Kwik Trip La Crosse, WI #762

Stormwater Management Calculations

1/17/2024



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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.

| | 1010110 | | |
|-------|-----------------|---------------|------------|
| 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 |

Existing Conditions

See Attached Existing Conditions Drainage Area Map *Offsite area

| 1 Toposed 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 HB Event | Existing Runoff (cfs): | | Proposed Runoff (cfs): | |
|--------------|------------------------|---|------------------------|--|
| Z4-HK, EVENI | Link TEX | | 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 Mulbery Lane

| 24 LID Event | Existing Runoff (cfs): | | Proposed Runoff (cfs): | |
|---------------|------------------------|---|------------------------|--|
| 24-fik, Event | Link TEX-N | | 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 HD Event | Existing Runoff (cfs): | | Proposed Runoff (cfs): |
|--------------|------------------------|---|------------------------|
| Z4-HK, EVEIL | Node EX S | | 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 = | 44,573 sf = | 5461 sf = | 20,615 sf = |
| | 1.622 acres | 1.02 acres | 0.125 acres | 0.473 acres |
| To Pond 17P | 33,596 sf = | 17,050 sf = | 9,454 sf = | 7,092 sf = |
| | 0.771 acres | 0.391 acres | 0.217 acres | 0.163 acres |
| To Pond 15P | 15,631 sf = | 8,189 sf = | n/a | 7,442 sf = |
| | 0.359 acres | 0.188 acres | | 0.171 acres |
| Untreated | 19,910 sf = | 3,960 sf = | n/a | 15,950 sf = |
| (Areas 15, 16, | 0.457 acres | 0.091 acres | | 0.366 acres |
| 18, 19) | | | | |

| 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 4P Stage Storage Table:

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

| | Peak Discharge | |
|--------------|----------------|--------|
| 24-HR, Event | 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

| | Peak Discharge | |
|--------------|----------------|--------|
| 24-HR, Event | 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

| | Peak Discharge | |
|--------------|----------------|--------|
| 24-HR, Event | 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 | C | contributing Are | ea | | Pipe | Flow | | | Pipe Data | | | Elevations | | | | | Che | ecks: | |
|-----------|------------|---------|------------------|----------|--------|---------|-------|-------|--------|-----------|-------|------------|------------|----------|--------------|---------------|--------------------|-------------------|----------|-------|
| Upstream | Downstream | Roof | Paved | Pervious | Area R | unoff** | Total | Flow | Length | Diameter | Slope | Capacity * | Capacity * | Velocity | Rim Elev. Up | Inv. Elev. Up | Inv. Elev. Down | Cover to Crown | Capacity | Cover |
| Structure | Structure | (sq ft) | (sq ft) | (sq ft) | (GPM) | (cfs) | (GPM) | (cfs) | (ft) | (in) | (%) | (GPM) | (cfs) | (ft/s) | (feet) | (feet) | (feet) | (feet) | | |
| | | | | | | | | | | | | | | | | | | | | |
| 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\v10.1 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 ending date: 12/28/59 Study period starting date: 01/02/59 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 Pond Area Natural Seepage Other Outflow Entry Stage Number (ft) (acres) (in/hr) (cfs) 0.ÒÓ 0 0.0000 Ò.00 Ò.0Ó 1 1.00 0.0258 0.00 0.00 2 0.0379 2.00 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 0.1445 5.50 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 10.00 12 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 Stage Pond Area Natural Seepage Other Outflow Number (acres) (in/hr) (cfs) (ft) 0.ÒÓ 0.0000 Ò.00 0 0.00 1.00 0.0039 0.00 0.00 1 2 0.0060 1.50 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 5.00 0.0650 0.00 0.00 7 8 6.00 0.0812 0.00 0.00 0.0992 9 7.00 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 Pond Area Natural Seepage Other Outflow Entry Stage Number (ft) (acres) (in/hr) (cfs) 0.0000 0 0.ÒÓ Ò.00 Ò.0Ó 0.0082 1.00 0.00 0.00 1 2 3 2.00 0.0154 0.00 0.00 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

Outfall Total with Controls:

Annualized Total After Outfall Controls:

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\v10.1 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 Percent Particulate Particulate Percent Solids Particulate Volume Runoff Solids Volume Conc. Yield Solids (cu ft) Reduction (lbs) Reduction (mg/L) Total of all Land Uses without Controls: 986.9 133843 118.1

8.82%

51.35

60.36%

391.2

396.7

122039

123734







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

| Εv | ent# | Event | Storm Type | Curve | Mode | Duration | B/B | Depth | AMC |
|----|------|--------|------------|-------|---------|----------|-----|----------|-----|
| | | Name | | | | (hours) | | (inches) | |
| | 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 |

