Runoff = 0.420 cfs @ 12.13 hrs, Volume= 864 cf, Depth= 2.70"
 Routed to Link P-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
1,421	98	Paved parking, HSG C
2,420	74	>75% Grass cover, Good, HSG C
3,841	83	Weighted Average
2,420		63.00% Pervious Area
1,421		37.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 19S: Offsite SE

Runoff = 0.194 cfs @ 12.14 hrs, Volume= 393 cf, Depth= 2.03"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
139	98	Paved parking, HSG C
2,185	74	>75% Grass cover, Good, HSG C
2,324	75	Weighted Average
2,185		94.02% Pervious Area
139		5.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX N:

Runoff = 6.085 cfs @ 12.13 hrs, Volume= 12,854 cf, Depth= 3.17"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

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MSE 24-hr 3 10-yr Rainfall=4.47"

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Area (sf)	CN	Description
40,279	98	Paved parking, HSG A
8,410	39	>75% Grass cover, Good, HSG A
48,689	88	Weighted Average
8,410		17.27% Pervious Area
40,279		82.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX S:

Runoff = 11.582 cfs @ 12.13 hrs, Volume= 26,341 cf, Depth= 3.90"
 Routed to Link TEX :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
77,271	98	Paved parking, HSG A
3,880	39	>75% Grass cover, Good, HSG A
81,151	95	Weighted Average
3,880		4.78% Pervious Area
77,271		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment OS-N:

Runoff = 1.243 cfs @ 12.13 hrs, Volume= 2,626 cf, Depth= 3.17"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-yr Rainfall=4.47"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Pond 4P:

Inflow Area = 70,649 sf, 70.82% Impervious, Inflow Depth = 3.54" for 10-yr event
 Inflow = 9.143 cfs @ 12.13 hrs, Volume= 20,866 cf
 Outflow = 0.535 cfs @ 13.26 hrs, Volume= 20,866 cf, Atten= 94%, Lag= 67.7 min
 Primary = 0.535 cfs @ 13.26 hrs, Volume= 20,866 cf
 Routed to Link P-S :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 639.50' Surf.Area= 6,295 sf Storage= 13,277 cf
 Peak Elev= 641.29' @ 13.26 hrs Surf.Area= 8,124 sf Storage= 26,141 cf (12,864 cf above start)

Plug-Flow detention time= 766.8 min calculated for 7,585 cf (36% of inflow)
 Center-of-Mass det. time= 321.3 min (1,085.1 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	634.00'	52,295 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
634.00	698	0	0
635.00	1,126	912	912
636.00	1,652	1,389	2,301
637.00	2,272	1,962	4,263
638.00	2,980	2,626	6,889
638.50	3,380	1,590	8,479
639.00	4,759	2,035	10,514
639.50	6,295	2,764	13,277
640.00	6,787	3,271	16,548
641.00	7,812	7,300	23,847
642.00	8,895	8,354	32,201
643.00	10,033	9,464	41,665
644.00	11,228	10,631	52,295

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	12.0" Round Culvert L= 57.0' Ke= 0.500 Inlet / Outlet Invert= 639.50' / 639.32' S= 0.0032 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	639.50'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	641.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.535 cfs @ 13.26 hrs HW=641.29' (Free Discharge)

- 1=Culvert (Passes 0.535 cfs of 3.419 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.535 cfs @ 6.13 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.000 cfs)

Summary for Pond 7P: CB 7

Inflow Area = 49,675 sf, 94.37% Impervious, Inflow Depth = 4.08" for 10-yr event
 Inflow = 7.221 cfs @ 12.13 hrs, Volume= 16,901 cf
 Outflow = 7.221 cfs @ 12.13 hrs, Volume= 16,901 cf, Atten= 0%, Lag= 0.0 min
 Primary = 7.221 cfs @ 12.13 hrs, Volume= 16,901 cf
 Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.36' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.63'	18.0" Round Culvert L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 639.63' / 639.50' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=6.903 cfs @ 12.13 hrs HW=641.30' (Free Discharge)
 ←1=Culvert (Barrel Controls 6.903 cfs @ 4.37 fps)

Summary for Pond 8P: CB 8

Inflow Area = 35,829 sf, 95.87% Impervious, Inflow Depth = 4.11" for 10-yr event
 Inflow = 5.221 cfs @ 12.13 hrs, Volume= 12,279 cf
 Outflow = 5.221 cfs @ 12.13 hrs, Volume= 12,279 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.221 cfs @ 12.13 hrs, Volume= 12,279 cf
 Routed to Pond 7P : CB 7

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.49' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.18'	18.0" Round Culvert L= 107.0' Ke= 0.500 Inlet / Outlet Invert= 640.18' / 639.63' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=4.991 cfs @ 12.13 hrs HW=641.45' (Free Discharge)
 ←1=Culvert (Barrel Controls 4.991 cfs @ 4.22 fps)

Summary for Pond 9P: MH 9

Inflow Area = 19,170 sf, 99.02% Impervious, Inflow Depth = 4.20" for 10-yr event
 Inflow = 2.814 cfs @ 12.13 hrs, Volume= 6,717 cf
 Outflow = 2.814 cfs @ 12.13 hrs, Volume= 6,717 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.814 cfs @ 12.13 hrs, Volume= 6,717 cf
 Routed to Pond 8P : CB 8

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.40' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.40'	15.0" Round Culvert L= 38.0' Ke= 0.500

Inlet / Outlet Invert= 640.40' / 640.18' S= 0.0058 '/ Cc= 0.900
 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=2.690 cfs @ 12.13 hrs HW=641.37' (Free Discharge)

↑1=Culvert (Barrel Controls 2.690 cfs @ 3.61 fps)

Summary for Pond 10P: CB 10

Inflow Area = 15,370 sf, 98.78% Impervious, Inflow Depth = 4.20" for 10-yr event
 Inflow = 2.255 cfs @ 12.13 hrs, Volume= 5,376 cf
 Outflow = 2.255 cfs @ 12.13 hrs, Volume= 5,376 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.255 cfs @ 12.13 hrs, Volume= 5,376 cf
 Routed to Pond 9P : MH 9

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.00' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.10'	15.0" Round Culvert L= 176.0' Ke= 0.500 Inlet / Outlet Invert= 641.10' / 640.40' S= 0.0040 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=2.156 cfs @ 12.13 hrs HW=641.98' (Free Discharge)

↑1=Culvert (Barrel Controls 2.156 cfs @ 3.30 fps)

Summary for Pond 11P: CB 11

Inflow Area = 3,931 sf, 98.19% Impervious, Inflow Depth = 4.17" for 10-yr event
 Inflow = 0.576 cfs @ 12.13 hrs, Volume= 1,365 cf
 Outflow = 0.576 cfs @ 12.13 hrs, Volume= 1,365 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.576 cfs @ 12.13 hrs, Volume= 1,365 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.82' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.33'	12.0" Round Culvert L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 641.33' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.550 cfs @ 12.13 hrs HW=641.81' (Free Discharge)

↑1=Culvert (Barrel Controls 0.550 cfs @ 2.17 fps)

Summary for Pond 13P: CB 13

Inflow Area = 5,084 sf, 62.06% Impervious, Inflow Depth = 3.27" for 10-yr event
 Inflow = 0.650 cfs @ 12.13 hrs, Volume= 1,384 cf
 Outflow = 0.650 cfs @ 12.13 hrs, Volume= 1,384 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.650 cfs @ 12.13 hrs, Volume= 1,384 cf
 Routed to Pond 4P :

Kwik Trip - La Crosse, WI #762

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MSE 24-hr 3 10-yr Rainfall=4.47"

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Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.16' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.73'	12.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 639.73' / 639.50' S= 0.0115 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.621 cfs @ 12.13 hrs HW=640.15' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.621 cfs @ 2.94 fps)**Summary for Pond 15P:**

Inflow Area = 49,227 sf, 70.48% Impervious, Inflow Depth = 3.42" for 10-yr event
 Inflow = 4.433 cfs @ 12.15 hrs, Volume= 14,026 cf
 Outflow = 4.063 cfs @ 12.20 hrs, Volume= 14,026 cf, Atten= 8%, Lag= 3.0 min
 Primary = 4.063 cfs @ 12.20 hrs, Volume= 14,026 cf
 Routed to Link P-N :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.65' @ 12.20 hrs Surf.Area= 443 sf Storage= 352 cf

Plug-Flow detention time= 0.7 min calculated for 14,026 cf (100% of inflow)

Center-of-Mass det. time= 0.7 min (785.6 - 784.9)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	4,022 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	0	0	0
640.00	250	125	125
641.00	545	398	523
642.00	912	729	1,251
643.00	1,350	1,131	2,382
644.00	1,930	1,640	4,022

Device	Routing	Invert	Outlet Devices
#1	Primary	639.00'	12.0" Round Culvert L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 639.00' / 637.96' S= 0.0693 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=4.049 cfs @ 12.20 hrs HW=640.65' (Free Discharge)↑**1=Culvert** (Inlet Controls 4.049 cfs @ 5.16 fps)

Summary for Pond 17P:

Inflow Area = 33,596 sf, 78.89% Impervious, Inflow Depth = 3.74" for 10-yr event
 Inflow = 4.507 cfs @ 12.13 hrs, Volume= 10,477 cf
 Outflow = 2.941 cfs @ 12.20 hrs, Volume= 10,477 cf, Atten= 35%, Lag= 4.5 min
 Primary = 2.941 cfs @ 12.20 hrs, Volume= 10,477 cf
 Routed to Pond 15P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 641.50' Surf.Area= 1,394 sf Storage= 1,002 cf
 Peak Elev= 642.61' @ 12.20 hrs Surf.Area= 1,998 sf Storage= 2,870 cf (1,868 cf above start)

Plug-Flow detention time= 91.5 min calculated for 9,475 cf (90% of inflow)
 Center-of-Mass det. time= 24.4 min (782.1 - 757.7)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	13,329 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	44	0	0
640.00	174	109	109
640.50	261	109	218
641.00	741	251	468
641.50	1,394	534	1,002
642.00	1,655	762	1,764
643.00	2,222	1,939	3,703
644.00	2,831	2,527	6,229
645.00	3,528	3,180	9,409
646.00	4,312	3,920	13,329

Device	Routing	Invert	Outlet Devices
#1	Primary	641.50'	12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 641.50' / 640.00' S= 0.0242 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.932 cfs @ 12.20 hrs HW=642.60' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 2.932 cfs @ 3.73 fps)

Summary for Pond 19P:

Inflow Area = 13,311 sf, 96.80% Impervious, Inflow Depth = 4.14" for 10-yr event
 Inflow = 1.946 cfs @ 12.13 hrs, Volume= 4,595 cf
 Outflow = 1.946 cfs @ 12.13 hrs, Volume= 4,595 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.946 cfs @ 12.13 hrs, Volume= 4,595 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.77' @ 12.13 hrs

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Device	Routing	Invert	Outlet Devices
#1	Primary	641.76'	12.0" Round Culvert L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 641.76' / 641.50' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.860 cfs @ 12.13 hrs HW=642.74' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.860 cfs @ 3.00 fps)**Summary for Pond 20P:**

Inflow Area = 2,703 sf, 100.00% Impervious, Inflow Depth = 4.23" for 10-yr event
 Inflow = 0.398 cfs @ 12.13 hrs, Volume= 954 cf
 Outflow = 0.398 cfs @ 12.13 hrs, Volume= 954 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.398 cfs @ 12.13 hrs, Volume= 954 cf
 Routed to Pond 19P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.49' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	642.08'	12.0" Round Culvert L= 106.0' Ke= 0.500 Inlet / Outlet Invert= 642.08' / 641.76' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.380 cfs @ 12.13 hrs HW=642.48' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.380 cfs @ 1.95 fps)**Summary for Pond 22P:**

Inflow Area = 4,850 sf, 85.88% Impervious, Inflow Depth = 3.90" for 10-yr event
 Inflow = 0.692 cfs @ 12.13 hrs, Volume= 1,574 cf
 Outflow = 0.692 cfs @ 12.13 hrs, Volume= 1,574 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.692 cfs @ 12.13 hrs, Volume= 1,574 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.10' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.57'	12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 641.57' / 641.50' S= 0.0032 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.661 cfs @ 12.13 hrs HW=642.09' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.661 cfs @ 2.33 fps)

Summary for Pond 23P: CB 23

Inflow Area = 2,608 sf, 95.55% Impervious, Inflow Depth = 4.12" for 10-yr event
 Inflow = 0.381 cfs @ 12.13 hrs, Volume= 895 cf
 Outflow = 0.381 cfs @ 12.13 hrs, Volume= 895 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.381 cfs @ 12.13 hrs, Volume= 895 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.80' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.40'	12.0" Round Culvert L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 641.40' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.364 cfs @ 12.13 hrs HW=641.79' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 0.364 cfs @ 1.93 fps)

Summary for Link P-N:

Inflow Area = 53,068 sf, 68.05% Impervious, Inflow Depth = 3.37" for 10-yr event
 Inflow = 4.344 cfs @ 12.19 hrs, Volume= 14,890 cf
 Primary = 4.344 cfs @ 12.19 hrs, Volume= 14,890 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link P-S:

Inflow Area = 86,718 sf, 60.62% Impervious, Inflow Depth = 3.31" for 10-yr event
 Inflow = 1.911 cfs @ 12.14 hrs, Volume= 23,888 cf
 Primary = 1.911 cfs @ 12.14 hrs, Volume= 23,888 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX:

Inflow Area = 139,786 sf, 89.95% Impervious, Inflow Depth = 3.59" for 10-yr event
 Inflow = 18.908 cfs @ 12.13 hrs, Volume= 41,820 cf
 Primary = 18.908 cfs @ 12.13 hrs, Volume= 41,820 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX-N:

Inflow Area = 58,635 sf, 82.66% Impervious, Inflow Depth = 3.17" for 10-yr event
Inflow = 7.328 cfs @ 12.13 hrs, Volume= 15,480 cf
Primary = 7.328 cfs @ 12.13 hrs, Volume= 15,480 cf, Atten= 0%, Lag= 0.0 min
Routed to Link TEX :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TP:

Inflow Area = 139,786 sf, 63.44% Impervious, Inflow Depth = 3.33" for 10-yr event
Inflow = 6.171 cfs @ 12.16 hrs, Volume= 38,778 cf
Primary = 6.171 cfs @ 12.16 hrs, Volume= 38,778 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S:	Runoff Area=15,890 sf 0.00% Impervious Runoff Depth=2.84" Tc=6.0 min CN=74 Runoff=1.858 cfs 3,765 cf
Subcatchment 2S:	Runoff Area=13,846 sf 90.49% Impervious Runoff Depth=5.12" Tc=6.0 min CN=96 Runoff=2.522 cfs 5,907 cf
Subcatchment 3S:	Runoff Area=16,659 sf 92.24% Impervious Runoff Depth=5.12" Tc=6.0 min CN=96 Runoff=3.034 cfs 7,107 cf
Subcatchment 4S: Pump Canopy	Runoff Area=3,800 sf 100.00% Impervious Runoff Depth=5.35" Tc=6.0 min CN=98 Runoff=0.701 cfs 1,695 cf
Subcatchment 5S:	Runoff Area=8,831 sf 100.00% Impervious Runoff Depth=5.35" Tc=6.0 min CN=98 Runoff=1.628 cfs 3,939 cf
Subcatchment 6S:	Runoff Area=2,270 sf 96.87% Impervious Runoff Depth=5.24" Tc=6.0 min CN=97 Runoff=0.416 cfs 990 cf
Subcatchment 7S:	Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=5.24" Tc=6.0 min CN=97 Runoff=0.478 cfs 1,138 cf
Subcatchment 8S:	Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=5.35" Tc=6.0 min CN=98 Runoff=0.498 cfs 1,206 cf
Subcatchment 9S:	Runoff Area=10,608 sf 95.98% Impervious Runoff Depth=5.24" Tc=6.0 min CN=97 Runoff=1.946 cfs 4,628 cf
Subcatchment 10S:	Runoff Area=4,850 sf 85.88% Impervious Runoff Depth=5.00" Tc=6.0 min CN=95 Runoff=0.876 cfs 2,023 cf
Subcatchment 11S: Store	Runoff Area=9,454 sf 100.00% Impervious Runoff Depth=5.35" Tc=6.0 min CN=98 Runoff=1.743 cfs 4,217 cf
Subcatchment 12S: Car Wash	Runoff Area=1,661 sf 100.00% Impervious Runoff Depth=5.35" Tc=6.0 min CN=98 Runoff=0.306 cfs 741 cf
Subcatchment 13S:	Runoff Area=5,981 sf 0.00% Impervious Runoff Depth=2.84" Tc=6.0 min CN=74 Runoff=0.699 cfs 1,417 cf
Subcatchment 14a:	Runoff Area=5,685 sf 0.00% Impervious Runoff Depth=2.84" Tc=6.0 min CN=74 Runoff=0.665 cfs 1,347 cf
Subcatchment 14b:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=4.23" Tc=6.0 min CN=88 Runoff=1.632 cfs 3,508 cf
Subcatchment 15S: Offsite West	Runoff Area=6,543 sf 0.00% Impervious Runoff Depth=2.84" Tc=6.0 min CN=74 Runoff=0.765 cfs 1,550 cf

Subcatchment 16S: Offsite South	Runoff Area=7,202 sf 33.32% Impervious Runoff Depth=3.61" Tc=6.0 min CN=82 Runoff=1.045 cfs 2,168 cf
Subcatchment 17S:	Runoff Area=5,084 sf 62.06% Impervious Runoff Depth=4.34" Tc=6.0 min CN=89 Runoff=0.849 cfs 1,838 cf
Subcatchment 18S: Offsite NE	Runoff Area=3,841 sf 37.00% Impervious Runoff Depth=3.71" Tc=6.0 min CN=83 Runoff=0.570 cfs 1,188 cf
Subcatchment 19S: Offsite SE	Runoff Area=2,324 sf 5.98% Impervious Runoff Depth=2.94" Tc=6.0 min CN=75 Runoff=0.280 cfs 569 cf
Subcatchment EX N:	Runoff Area=48,689 sf 82.73% Impervious Runoff Depth=4.23" Tc=6.0 min CN=88 Runoff=7.988 cfs 17,171 cf
Subcatchment EX S:	Runoff Area=81,151 sf 95.22% Impervious Runoff Depth=5.00" Tc=6.0 min CN=95 Runoff=14.656 cfs 33,843 cf
Subcatchment OS-N:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=4.23" Tc=6.0 min CN=88 Runoff=1.632 cfs 3,508 cf
Pond 4P:	Peak Elev=641.64' Storage=29,096 cf Inflow=11.786 cfs 27,120 cf Outflow=1.325 cfs 27,120 cf
Pond 7P: CB 7	Peak Elev=641.82' Inflow=9.086 cfs 21,516 cf 18.0" Round Culvert n=0.013 L=25.0' S=0.0052 '/' Outflow=9.086 cfs 21,516 cf
Pond 8P: CB 8	Peak Elev=641.72' Inflow=6.564 cfs 15,610 cf 18.0" Round Culvert n=0.013 L=107.0' S=0.0051 '/' Outflow=6.564 cfs 15,610 cf
Pond 9P: MH 9	Peak Elev=641.56' Inflow=3.529 cfs 8,503 cf 15.0" Round Culvert n=0.013 L=38.0' S=0.0058 '/' Outflow=3.529 cfs 8,503 cf
Pond 10P: CB 10	Peak Elev=642.14' Inflow=2.829 cfs 6,808 cf 15.0" Round Culvert n=0.013 L=176.0' S=0.0040 '/' Outflow=2.829 cfs 6,808 cf
Pond 11P: CB 11	Peak Elev=641.88' Inflow=0.723 cfs 1,731 cf 12.0" Round Culvert n=0.013 L=76.0' S=0.0030 '/' Outflow=0.723 cfs 1,731 cf
Pond 13P: CB 13	Peak Elev=640.23' Inflow=0.849 cfs 1,838 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0115 '/' Outflow=0.849 cfs 1,838 cf
Pond 15P:	Peak Elev=641.15' Storage=606 cf Inflow=5.540 cfs 18,345 cf 12.0" Round Culvert n=0.013 L=15.0' S=0.0693 '/' Outflow=4.853 cfs 18,345 cf
Pond 17P:	Peak Elev=642.87' Storage=3,414 cf Inflow=5.760 cfs 13,490 cf 12.0" Round Culvert n=0.013 L=62.0' S=0.0242 '/' Outflow=3.522 cfs 13,490 cf
Pond 19P:	Peak Elev=643.00' Inflow=2.444 cfs 5,834 cf 12.0" Round Culvert n=0.013 L=86.0' S=0.0030 '/' Outflow=2.444 cfs 5,834 cf
Pond 20P:	Peak Elev=642.54' Inflow=0.498 cfs 1,206 cf 12.0" Round Culvert n=0.013 L=106.0' S=0.0030 '/' Outflow=0.498 cfs 1,206 cf