Rainfall Events Listing

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

| Subcatchment1S: | 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 |
|-------------------------------|--|
| Subcatchment2S: | 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 |
| Subcatchment3S: | 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 |
| Subcatchment4S: 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 |
| Subcatchment5S: | 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 |
| Subcatchment6S: | Runoff Area=2,270 sf 96.87% Impervious Runoff Depth=2.67" Tc=6.0 min CN=97 Runoff=0.220 cfs 505 cf |
| Subcatchment7S: | Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=2.67" Tc=6.0 min CN=97 Runoff=0.253 cfs 580 cf |
| Subcatchment8S: | Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=2.78" Tc=6.0 min CN=98 Runoff=0.266 cfs 626 cf |
| Subcatchment9S: | 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 |
| Subcatchment10S: | Runoff Area=4,850 sf 85.88% Impervious Runoff Depth=2.46" Tc=6.0 min CN=95 Runoff=0.450 cfs 994 cf |
| Subcatchment11S: 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 |
| Subcatchment12S: 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 |
| Subcatchment13S: | 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 |
| Subcatchment14b: | 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 |
| Subcatchment15S: 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 S | SouthRunoff Area=7,202 sf33.32% ImperviousRunoff Depth=1.39"Tc=6.0 minCN=82Runoff=0.412 cfs832 cf |
|-----------------------------|---|
| Subcatchment17S: | 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 I | 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 S | 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 |
| SubcatchmentOS-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" Printed 1/17/2024 LC Page 5

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|--------------------|-----------|--|
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| Pond 22P: | | | | Peal | k Elev=641.99 | ' Inflow=0.450 c | fs 994 cf |
|-----------------|-------|--------------|---------|---------|---------------------------------|------------------|-----------|
| | 12.0" | Round Culver | n=0.013 | L=22.0' | S=0.0032 '/' | Outflow=0.450 c | fs 994 cf |
| Pond 23P: CB 23 | | | | Peal | K Elev=641.72 | ' Inflow=0.253 c | fs 580 cf |
| | 12.0" | Round Culver | n=0.013 | L=99.0' | S=0.0030 '/' | Outflow=0.253 c | fs 580 cf |
| Link P-N: | | | | | | Inflow=2.891 cfs | 9,036 cf |
| | | | | | Р | rimary=2.891 cfs | 9,036 cf |
| Link P-S: | | | | | I | nflow=1.070 cfs | 14,444 cf |
| | | | | | Pri | imary=1.070 cfs | 14,444 cf |
| Link TEX: | | | | | In | flow=11.872 cfs | 25,558 cf |
| | | | | | Prin | nary=11.872 cfs | 25,558 cf |
| Link TEX-N: | | | | | | Inflow=4.341 cfs | 8,928 cf |
| | | | | | Р | rimary=4.341 cfs | 8,928 cf |
| Link TP: | | | | | I | nflow=3.939 cfs | 23,480 cf |
| | | | | | Pri | imary=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 parki | ng, HSG C | |
| 15,890 | 74 | >75% Ġrass | s cover, Goo | od, HSG C |
| 15,890 | 74 | Weighted Av | verage | |
| 15,890 | | 100.00% Pe | rvious Area | |
| | | | | |
| Tc Length | Slop | be Velocity | Capacity | Description |
| (min) (feet) | (ft/1 | ft) (ft/sec) | (cfs) | |
| 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"

| A | rea (sf) | CN | Description | | | | |
|-------------|------------------|----------------|---------------------------|-------------------|-----------------------|--|--|
| | 12,529 | 98 | Paved parki | ng, HSG C | | | |
| | 1,317 | 74 | >75% Grass | cover, Goo | od, HSG C | | |
| | 13,846 | 96 | Weighted Av | /eighted Average | | | |
| | 1,317 | | 9.51% Pervi | ous Area | | | |
| | 12,529 | | 90.49% imp | ervious Area | d | | |
| Tc (min) | Length (feet) | Slop (ft/ft | e 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

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| Α | rea (sf) | CN | Description | | |
|-------------|---|-----------------------|--|---|-----------------------|
| | 15,366 | 98 | Paved parki | ng, HSG C | |
| | 1,293 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| Tc (min) | 16,659 1,293 15,366 Length (feet) | 96 Slope (ft/ft | Weighted Av 7.76% Pervi 92.24% Imp e Velocity) (ft/sec) | verage ous Area ervious Area Capacity (cfs) | a Description |
| 6.0 | / | X - | // | | Direct Entry, Minimum |