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Pond 22P: Peak Elev=642.18' Inflow=0.876 cfs 2,023 cf
12.0" Round Culvert n=0.013 L=22.0' S=0.0032 '/' Outflow=0.876 cfs 2,023 cf

Pond 23P: CB 23 Peak Elev=641.85' Inflow=0.478 cfs 1,138 cf
12.0" Round Culvert n=0.013 L=99.0' S=0.0030 '/' Outflow=0.478 cfs 1,138 cf

Link P-N: Inflow=5.203 cfs 19,533 cf
Primary=5.203 cfs 19,533 cf

Link P-S: Inflow=2.579 cfs 31,406 cf
Primary=2.579 cfs 31,406 cf

Link TEX: Inflow=24.275 cfs 54,522 cf
Primary=24.275 cfs 54,522 cf

Link TEX-N: Inflow=9.620 cfs 20,678 cf
Primary=9.620 cfs 20,678 cf

Link TP: Inflow=7.663 cfs 50,939 cf
Primary=7.663 cfs 50,939 cf

Total Runoff Area = 279,572 sf Runoff Volume = 105,461 cf Average Runoff Depth = 4.53"
23.30% Pervious = 65,147 sf 76.70% Impervious = 214,425 sf

Summary for Subcatchment 1S:

Runoff = 1.858 cfs @ 12.13 hrs, Volume= 3,765 cf, Depth= 2.84"
 Routed to Pond 4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
15,890	74	>75% Grass cover, Good, HSG C
15,890	74	Weighted Average
15,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 2S:

Runoff = 2.522 cfs @ 12.13 hrs, Volume= 5,907 cf, Depth= 5.12"
 Routed to Pond 7P : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
12,529	98	Paved parking, HSG C
1,317	74	>75% Grass cover, Good, HSG C
13,846	96	Weighted Average
1,317		9.51% Pervious Area
12,529		90.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 3S:

Runoff = 3.034 cfs @ 12.13 hrs, Volume= 7,107 cf, Depth= 5.12"
 Routed to Pond 8P : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

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MSE 24-hr 3 25-yr Rainfall=5.59"

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Area (sf)	CN	Description
15,366	98	Paved parking, HSG C
1,293	74	>75% Grass cover, Good, HSG C
16,659	96	Weighted Average
1,293		7.76% Pervious Area
15,366		92.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 4S: Pump Canopy

Runoff = 0.701 cfs @ 12.13 hrs, Volume= 1,695 cf, Depth= 5.35"
 Routed to Pond 9P : MH 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
3,800	98	Weighted Average
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 5S:

Runoff = 1.628 cfs @ 12.13 hrs, Volume= 3,939 cf, Depth= 5.35"
 Routed to Pond 10P : CB 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
8,831	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
8,831	98	Weighted Average
8,831		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 6S:

Runoff = 0.416 cfs @ 12.13 hrs, Volume= 990 cf, Depth= 5.24"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
2,199	98	Paved parking, HSG C
71	74	>75% Grass cover, Good, HSG C
2,270	97	Weighted Average
71		3.13% Pervious Area
2,199		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 7S:

Runoff = 0.478 cfs @ 12.13 hrs, Volume= 1,138 cf, Depth= 5.24"
 Routed to Pond 23P : CB 23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
2,492	98	Paved parking, HSG C
116	74	>75% Grass cover, Good, HSG C
2,608	97	Weighted Average
116		4.45% Pervious Area
2,492		95.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 8S:

Runoff = 0.498 cfs @ 12.13 hrs, Volume= 1,206 cf, Depth= 5.35"
 Routed to Pond 20P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

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MSE 24-hr 3 25-yr Rainfall=5.59"

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Area (sf)	CN	Description
2,703	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
2,703	98	Weighted Average
2,703		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 9S:

Runoff = 1.946 cfs @ 12.13 hrs, Volume= 4,628 cf, Depth= 5.24"
 Routed to Pond 19P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
10,182	98	Paved parking, HSG C
426	74	>75% Grass cover, Good, HSG C
10,608	97	Weighted Average
426		4.02% Pervious Area
10,182		95.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 10S:

Runoff = 0.876 cfs @ 12.13 hrs, Volume= 2,023 cf, Depth= 5.00"
 Routed to Pond 22P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
4,165	98	Paved parking, HSG C
685	74	>75% Grass cover, Good, HSG C
4,850	95	Weighted Average
685		14.12% Pervious Area
4,165		85.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 11S: Store

Runoff = 1.743 cfs @ 12.13 hrs, Volume= 4,217 cf, Depth= 5.35"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
9,454	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
9,454	98	Weighted Average
9,454		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 12S: Car Wash

Runoff = 0.306 cfs @ 12.13 hrs, Volume= 741 cf, Depth= 5.35"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
1,661	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
1,661	98	Weighted Average
1,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 13S:

Runoff = 0.699 cfs @ 12.13 hrs, Volume= 1,417 cf, Depth= 2.84"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,981	74	>75% Grass cover, Good, HSG C
5,981	74	Weighted Average
5,981		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14a:

Runoff = 0.665 cfs @ 12.13 hrs, Volume= 1,347 cf, Depth= 2.84"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,685	74	>75% Grass cover, Good, HSG C
5,685	74	Weighted Average
5,685		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14b:

Runoff = 1.632 cfs @ 12.13 hrs, Volume= 3,508 cf, Depth= 4.23"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 15S: Offsite West

Runoff = 0.765 cfs @ 12.13 hrs, Volume= 1,550 cf, Depth= 2.84"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

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MSE 24-hr 3 25-yr Rainfall=5.59"

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Area (sf)	CN	Description
0	98	Paved parking, HSG C
6,543	74	>75% Grass cover, Good, HSG C
6,543	74	Weighted Average
6,543		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 16S: Offsite South

Runoff = 1.045 cfs @ 12.13 hrs, Volume= 2,168 cf, Depth= 3.61"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG C
4,802	74	>75% Grass cover, Good, HSG C
7,202	82	Weighted Average
4,802		66.68% Pervious Area
2,400		33.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 17S:

Runoff = 0.849 cfs @ 12.13 hrs, Volume= 1,838 cf, Depth= 4.34"
 Routed to Pond 13P : CB 13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
3,155	98	Paved parking, HSG C
1,929	74	>75% Grass cover, Good, HSG C
5,084	89	Weighted Average
1,929		37.94% Pervious Area
3,155		62.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 18S: Offsite NE

Runoff = 0.570 cfs @ 12.13 hrs, Volume= 1,188 cf, Depth= 3.71"
 Routed to Link P-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
1,421	98	Paved parking, HSG C
2,420	74	>75% Grass cover, Good, HSG C
3,841	83	Weighted Average
2,420		63.00% Pervious Area
1,421		37.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 19S: Offsite SE

Runoff = 0.280 cfs @ 12.13 hrs, Volume= 569 cf, Depth= 2.94"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
139	98	Paved parking, HSG C
2,185	74	>75% Grass cover, Good, HSG C
2,324	75	Weighted Average
2,185		94.02% Pervious Area
139		5.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX N:

Runoff = 7.988 cfs @ 12.13 hrs, Volume= 17,171 cf, Depth= 4.23"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

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Area (sf)	CN	Description
40,279	98	Paved parking, HSG A
8,410	39	>75% Grass cover, Good, HSG A
48,689	88	Weighted Average
8,410		17.27% Pervious Area
40,279		82.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX S:

Runoff = 14.656 cfs @ 12.13 hrs, Volume= 33,843 cf, Depth= 5.00"
 Routed to Link TEX :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
77,271	98	Paved parking, HSG A
3,880	39	>75% Grass cover, Good, HSG A
81,151	95	Weighted Average
3,880		4.78% Pervious Area
77,271		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment OS-N:

Runoff = 1.632 cfs @ 12.13 hrs, Volume= 3,508 cf, Depth= 4.23"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 25-yr Rainfall=5.59"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Pond 4P:

Inflow Area = 70,649 sf, 70.82% Impervious, Inflow Depth = 4.61" for 25-yr event
 Inflow = 11.786 cfs @ 12.13 hrs, Volume= 27,120 cf
 Outflow = 1.325 cfs @ 12.60 hrs, Volume= 27,120 cf, Atten= 89%, Lag= 28.1 min
 Primary = 1.325 cfs @ 12.60 hrs, Volume= 27,120 cf
 Routed to Link P-S :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 639.50' Surf.Area= 6,295 sf Storage= 13,277 cf
 Peak Elev= 641.64' @ 12.60 hrs Surf.Area= 8,509 sf Storage= 29,096 cf (15,819 cf above start)

Plug-Flow detention time= 656.3 min calculated for 13,842 cf (51% of inflow)
 Center-of-Mass det. time= 313.9 min (1,074.3 - 760.4)

Volume	Invert	Avail.Storage	Storage Description
#1	634.00'	52,295 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
634.00	698	0	0
635.00	1,126	912	912
636.00	1,652	1,389	2,301
637.00	2,272	1,962	4,263
638.00	2,980	2,626	6,889
638.50	3,380	1,590	8,479
639.00	4,759	2,035	10,514
639.50	6,295	2,764	13,277
640.00	6,787	3,271	16,548
641.00	7,812	7,300	23,847
642.00	8,895	8,354	32,201
643.00	10,033	9,464	41,665
644.00	11,228	10,631	52,295

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	12.0" Round Culvert L= 57.0' Ke= 0.500 Inlet / Outlet Invert= 639.50' / 639.32' S= 0.0032 1/'' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	639.50'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	641.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=1.294 cfs @ 12.60 hrs HW=641.64' (Free Discharge)
 1=Culvert (Passes 1.294 cfs of 3.997 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.591 cfs @ 6.77 fps)
 3=Sharp-Crested Rectangular Weir (Weir Controls 0.703 cfs @ 1.24 fps)

Summary for Pond 7P: CB 7

Inflow Area = 49,675 sf, 94.37% Impervious, Inflow Depth = 5.20" for 25-yr event
 Inflow = 9.086 cfs @ 12.13 hrs, Volume= 21,516 cf
 Outflow = 9.086 cfs @ 12.13 hrs, Volume= 21,516 cf, Atten= 0%, Lag= 0.0 min
 Primary = 9.086 cfs @ 12.13 hrs, Volume= 21,516 cf
 Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.82' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.63'	18.0" Round Culvert L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 639.63' / 639.50' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=8.685 cfs @ 12.13 hrs HW=641.73' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 8.685 cfs @ 4.91 fps)

Summary for Pond 8P: CB 8

Inflow Area = 35,829 sf, 95.87% Impervious, Inflow Depth = 5.23" for 25-yr event
 Inflow = 6.564 cfs @ 12.13 hrs, Volume= 15,610 cf
 Outflow = 6.564 cfs @ 12.13 hrs, Volume= 15,610 cf, Atten= 0%, Lag= 0.0 min
 Primary = 6.564 cfs @ 12.13 hrs, Volume= 15,610 cf
 Routed to Pond 7P : CB 7

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.72' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.18'	18.0" Round Culvert L= 107.0' Ke= 0.500 Inlet / Outlet Invert= 640.18' / 639.63' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=6.275 cfs @ 12.13 hrs HW=641.67' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 6.275 cfs @ 4.43 fps)

Summary for Pond 9P: MH 9

Inflow Area = 19,170 sf, 99.02% Impervious, Inflow Depth = 5.32" for 25-yr event
 Inflow = 3.529 cfs @ 12.13 hrs, Volume= 8,503 cf
 Outflow = 3.529 cfs @ 12.13 hrs, Volume= 8,503 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.529 cfs @ 12.13 hrs, Volume= 8,503 cf
 Routed to Pond 8P : CB 8

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.56' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.40'	15.0" Round Culvert L= 38.0' Ke= 0.500

Inlet / Outlet Invert= 640.40' / 640.18' S= 0.0058 '/ Cc= 0.900
 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=3.374 cfs @ 12.13 hrs HW=641.53' (Free Discharge)

↑1=Culvert (Barrel Controls 3.374 cfs @ 3.82 fps)

Summary for Pond 10P: CB 10

Inflow Area = 15,370 sf, 98.78% Impervious, Inflow Depth = 5.32" for 25-yr event
 Inflow = 2.829 cfs @ 12.13 hrs, Volume= 6,808 cf
 Outflow = 2.829 cfs @ 12.13 hrs, Volume= 6,808 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.829 cfs @ 12.13 hrs, Volume= 6,808 cf
 Routed to Pond 9P : MH 9

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.14' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.10'	15.0" Round Culvert L= 176.0' Ke= 0.500 Inlet / Outlet Invert= 641.10' / 640.40' S= 0.0040 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=2.704 cfs @ 12.13 hrs HW=642.11' (Free Discharge)

↑1=Culvert (Barrel Controls 2.704 cfs @ 3.48 fps)

Summary for Pond 11P: CB 11

Inflow Area = 3,931 sf, 98.19% Impervious, Inflow Depth = 5.28" for 25-yr event
 Inflow = 0.723 cfs @ 12.13 hrs, Volume= 1,731 cf
 Outflow = 0.723 cfs @ 12.13 hrs, Volume= 1,731 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.723 cfs @ 12.13 hrs, Volume= 1,731 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.88' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.33'	12.0" Round Culvert L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 641.33' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.691 cfs @ 12.13 hrs HW=641.87' (Free Discharge)

↑1=Culvert (Barrel Controls 0.691 cfs @ 2.31 fps)

Summary for Pond 13P: CB 13

Inflow Area = 5,084 sf, 62.06% Impervious, Inflow Depth = 4.34" for 25-yr event
 Inflow = 0.849 cfs @ 12.13 hrs, Volume= 1,838 cf
 Outflow = 0.849 cfs @ 12.13 hrs, Volume= 1,838 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.849 cfs @ 12.13 hrs, Volume= 1,838 cf
 Routed to Pond 4P :

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Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.23' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.73'	12.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 639.73' / 639.50' S= 0.0115 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.811 cfs @ 12.13 hrs HW=640.22' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.811 cfs @ 3.11 fps)**Summary for Pond 15P:**

Inflow Area = 49,227 sf, 70.48% Impervious, Inflow Depth = 4.47" for 25-yr event
 Inflow = 5.540 cfs @ 12.15 hrs, Volume= 18,345 cf
 Outflow = 4.853 cfs @ 12.22 hrs, Volume= 18,345 cf, Atten= 12%, Lag= 4.0 min
 Primary = 4.853 cfs @ 12.22 hrs, Volume= 18,345 cf
 Routed to Link P-N :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 641.15' @ 12.22 hrs Surf.Area= 599 sf Storage= 606 cf

Plug-Flow detention time= 0.9 min calculated for 18,345 cf (100% of inflow)

Center-of-Mass det. time= 0.9 min (780.7 - 779.8)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	4,022 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	0	0	0
640.00	250	125	125
641.00	545	398	523
642.00	912	729	1,251
643.00	1,350	1,131	2,382
644.00	1,930	1,640	4,022

Device	Routing	Invert	Outlet Devices
#1	Primary	639.00'	12.0" Round Culvert L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 639.00' / 637.96' S= 0.0693 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=4.817 cfs @ 12.22 hrs HW=641.12' (Free Discharge)↑**1=Culvert** (Inlet Controls 4.817 cfs @ 6.13 fps)

Summary for Pond 17P:

Inflow Area = 33,596 sf, 78.89% Impervious, Inflow Depth = 4.82" for 25-yr event
 Inflow = 5.760 cfs @ 12.13 hrs, Volume= 13,490 cf
 Outflow = 3.522 cfs @ 12.21 hrs, Volume= 13,490 cf, Atten= 39%, Lag= 5.0 min
 Primary = 3.522 cfs @ 12.21 hrs, Volume= 13,490 cf
 Routed to Pond 15P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 641.50' Surf.Area= 1,394 sf Storage= 1,002 cf
 Peak Elev= 642.87' @ 12.21 hrs Surf.Area= 2,147 sf Storage= 3,414 cf (2,412 cf above start)

Plug-Flow detention time= 80.7 min calculated for 12,488 cf (93% of inflow)
 Center-of-Mass det. time= 22.4 min (777.0 - 754.6)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	13,329 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	44	0	0
640.00	174	109	109
640.50	261	109	218
641.00	741	251	468
641.50	1,394	534	1,002
642.00	1,655	762	1,764
643.00	2,222	1,939	3,703
644.00	2,831	2,527	6,229
645.00	3,528	3,180	9,409
646.00	4,312	3,920	13,329

Device	Routing	Invert	Outlet Devices
#1	Primary	641.50'	12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 641.50' / 640.00' S= 0.0242 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=3.499 cfs @ 12.21 hrs HW=642.86' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 3.499 cfs @ 4.46 fps)

Summary for Pond 19P:

Inflow Area = 13,311 sf, 96.80% Impervious, Inflow Depth = 5.26" for 25-yr event
 Inflow = 2.444 cfs @ 12.13 hrs, Volume= 5,834 cf
 Outflow = 2.444 cfs @ 12.13 hrs, Volume= 5,834 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.444 cfs @ 12.13 hrs, Volume= 5,834 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 643.00' @ 12.13 hrs

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Device	Routing	Invert	Outlet Devices
#1	Primary	641.76'	12.0" Round Culvert L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 641.76' / 641.50' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.337 cfs @ 12.13 hrs HW=642.96' (Free Discharge)↑**1=Culvert** (Barrel Controls 2.337 cfs @ 3.15 fps)**Summary for Pond 20P:**

Inflow Area = 2,703 sf, 100.00% Impervious, Inflow Depth = 5.35" for 25-yr event
 Inflow = 0.498 cfs @ 12.13 hrs, Volume= 1,206 cf
 Outflow = 0.498 cfs @ 12.13 hrs, Volume= 1,206 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.498 cfs @ 12.13 hrs, Volume= 1,206 cf
 Routed to Pond 19P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.54' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	642.08'	12.0" Round Culvert L= 106.0' Ke= 0.500 Inlet / Outlet Invert= 642.08' / 641.76' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.476 cfs @ 12.13 hrs HW=642.52' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.476 cfs @ 2.08 fps)**Summary for Pond 22P:**

Inflow Area = 4,850 sf, 85.88% Impervious, Inflow Depth = 5.00" for 25-yr event
 Inflow = 0.876 cfs @ 12.13 hrs, Volume= 2,023 cf
 Outflow = 0.876 cfs @ 12.13 hrs, Volume= 2,023 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.876 cfs @ 12.13 hrs, Volume= 2,023 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.18' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.57'	12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 641.57' / 641.50' S= 0.0032 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.837 cfs @ 12.13 hrs HW=642.16' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.837 cfs @ 2.49 fps)

Summary for Pond 23P: CB 23

Inflow Area = 2,608 sf, 95.55% Impervious, Inflow Depth = 5.24" for 25-yr event
 Inflow = 0.478 cfs @ 12.13 hrs, Volume= 1,138 cf
 Outflow = 0.478 cfs @ 12.13 hrs, Volume= 1,138 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.478 cfs @ 12.13 hrs, Volume= 1,138 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.85' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.40'	12.0" Round Culvert L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 641.40' / 641.10' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.457 cfs @ 12.13 hrs HW=641.83' (Free Discharge)
 ↑1=Culvert (Barrel Controls 0.457 cfs @ 2.06 fps)

Summary for Link P-N:

Inflow Area = 53,068 sf, 68.05% Impervious, Inflow Depth = 4.42" for 25-yr event
 Inflow = 5.203 cfs @ 12.19 hrs, Volume= 19,533 cf
 Primary = 5.203 cfs @ 12.19 hrs, Volume= 19,533 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link P-S:

Inflow Area = 86,718 sf, 60.62% Impervious, Inflow Depth = 4.35" for 25-yr event
 Inflow = 2.579 cfs @ 12.14 hrs, Volume= 31,406 cf
 Primary = 2.579 cfs @ 12.14 hrs, Volume= 31,406 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX:

Inflow Area = 139,786 sf, 89.95% Impervious, Inflow Depth = 4.68" for 25-yr event
 Inflow = 24.275 cfs @ 12.13 hrs, Volume= 54,522 cf
 Primary = 24.275 cfs @ 12.13 hrs, Volume= 54,522 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX-N:

Inflow Area = 58,635 sf, 82.66% Impervious, Inflow Depth = 4.23" for 25-yr event
Inflow = 9.620 cfs @ 12.13 hrs, Volume= 20,678 cf
Primary = 9.620 cfs @ 12.13 hrs, Volume= 20,678 cf, Atten= 0%, Lag= 0.0 min
Routed to Link TEX :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TP:

Inflow Area = 139,786 sf, 63.44% Impervious, Inflow Depth = 4.37" for 25-yr event
Inflow = 7.663 cfs @ 12.15 hrs, Volume= 50,939 cf
Primary = 7.663 cfs @ 12.15 hrs, Volume= 50,939 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S:	Runoff Area=15,890 sf 0.00% Impervious Runoff Depth=4.57" Tc=6.0 min CN=74 Runoff=2.946 cfs 6,051 cf
Subcatchment 2S:	Runoff Area=13,846 sf 90.49% Impervious Runoff Depth=7.12" Tc=6.0 min CN=96 Runoff=3.453 cfs 8,217 cf
Subcatchment 3S:	Runoff Area=16,659 sf 92.24% Impervious Runoff Depth=7.12" Tc=6.0 min CN=96 Runoff=4.155 cfs 9,887 cf
Subcatchment 4S: Pump Canopy	Runoff Area=3,800 sf 100.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=98 Runoff=0.954 cfs 2,331 cf
Subcatchment 5S:	Runoff Area=8,831 sf 100.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=98 Runoff=2.218 cfs 5,417 cf
Subcatchment 6S:	Runoff Area=2,270 sf 96.87% Impervious Runoff Depth=7.24" Tc=6.0 min CN=97 Runoff=0.568 cfs 1,370 cf
Subcatchment 7S:	Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=7.24" Tc=6.0 min CN=97 Runoff=0.653 cfs 1,574 cf
Subcatchment 8S:	Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=98 Runoff=0.679 cfs 1,658 cf
Subcatchment 9S:	Runoff Area=10,608 sf 95.98% Impervious Runoff Depth=7.24" Tc=6.0 min CN=97 Runoff=2.656 cfs 6,401 cf
Subcatchment 10S:	Runoff Area=4,850 sf 85.88% Impervious Runoff Depth=7.00" Tc=6.0 min CN=95 Runoff=1.204 cfs 2,830 cf
Subcatchment 11S: Store	Runoff Area=9,454 sf 100.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=98 Runoff=2.374 cfs 5,799 cf
Subcatchment 12S: Car Wash	Runoff Area=1,661 sf 100.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=98 Runoff=0.417 cfs 1,019 cf
Subcatchment 13S:	Runoff Area=5,981 sf 0.00% Impervious Runoff Depth=4.57" Tc=6.0 min CN=74 Runoff=1.109 cfs 2,278 cf
Subcatchment 14a:	Runoff Area=5,685 sf 0.00% Impervious Runoff Depth=4.57" Tc=6.0 min CN=74 Runoff=1.054 cfs 2,165 cf
Subcatchment 14b:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=6.18" Tc=6.0 min CN=88 Runoff=2.324 cfs 5,120 cf
Subcatchment 15S: Offsite West	Runoff Area=6,543 sf 0.00% Impervious Runoff Depth=4.57" Tc=6.0 min CN=74 Runoff=1.213 cfs 2,492 cf

Subcatchment 16S: Offsite South	Runoff Area=7,202 sf 33.32% Impervious Runoff Depth=5.48" Tc=6.0 min CN=82 Runoff=1.551 cfs 3,289 cf
Subcatchment 17S:	Runoff Area=5,084 sf 62.06% Impervious Runoff Depth=6.29" Tc=6.0 min CN=89 Runoff=1.201 cfs 2,667 cf
Subcatchment 18S: Offsite NE	Runoff Area=3,841 sf 37.00% Impervious Runoff Depth=5.60" Tc=6.0 min CN=83 Runoff=0.840 cfs 1,791 cf
Subcatchment 19S: Offsite SE	Runoff Area=2,324 sf 5.98% Impervious Runoff Depth=4.68" Tc=6.0 min CN=75 Runoff=0.440 cfs 907 cf
Subcatchment EX N:	Runoff Area=48,689 sf 82.73% Impervious Runoff Depth=6.18" Tc=6.0 min CN=88 Runoff=11.378 cfs 25,065 cf
Subcatchment EX S:	Runoff Area=81,151 sf 95.22% Impervious Runoff Depth=7.00" Tc=6.0 min CN=95 Runoff=20.138 cfs 47,358 cf
Subcatchment OS-N:	Runoff Area=9,946 sf 82.33% Impervious Runoff Depth=6.18" Tc=6.0 min CN=88 Runoff=2.324 cfs 5,120 cf
Pond 4P:	Peak Elev=642.03' Storage=32,448 cf Inflow=16.560 cfs 38,532 cf Outflow=4.541 cfs 38,532 cf
Pond 7P: CB 7	Peak Elev=642.49' Inflow=12.418 cfs 29,814 cf 18.0" Round Culvert n=0.013 L=25.0' S=0.0052 '/' Outflow=12.418 cfs 29,814 cf
Pond 8P: CB 8	Peak Elev=642.50' Inflow=8.965 cfs 21,597 cf 18.0" Round Culvert n=0.013 L=107.0' S=0.0051 '/' Outflow=8.965 cfs 21,597 cf
Pond 9P: MH 9	Peak Elev=641.87' Inflow=4.811 cfs 11,710 cf 15.0" Round Culvert n=0.013 L=38.0' S=0.0058 '/' Outflow=4.811 cfs 11,710 cf
Pond 10P: CB 10	Peak Elev=642.39' Inflow=3.856 cfs 9,379 cf 15.0" Round Culvert n=0.013 L=176.0' S=0.0040 '/' Outflow=3.856 cfs 9,379 cf
Pond 11P: CB 11	Peak Elev=641.99' Inflow=0.986 cfs 2,389 cf 12.0" Round Culvert n=0.013 L=76.0' S=0.0030 '/' Outflow=0.986 cfs 2,389 cf
Pond 13P: CB 13	Peak Elev=640.35' Inflow=1.201 cfs 2,667 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0115 '/' Outflow=1.201 cfs 2,667 cf
Pond 15P:	Peak Elev=641.96' Storage=1,212 cf Inflow=7.382 cfs 26,251 cf 12.0" Round Culvert n=0.013 L=15.0' S=0.0693 '/' Outflow=5.928 cfs 26,251 cf
Pond 17P:	Peak Elev=643.35' Storage=4,529 cf Inflow=8.019 cfs 18,966 cf 12.0" Round Culvert n=0.013 L=62.0' S=0.0242 '/' Outflow=4.403 cfs 18,966 cf
Pond 19P:	Peak Elev=643.67' Inflow=3.335 cfs 8,059 cf 12.0" Round Culvert n=0.013 L=86.0' S=0.0030 '/' Outflow=3.335 cfs 8,059 cf
Pond 20P:	Peak Elev=642.62' Inflow=0.679 cfs 1,658 cf 12.0" Round Culvert n=0.013 L=106.0' S=0.0030 '/' Outflow=0.679 cfs 1,658 cf

Pond 22P:	Peak Elev=642.30'	Inflow=1.204 cfs	2,830 cf
	12.0" Round Culvert n=0.013 L=22.0' S=0.0032 '/'	Outflow=1.204 cfs	2,830 cf
Pond 23P: CB 23	Peak Elev=641.93'	Inflow=0.653 cfs	1,574 cf
	12.0" Round Culvert n=0.013 L=99.0' S=0.0030 '/'	Outflow=0.653 cfs	1,574 cf
Link P-N:		Inflow=6.402 cfs	28,042 cf
		Primary=6.402 cfs	28,042 cf
Link P-S:		Inflow=6.077 cfs	45,220 cf
		Primary=6.077 cfs	45,220 cf
Link TEX:		Inflow=33.839 cfs	77,543 cf
		Primary=33.839 cfs	77,543 cf
Link TEX-N:		Inflow=13.702 cfs	30,185 cf
		Primary=13.702 cfs	30,185 cf
Link TP:		Inflow=12.453 cfs	73,262 cf
		Primary=12.453 cfs	73,262 cf

Total Runoff Area = 279,572 sf Runoff Volume = 150,805 cf Average Runoff Depth = 6.47"
23.30% Pervious = 65,147 sf 76.70% Impervious = 214,425 sf

Summary for Subcatchment 1S:

Runoff = 2.946 cfs @ 12.13 hrs, Volume= 6,051 cf, Depth= 4.57"
 Routed to Pond 4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
15,890	74	>75% Grass cover, Good, HSG C
15,890	74	Weighted Average
15,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 2S:

Runoff = 3.453 cfs @ 12.13 hrs, Volume= 8,217 cf, Depth= 7.12"
 Routed to Pond 7P : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
12,529	98	Paved parking, HSG C
1,317	74	>75% Grass cover, Good, HSG C
13,846	96	Weighted Average
1,317		9.51% Pervious Area
12,529		90.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 3S:

Runoff = 4.155 cfs @ 12.13 hrs, Volume= 9,887 cf, Depth= 7.12"
 Routed to Pond 8P : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

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MSE 24-hr 3 100-yr Rainfall=7.60"

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Area (sf)	CN	Description
15,366	98	Paved parking, HSG C
1,293	74	>75% Grass cover, Good, HSG C
16,659	96	Weighted Average
1,293		7.76% Pervious Area
15,366		92.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 4S: Pump Canopy

Runoff = 0.954 cfs @ 12.13 hrs, Volume= 2,331 cf, Depth= 7.36"
 Routed to Pond 9P : MH 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
3,800	98	Weighted Average
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 5S:

Runoff = 2.218 cfs @ 12.13 hrs, Volume= 5,417 cf, Depth= 7.36"
 Routed to Pond 10P : CB 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
8,831	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
8,831	98	Weighted Average
8,831		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 6S:

Runoff = 0.568 cfs @ 12.13 hrs, Volume= 1,370 cf, Depth= 7.24"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
2,199	98	Paved parking, HSG C
71	74	>75% Grass cover, Good, HSG C
2,270	97	Weighted Average
71		3.13% Pervious Area
2,199		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 7S:

Runoff = 0.653 cfs @ 12.13 hrs, Volume= 1,574 cf, Depth= 7.24"
 Routed to Pond 23P : CB 23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
2,492	98	Paved parking, HSG C
116	74	>75% Grass cover, Good, HSG C
2,608	97	Weighted Average
116		4.45% Pervious Area
2,492		95.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 8S:

Runoff = 0.679 cfs @ 12.13 hrs, Volume= 1,658 cf, Depth= 7.36"
 Routed to Pond 20P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

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MSE 24-hr 3 100-yr Rainfall=7.60"

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Area (sf)	CN	Description
2,703	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
2,703	98	Weighted Average
2,703		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 9S:

Runoff = 2.656 cfs @ 12.13 hrs, Volume= 6,401 cf, Depth= 7.24"
 Routed to Pond 19P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
10,182	98	Paved parking, HSG C
426	74	>75% Grass cover, Good, HSG C
10,608	97	Weighted Average
426		4.02% Pervious Area
10,182		95.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 10S:

Runoff = 1.204 cfs @ 12.13 hrs, Volume= 2,830 cf, Depth= 7.00"
 Routed to Pond 22P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
4,165	98	Paved parking, HSG C
685	74	>75% Grass cover, Good, HSG C
4,850	95	Weighted Average
685		14.12% Pervious Area
4,165		85.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 11S: Store

Runoff = 2.374 cfs @ 12.13 hrs, Volume= 5,799 cf, Depth= 7.36"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
9,454	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
9,454	98	Weighted Average
9,454		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 12S: Car Wash

Runoff = 0.417 cfs @ 12.13 hrs, Volume= 1,019 cf, Depth= 7.36"
 Routed to Pond 11P : CB 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
1,661	98	Paved parking, HSG C
0	74	>75% Grass cover, Good, HSG C
1,661	98	Weighted Average
1,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 13S:

Runoff = 1.109 cfs @ 12.13 hrs, Volume= 2,278 cf, Depth= 4.57"
 Routed to Pond 17P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,981	74	>75% Grass cover, Good, HSG C
5,981	74	Weighted Average
5,981		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14a:

Runoff = 1.054 cfs @ 12.13 hrs, Volume= 2,165 cf, Depth= 4.57"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
5,685	74	>75% Grass cover, Good, HSG C
5,685	74	Weighted Average
5,685		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 14b:

Runoff = 2.324 cfs @ 12.13 hrs, Volume= 5,120 cf, Depth= 6.18"
 Routed to Pond 15P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 15S: Offsite West

Runoff = 1.213 cfs @ 12.13 hrs, Volume= 2,492 cf, Depth= 4.57"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

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MSE 24-hr 3 100-yr Rainfall=7.60"

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Area (sf)	CN	Description
0	98	Paved parking, HSG C
6,543	74	>75% Grass cover, Good, HSG C
6,543	74	Weighted Average
6,543		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 16S: Offsite South

Runoff = 1.551 cfs @ 12.13 hrs, Volume= 3,289 cf, Depth= 5.48"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG C
4,802	74	>75% Grass cover, Good, HSG C
7,202	82	Weighted Average
4,802		66.68% Pervious Area
2,400		33.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 17S:

Runoff = 1.201 cfs @ 12.13 hrs, Volume= 2,667 cf, Depth= 6.29"
 Routed to Pond 13P : CB 13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
3,155	98	Paved parking, HSG C
1,929	74	>75% Grass cover, Good, HSG C
5,084	89	Weighted Average
1,929		37.94% Pervious Area
3,155		62.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 18S: Offsite NE

Runoff = 0.840 cfs @ 12.13 hrs, Volume= 1,791 cf, Depth= 5.60"
 Routed to Link P-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
1,421	98	Paved parking, HSG C
2,420	74	>75% Grass cover, Good, HSG C
3,841	83	Weighted Average
2,420		63.00% Pervious Area
1,421		37.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment 19S: Offsite SE

Runoff = 0.440 cfs @ 12.13 hrs, Volume= 907 cf, Depth= 4.68"
 Routed to Link P-S :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
139	98	Paved parking, HSG C
2,185	74	>75% Grass cover, Good, HSG C
2,324	75	Weighted Average
2,185		94.02% Pervious Area
139		5.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX N:

Runoff = 11.378 cfs @ 12.13 hrs, Volume= 25,065 cf, Depth= 6.18"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

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MSE 24-hr 3 100-yr Rainfall=7.60"

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Area (sf)	CN	Description
40,279	98	Paved parking, HSG A
8,410	39	>75% Grass cover, Good, HSG A
48,689	88	Weighted Average
8,410		17.27% Pervious Area
40,279		82.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment EX S:

Runoff = 20.138 cfs @ 12.13 hrs, Volume= 47,358 cf, Depth= 7.00"
 Routed to Link TEX :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
77,271	98	Paved parking, HSG A
3,880	39	>75% Grass cover, Good, HSG A
81,151	95	Weighted Average
3,880		4.78% Pervious Area
77,271		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Subcatchment OS-N:

Runoff = 2.324 cfs @ 12.13 hrs, Volume= 5,120 cf, Depth= 6.18"
 Routed to Link TEX-N :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-yr Rainfall=7.60"

Area (sf)	CN	Description
8,189	98	Paved parking, HSG A
1,757	39	>75% Grass cover, Good, HSG A
9,946	88	Weighted Average
1,757		17.67% Pervious Area
8,189		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum

Summary for Pond 4P:

Inflow Area = 70,649 sf, 70.82% Impervious, Inflow Depth = 6.54" for 100-yr event
 Inflow = 16.560 cfs @ 12.13 hrs, Volume= 38,532 cf
 Outflow = 4.541 cfs @ 12.33 hrs, Volume= 38,532 cf, Atten= 73%, Lag= 11.9 min
 Primary = 4.541 cfs @ 12.33 hrs, Volume= 38,532 cf
 Routed to Link P-S :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 639.50' Surf.Area= 6,295 sf Storage= 13,277 cf
 Peak Elev= 642.03' @ 12.33 hrs Surf.Area= 8,927 sf Storage= 32,448 cf (19,170 cf above start)

Plug-Flow detention time= 482.0 min calculated for 25,255 cf (66% of inflow)
 Center-of-Mass det. time= 253.7 min (1,009.6 - 755.9)

Volume	Invert	Avail.Storage	Storage Description
#1	634.00'	52,295 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
634.00	698	0	0
635.00	1,126	912	912
636.00	1,652	1,389	2,301
637.00	2,272	1,962	4,263
638.00	2,980	2,626	6,889
638.50	3,380	1,590	8,479
639.00	4,759	2,035	10,514
639.50	6,295	2,764	13,277
640.00	6,787	3,271	16,548
641.00	7,812	7,300	23,847
642.00	8,895	8,354	32,201
643.00	10,033	9,464	41,665
644.00	11,228	10,631	52,295

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	12.0" Round Culvert L= 57.0' Ke= 0.500 Inlet / Outlet Invert= 639.50' / 639.32' S= 0.0032 1/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	639.50'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	641.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.538 cfs @ 12.33 hrs HW=642.03' (Free Discharge)
 1=Culvert (Barrel Controls 4.538 cfs @ 5.78 fps)
 2=Orifice/Grate (Passes < 0.645 cfs potential flow)
 3=Sharp-Crested Rectangular Weir (Passes < 4.854 cfs potential flow)

Summary for Pond 7P: CB 7

Inflow Area = 49,675 sf, 94.37% Impervious, Inflow Depth = 7.20" for 100-yr event
 Inflow = 12.418 cfs @ 12.13 hrs, Volume= 29,814 cf
 Outflow = 12.418 cfs @ 12.13 hrs, Volume= 29,814 cf, Atten= 0%, Lag= 0.0 min
 Primary = 12.418 cfs @ 12.13 hrs, Volume= 29,814 cf
 Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.49' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.63'	18.0" Round Culvert L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 639.63' / 639.50' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=11.872 cfs @ 12.13 hrs HW=642.37' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 11.872 cfs @ 6.72 fps)

Summary for Pond 8P: CB 8

Inflow Area = 35,829 sf, 95.87% Impervious, Inflow Depth = 7.23" for 100-yr event
 Inflow = 8.965 cfs @ 12.13 hrs, Volume= 21,597 cf
 Outflow = 8.965 cfs @ 12.13 hrs, Volume= 21,597 cf, Atten= 0%, Lag= 0.0 min
 Primary = 8.965 cfs @ 12.13 hrs, Volume= 21,597 cf
 Routed to Pond 7P : CB 7

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.50' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.18'	18.0" Round Culvert L= 107.0' Ke= 0.500 Inlet / Outlet Invert= 640.18' / 639.63' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=8.571 cfs @ 12.13 hrs HW=642.39' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 8.571 cfs @ 4.85 fps)

Summary for Pond 9P: MH 9

Inflow Area = 19,170 sf, 99.02% Impervious, Inflow Depth = 7.33" for 100-yr event
 Inflow = 4.811 cfs @ 12.13 hrs, Volume= 11,710 cf
 Outflow = 4.811 cfs @ 12.13 hrs, Volume= 11,710 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.811 cfs @ 12.13 hrs, Volume= 11,710 cf
 Routed to Pond 8P : CB 8

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.87' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	640.40'	15.0" Round Culvert L= 38.0' Ke= 0.500

Inlet / Outlet Invert= 640.40' / 640.18' S= 0.0058 '/ Cc= 0.900
 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=4.599 cfs @ 12.13 hrs HW=641.82' (Free Discharge)

↑1=Culvert (Barrel Controls 4.599 cfs @ 4.12 fps)

Summary for Pond 10P: CB 10

Inflow Area = 15,370 sf, 98.78% Impervious, Inflow Depth = 7.32" for 100-yr event
 Inflow = 3.856 cfs @ 12.13 hrs, Volume= 9,379 cf
 Outflow = 3.856 cfs @ 12.13 hrs, Volume= 9,379 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.856 cfs @ 12.13 hrs, Volume= 9,379 cf
 Routed to Pond 9P : MH 9

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 642.39' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.10'	15.0" Round Culvert L= 176.0' Ke= 0.500 Inlet / Outlet Invert= 641.10' / 640.40' S= 0.0040 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=3.687 cfs @ 12.13 hrs HW=642.35' (Free Discharge)