Summary for Subcatchment 4S: Pump Canopy

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

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"

| A | rea (sf) | CN | Description | Jescription | | | | | | |
|-------|----------|-------|-------------|-------------------------|-----------------------|--|--|--|--|--|
| | 3,800 | 98 | Paved parki | ng, HSG C | | | | | | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | | | |
| | 3,800 | 98 | Weighted Av | verage | | | | | | |
| | 3,800 | | 100.00% Im | 100.00% Impervious Area | | | | | | |
| | | | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | | | |
| 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

| A | rea (sf) | CN | Description | | | | | |
|--------------|-------------|-------|-------------------------------|-------------------------|-----------------------|--|--|--|
| | 8,831 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass cover, Good, HSG C | | | | | |
| | 8,831 | 98 | Weighted Av | /erage | | | | |
| | 8,831 | | 100.00% Im | 100.00% Impervious Area | | | | |
| Та | l a sa aith | Clan | | Consolity | Description | | | |
| IC | Length | Slop | e velocity | Capacity | Description | | | |
| <u>(min)</u> | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| 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"

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|--------|-------------------------------|---------------------|-----------------------|--|--|--|
| | 2,199 | 98 | Paved parki | ng, HSG C | | | | |
| | 71 | 74 | >75% Grass cover, Good, HSG C | | | | | |
| | 2,270 | 97 | Weighted Average | | | | | |
| | 71 | | 3.13% Pervi | 3.13% Pervious Area | | | | |
| | 2,199 | | 96.87% Imp | ervious Area | а | | | |
| | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/ft | i) (ft/sec) | (cfs) | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | |
| | | | | | | | | |

Summary for Subcatchment 7S:

580 cf, Depth= 2.67"

Runoff = 0.253 cfs @ 12.13 hrs, Volume= 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"

| A | rea (sf) | CN | Description | | |
|---------------|----------|------|-------------|--------------|-----------------------|
| | 2,492 | 98 | Paved parki | ng, HSG C | |
| | 116 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 2,608 | 97 | Weighted Av | verage | |
| | 116 | | 4.45% Perv | ous Area | |
| | 2,492 | | 95.55% Imp | ervious Area | ea |
| То | Longth | Slop | - Volooity | Consoity | Description |
| IC (maine) | Lengin | Siop | | Capacity | Description |
| <u>(min)</u> | (teet) | (π/п | .) (11/sec) | (CIS) | |
| 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 :

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| MSE 24 | hr 3 2-yr Rainfall=3.01" |
|---------------|--------------------------|
| | Printed 1/17/2024 |
| Solutions LLC | Page 9 |

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|---------------|---|------------------------------|-----------------------|--|--|--|
| | 2,703 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | 75% Grass cover, Good, HSG C | | | | |
| | 2,703 2,703 | 98 | Weighted Average 100.00% Impervious Area | | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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) Cl | N D | escription | | | | |
|---------------------|---------------|------------------|------------------------------|-------------------|-----------------------|--|--|
| 10,1 | 82 9 | 8 P | aved parkir | ng, HSG C | | | |
| 4 | 26 74 | 4 > | 75% Grass cover, Good, HSG C | | | | |
| 10,6 | 08 9 | 7 V | Veighted Av | verage | | | |
| 4 | 26 | 4 | 4.02% Pervious Area | | | | |
| 10,1 | 82 | 9 | 5.98% Imp | ervious Area | a | | |
| Tc Len (min) (fe | gth S eet) | 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 :

| A | rea (sf) | CN | Description | | |
|-------|----------|--------|-------------|--------------|-----------------------|
| | 4,165 | 98 | Paved parki | ng, HSG C | |
| | 685 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 4,850 | 95 | Weighted Av | verage | |
| | 685 | | 14.12% Per | vious Area | |
| | 4,165 | | 85.88% Imp | ervious Area | a |
| | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | |
| 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"

| Are | ea (sf) | CN | Description | | | | | | |
|-------|--|-------|-------------------------|-------------------------------|-----------------------|--|--|--|--|
| | 9,454 | 98 | Paved parki | ng, HSG C | | | | | |
| | 0 | 74 | >75% Grass | >75% Grass cover, Good, HSG C | | | | | |
| | 9,454 | 98 | Weighted Average | | | | | | |
| | 9,454 | | 100.00% Impervious Area | | | | | | |
| | | | | | | | | | |
| Tc I | Length | Slop | e Velocity | Capacity | Description | | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | | |
| 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"