↑1=Culvert (Barrel Controls 3.687 cfs @ 3.73 fps)

Summary for Pond 11P: CB 11

Inflow Area = 3,931 sf, 98.19% Impervious, Inflow Depth = 7.29" for 100-yr event
 Inflow = 0.986 cfs @ 12.13 hrs, Volume= 2,389 cf
 Outflow = 0.986 cfs @ 12.13 hrs, Volume= 2,389 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.986 cfs @ 12.13 hrs, Volume= 2,389 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.99' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.33'	12.0" Round Culvert L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 641.33' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.942 cfs @ 12.13 hrs HW=641.97' (Free Discharge)

↑1=Culvert (Barrel Controls 0.942 cfs @ 2.52 fps)

Summary for Pond 13P: CB 13

Inflow Area = 5,084 sf, 62.06% Impervious, Inflow Depth = 6.29" for 100-yr event
 Inflow = 1.201 cfs @ 12.13 hrs, Volume= 2,667 cf
 Outflow = 1.201 cfs @ 12.13 hrs, Volume= 2,667 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.201 cfs @ 12.13 hrs, Volume= 2,667 cf
 Routed to Pond 4P :

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Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 640.35' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	639.73'	12.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 639.73' / 639.50' S= 0.0115 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.148 cfs @ 12.13 hrs HW=640.33' (Free Discharge)

←**1=Culvert** (Barrel Controls 1.148 cfs @ 3.34 fps)

Summary for Pond 15P:

Inflow Area = 49,227 sf, 70.48% Impervious, Inflow Depth = 6.40" for 100-yr event
 Inflow = 7.382 cfs @ 12.15 hrs, Volume= 26,251 cf
 Outflow = 5.928 cfs @ 12.24 hrs, Volume= 26,251 cf, Atten= 20%, Lag= 5.8 min
 Primary = 5.928 cfs @ 12.24 hrs, Volume= 26,251 cf
 Routed to Link P-N :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 641.96' @ 12.24 hrs Surf.Area= 896 sf Storage= 1,212 cf

Plug-Flow detention time= 1.3 min calculated for 26,251 cf (100% of inflow)

Center-of-Mass det. time= 1.3 min (774.8 - 773.5)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	4,022 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	0	0	0
640.00	250	125	125
641.00	545	398	523
642.00	912	729	1,251
643.00	1,350	1,131	2,382
644.00	1,930	1,640	4,022

Device	Routing	Invert	Outlet Devices
#1	Primary	639.00'	12.0" Round Culvert L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 639.00' / 637.96' S= 0.0693 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=5.920 cfs @ 12.24 hrs HW=641.95' (Free Discharge)

←**1=Culvert** (Inlet Controls 5.920 cfs @ 7.54 fps)

Summary for Pond 17P:

Inflow Area = 33,596 sf, 78.89% Impervious, Inflow Depth = 6.77" for 100-yr event
 Inflow = 8.019 cfs @ 12.13 hrs, Volume= 18,966 cf
 Outflow = 4.403 cfs @ 12.22 hrs, Volume= 18,966 cf, Atten= 45%, Lag= 5.6 min
 Primary = 4.403 cfs @ 12.22 hrs, Volume= 18,966 cf
 Routed to Pond 15P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Starting Elev= 641.50' Surf.Area= 1,394 sf Storage= 1,002 cf
 Peak Elev= 643.35' @ 12.22 hrs Surf.Area= 2,438 sf Storage= 4,529 cf (3,527 cf above start)

Plug-Flow detention time= 66.3 min calculated for 17,954 cf (95% of inflow)
 Center-of-Mass det. time= 20.4 min (771.1 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	13,329 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	44	0	0
640.00	174	109	109
640.50	261	109	218
641.00	741	251	468
641.50	1,394	534	1,002
642.00	1,655	762	1,764
643.00	2,222	1,939	3,703
644.00	2,831	2,527	6,229
645.00	3,528	3,180	9,409
646.00	4,312	3,920	13,329

Device	Routing	Invert	Outlet Devices
#1	Primary	641.50'	12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 641.50' / 640.00' S= 0.0242 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=4.367 cfs @ 12.22 hrs HW=643.33' (Free Discharge)
 ↑1=Culvert (Inlet Controls 4.367 cfs @ 5.56 fps)

Summary for Pond 19P:

Inflow Area = 13,311 sf, 96.80% Impervious, Inflow Depth = 7.27" for 100-yr event
 Inflow = 3.335 cfs @ 12.13 hrs, Volume= 8,059 cf
 Outflow = 3.335 cfs @ 12.13 hrs, Volume= 8,059 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.335 cfs @ 12.13 hrs, Volume= 8,059 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 643.67' @ 12.13 hrs

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Device	Routing	Invert	Outlet Devices
#1	Primary	641.76'	12.0" Round Culvert L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 641.76' / 641.50' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=3.188 cfs @ 12.13 hrs HW=643.57' (Free Discharge)↑**1=Culvert** (Barrel Controls 3.188 cfs @ 4.06 fps)**Summary for Pond 20P:**

Inflow Area = 2,703 sf, 100.00% Impervious, Inflow Depth = 7.36" for 100-yr event
 Inflow = 0.679 cfs @ 12.13 hrs, Volume= 1,658 cf
 Outflow = 0.679 cfs @ 12.13 hrs, Volume= 1,658 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.679 cfs @ 12.13 hrs, Volume= 1,658 cf
 Routed to Pond 19P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.62' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	642.08'	12.0" Round Culvert L= 106.0' Ke= 0.500 Inlet / Outlet Invert= 642.08' / 641.76' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.649 cfs @ 12.13 hrs HW=642.60' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.649 cfs @ 2.27 fps)**Summary for Pond 22P:**

Inflow Area = 4,850 sf, 85.88% Impervious, Inflow Depth = 7.00" for 100-yr event
 Inflow = 1.204 cfs @ 12.13 hrs, Volume= 2,830 cf
 Outflow = 1.204 cfs @ 12.13 hrs, Volume= 2,830 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.204 cfs @ 12.13 hrs, Volume= 2,830 cf
 Routed to Pond 17P :

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 642.30' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.57'	12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 641.57' / 641.50' S= 0.0032 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.150 cfs @ 12.13 hrs HW=642.28' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.150 cfs @ 2.72 fps)

Summary for Pond 23P: CB 23

Inflow Area = 2,608 sf, 95.55% Impervious, Inflow Depth = 7.24" for 100-yr event
 Inflow = 0.653 cfs @ 12.13 hrs, Volume= 1,574 cf
 Outflow = 0.653 cfs @ 12.13 hrs, Volume= 1,574 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.653 cfs @ 12.13 hrs, Volume= 1,574 cf
 Routed to Pond 10P : CB 10

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 641.93' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	641.40'	12.0" Round Culvert L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 641.40' / 641.10' S= 0.0030 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.624 cfs @ 12.13 hrs HW=641.91' (Free Discharge)
 ↑1=Culvert (Barrel Controls 0.624 cfs @ 2.24 fps)

Summary for Link P-N:

Inflow Area = 53,068 sf, 68.05% Impervious, Inflow Depth = 6.34" for 100-yr event
 Inflow = 6.402 cfs @ 12.19 hrs, Volume= 28,042 cf
 Primary = 6.402 cfs @ 12.19 hrs, Volume= 28,042 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link P-S:

Inflow Area = 86,718 sf, 60.62% Impervious, Inflow Depth = 6.26" for 100-yr event
 Inflow = 6.077 cfs @ 12.22 hrs, Volume= 45,220 cf
 Primary = 6.077 cfs @ 12.22 hrs, Volume= 45,220 cf, Atten= 0%, Lag= 0.0 min
 Routed to Link TP :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX:

Inflow Area = 139,786 sf, 89.95% Impervious, Inflow Depth = 6.66" for 100-yr event
 Inflow = 33.839 cfs @ 12.13 hrs, Volume= 77,543 cf
 Primary = 33.839 cfs @ 12.13 hrs, Volume= 77,543 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TEX-N:

Inflow Area = 58,635 sf, 82.66% Impervious, Inflow Depth = 6.18" for 100-yr event
Inflow = 13.702 cfs @ 12.13 hrs, Volume= 30,185 cf
Primary = 13.702 cfs @ 12.13 hrs, Volume= 30,185 cf, Atten= 0%, Lag= 0.0 min
Routed to Link TEX :

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link TP:

Inflow Area = 139,786 sf, 63.44% Impervious, Inflow Depth = 6.29" for 100-yr event
Inflow = 12.453 cfs @ 12.22 hrs, Volume= 73,262 cf
Primary = 12.453 cfs @ 12.22 hrs, Volume= 73,262 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs



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Location name: La Crosse, Wisconsin, USA*
Latitude: 43.8595°, Longitude: -91.2404°
Elevation: m/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

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PF tabular

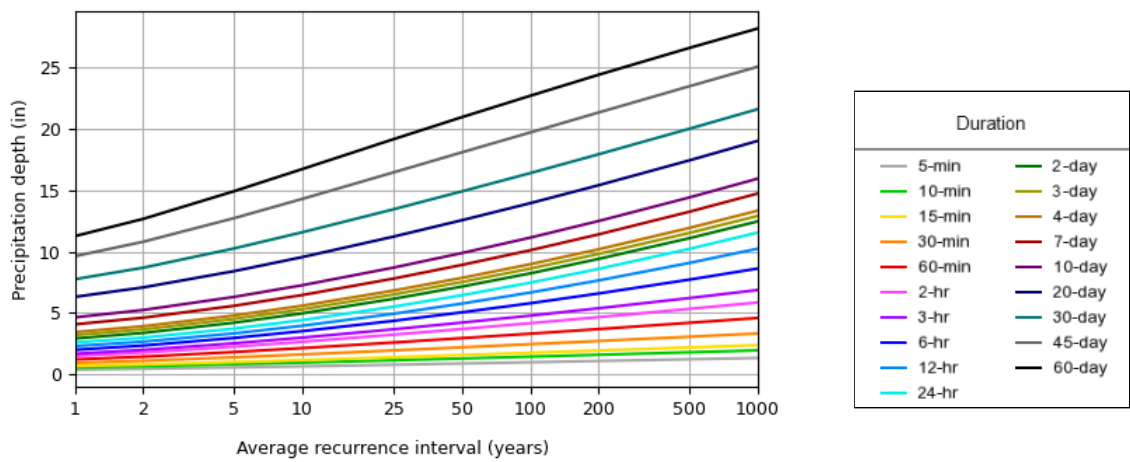
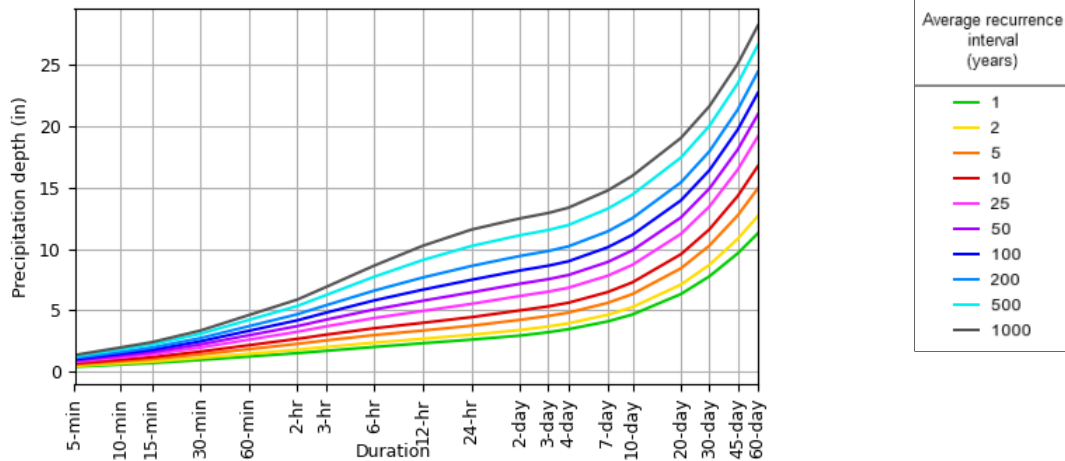
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.385 (0.329-0.458)	0.451 (0.385-0.538)	0.562 (0.477-0.671)	0.654 (0.552-0.785)	0.783 (0.632-0.967)	0.884 (0.693-1.10)	0.986 (0.740-1.26)	1.09 (0.777-1.43)	1.23 (0.835-1.65)	1.34 (0.879-1.82)
10-min	0.563 (0.481-0.671)	0.661 (0.564-0.788)	0.822 (0.699-0.983)	0.958 (0.808-1.15)	1.15 (0.926-1.42)	1.29 (1.02-1.62)	1.44 (1.08-1.84)	1.60 (1.14-2.09)	1.80 (1.22-2.42)	1.96 (1.29-2.67)
15-min	0.687 (0.587-0.819)	0.806 (0.688-0.961)	1.00 (0.852-1.20)	1.17 (0.985-1.40)	1.40 (1.13-1.73)	1.58 (1.24-1.97)	1.76 (1.32-2.25)	1.95 (1.39-2.55)	2.20 (1.49-2.95)	2.39 (1.57-3.25)
30-min	0.938 (0.801-1.12)	1.11 (0.946-1.32)	1.39 (1.18-1.66)	1.62 (1.37-1.95)	1.95 (1.57-2.41)	2.20 (1.73-2.76)	2.46 (1.85-3.14)	2.72 (1.94-3.56)	3.07 (2.08-4.12)	3.33 (2.19-4.54)
60-min	1.22 (1.04-1.45)	1.44 (1.23-1.72)	1.82 (1.55-2.18)	2.14 (1.81-2.57)	2.59 (2.10-3.21)	2.95 (2.32-3.70)	3.32 (2.49-4.25)	3.69 (2.63-4.84)	4.20 (2.86-5.65)	4.60 (3.02-6.26)
2-hr	1.50 (1.29-1.77)	1.78 (1.53-2.10)	2.25 (1.93-2.67)	2.66 (2.26-3.17)	3.24 (2.64-3.99)	3.70 (2.92-4.61)	4.17 (3.16-5.31)	4.67 (3.35-6.09)	5.34 (3.65-7.14)	5.86 (3.88-7.94)
3-hr	1.68 (1.45-1.98)	2.00 (1.72-2.35)	2.53 (2.17-2.99)	3.00 (2.55-3.55)	3.67 (3.01-4.52)	4.22 (3.35-5.25)	4.79 (3.64-6.09)	5.39 (3.89-7.02)	6.22 (4.28-8.30)	6.88 (4.57-9.28)
6-hr	2.00 (1.74-2.34)	2.35 (2.04-2.75)	2.97 (2.56-3.48)	3.52 (3.02-4.15)	4.36 (3.61-5.36)	5.06 (4.05-6.27)	5.80 (4.45-7.35)	6.60 (4.80-8.56)	7.73 (5.36-10.3)	8.64 (5.78-11.6)
12-hr	2.30 (2.01-2.67)	2.67 (2.33-3.10)	3.34 (2.90-3.88)	3.97 (3.42-4.63)	4.94 (4.13-6.05)	5.77 (4.67-7.13)	6.67 (5.17-8.43)	7.66 (5.63-9.91)	9.09 (6.36-12.0)	10.3 (6.91-13.6)
24-hr	2.60 (2.28-2.99)	2.99 (2.63-3.44)	3.73 (3.26-4.30)	4.43 (3.84-5.13)	5.51 (4.65-6.72)	6.45 (5.26-7.92)	7.47 (5.83-9.38)	8.60 (6.37-11.1)	10.2 (7.22-13.5)	11.6 (7.86-15.3)
2-day	2.92 (2.59-3.34)	3.38 (2.99-3.86)	4.21 (3.71-4.82)	4.98 (4.35-5.72)	6.15 (5.21-7.42)	7.15 (5.86-8.70)	8.24 (6.46-10.2)	9.42 (7.01-12.0)	11.1 (7.88-14.5)	12.5 (8.53-16.4)
3-day	3.20 (2.84-3.63)	3.67 (3.26-4.17)	4.52 (4.00-5.15)	5.31 (4.66-6.07)	6.51 (5.53-7.80)	7.53 (6.19-9.10)	8.63 (6.80-10.7)	9.82 (7.34-12.5)	11.5 (8.22-15.0)	12.9 (8.88-16.9)
4-day	3.44 (3.07-3.90)	3.93 (3.50-4.45)	4.80 (4.25-5.45)	5.60 (4.93-6.39)	6.83 (5.82-8.14)	7.86 (6.49-9.47)	8.98 (7.10-11.1)	10.2 (7.65-12.9)	11.9 (8.53-15.5)	13.4 (9.20-17.4)
7-day	4.08 (3.65-4.58)	4.62 (4.13-5.20)	5.59 (4.98-6.30)	6.47 (5.73-7.33)	7.80 (6.68-9.23)	8.92 (7.40-10.7)	10.1 (8.04-12.4)	11.4 (8.61-14.3)	13.3 (9.52-17.1)	14.8 (10.2-19.1)
10-day	4.65 (4.18-5.20)	5.25 (4.71-5.88)	6.31 (5.65-7.09)	7.27 (6.46-8.20)	8.70 (7.46-10.2)	9.89 (8.22-11.7)	11.2 (8.88-13.6)	12.5 (9.46-15.6)	14.4 (10.4-18.5)	16.0 (11.1-20.6)
20-day	6.32 (5.72-7.01)	7.09 (6.41-7.88)	8.41 (7.58-9.37)	9.56 (8.55-10.7)	11.2 (9.66-13.0)	12.6 (10.5-14.7)	14.0 (11.2-16.8)	15.4 (11.7-19.0)	17.5 (12.6-22.1)	19.0 (13.3-24.5)
30-day	7.76 (7.05-8.57)	8.70 (7.90-9.62)	10.3 (9.28-11.4)	11.6 (10.4-12.9)	13.5 (11.6-15.4)	14.9 (12.5-17.4)	16.4 (13.2-19.6)	18.0 (13.7-22.0)	20.0 (14.6-25.2)	21.6 (15.2-27.7)
45-day	9.63 (8.79-10.6)	10.8 (9.86-11.9)	12.7 (11.6-14.0)	14.3 (12.9-15.9)	16.5 (14.2-18.7)	18.1 (15.2-20.9)	19.7 (15.9-23.4)	21.4 (16.3-26.0)	23.5 (17.1-29.4)	25.1 (17.7-32.0)
60-day	11.3 (10.3-12.3)	12.7 (11.6-13.9)	14.9 (13.6-16.4)	16.7 (15.1-18.5)	19.2 (16.6-21.7)	21.0 (17.6-24.1)	22.7 (18.3-26.7)	24.4 (18.7-29.6)	26.6 (19.4-33.1)	28.2 (20.0-35.8)

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: 43.8595°, Longitude: -91.2404°



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Maps & aerials

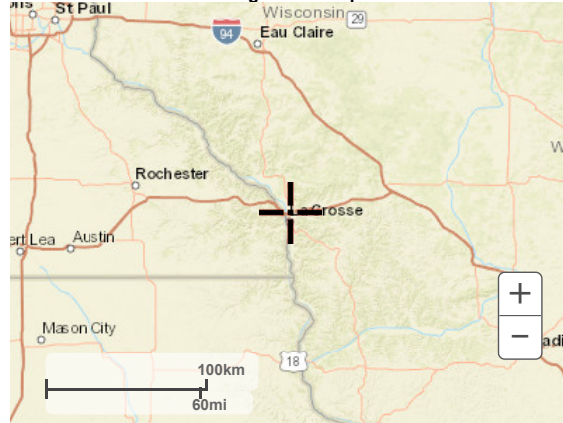
Small scale terrain



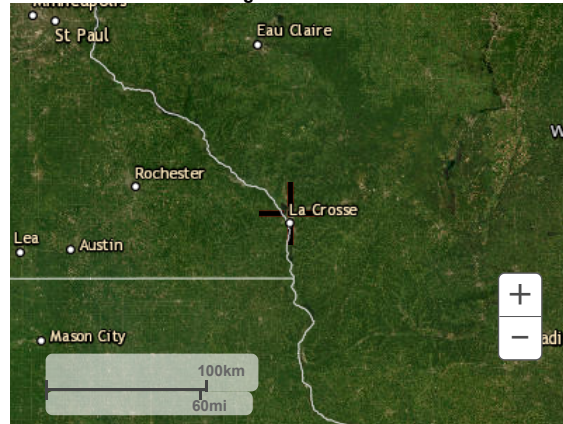
Large scale terrain



Large scale map



Large scale aerial



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