| rea (sf) | CN | Description | | | | | |
|----------|--|--|--|---|--|--|--|
| 1,661 | 98 | Paved parki | ng, HSG C | | | | |
| 0 | 74 | >75% Grass cover, Good, HSG C | | | | | |
| 1,661 | 98 | Weighted Av | /erage | | | | |
| 1,661 | | 100.00% Im | 100.00% Impervious Area | | | | |
| | | | | | | | |
| Length | Slop | e Velocity | Capacity | Description | | | |
| (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| | | | | Direct Entry, Minimum | | | |
| | rea (sf) 1,661 0 1,661 1,661 Length (feet) | rea (sf) CN 1,661 98 0 74 1,661 98 1,661 Length Slop (feet) (ft/ft | rea (sf) CN Description 1,661 98 Paved parkin 0 74 >75% Grass 1,661 98 Weighted Av 1,661 100.00% Imp Length Slope Velocity (feet) (ft/ft) (ft/sec) | rea (sf)CNDescription1,66198Paved parking, HSG C074>75% Grass cover, Good1,66198Weighted Average1,661100.00% Impervious AreLengthSlopeVelocityCapacity(feet)(ft/ft) | | | |

Summary for Subcatchment 13S:

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

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

| Kwik T | rip - La | Crosse | e, WI #70 | 62 | | MSE 24 | -hr 3 2-yr Rainfall: | =3.01" |
|---------------------|------------------------|----------------------|-----------------------|--------------------------------------|-------------------|------------------|----------------------|---------------|
| Prepare | d by Sun | ide Eng | ineering | PLLC | | | Printed 1/1 | 7/2024 |
| HydroCA | <u>D® 10.20-</u> | <u>4a_s/n 02</u> | <u>2350 © 20</u> | 23 HydroCAD | Software Solution | ons LLC | Pa | <u>age 11</u> |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry | , Minimum | | |
| | | | Su | mmary for | Subcatchm | ient 14a: | | |
| Runoff Route | = ed to Pond | 0.210 d d 15P : | cfs @ 12 | 2.14 hrs, Volu | ume= | 433 cf, Depth | ר= 0.91" | |
| Runoff b MSE 24- | y SCS TF -hr 3 2-yr | R-20 met Rainfall | hod, UH= =3.01" | SCS, Weight | ed-CN, Time S | 9pan= 0.00-96.00 |) hrs, dt= 0.05 hrs | |
| A | rea (sf) | CN [| Descriptio | n | | | | |
| | 0 5,685 | 98 F 74 > | Paved par •75% Gra | king, HSG C <u>ss cover, Go</u> o | od, HSG C | | | |
| | 5,685 5,685 | 74 N 1 | Veighted 00.00% F | Average Pervious Area | 1 | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry | , Minimum | | |
| | | | Su | mmary for | Subcatchm | ent 14b: | | |
| Runoff Route | = ed to Pone | 0.736 d d 15P : | cfs @ 12 | 2.13 hrs, Volu | ume= | 1,514 cf, Depth | n= 1.83" | |
| Runoff b MSE 24- | y SCS TF -hr 3 2-yr | R-20 met Rainfall | hod, UH= =3.01" | SCS, Weight | ed-CN, Time S | pan= 0.00-96.00 |) hrs, dt= 0.05 hrs | |
| А | rea (sf) | CN [| Descriptio | n | | | | |
| | 8,189 | 98 F | Paved par | king, HSG A | | | | |
| | 1,757 | 39 > | •75% Gra | ss cover, Go | od, HSG A | | | |
| | 9,946 | 88 V | Veighted | Average | | | | |

| _ | 1,757 8,189 | 1 8 | 7.67% Per 2.33% Imp | vious Area ervious Area | | |
|-------|----------------|---------|------------------------|----------------------------|-------------|--|
| Тс | Length | Slope | Velocity | Capacity | Description | |
| | (feet) | (ft/ft) | (ft/sec) | (cfs) | | |
| (min) | (leet) | | (10000) | (010) | | |

Summary for Subcatchment 15S: Offsite West

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

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(feet)

(min)

6.0

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(ft/ft)

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(ft/sec)

| | 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 Length | Slop | be Velocity Capacity Description | | | | |

Summary for Subcatchment 16S: Offsite South

Direct Entry, Minimum

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

(cfs)

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"

| CN | Description | | |
|-------|---------------------------------------|--|---|
| 98 | Paved parki | ng, HSG C | |
| 74 | >75% Grass | s cover, Goo | od, HSG C |
| 82 | Weighted A | verage | |
| | 66.68% Per | vious Area | |
| | 33.32% Imp | ervious Area | а |
| | | | |
| Slop | e Velocity | Capacity | Description |
| (ft/1 | t) (ft/sec) | (cfs) | |
| | | | Direct Entry, Minimum |
| | | | |
| | CN 98 74 82 Slop (ft/f | CNDescription98Paved parki74>75% Grass82Weighted A66.68% Per33.32% ImpSlopeVelocity(ft/ft)(ft/sec) | CNDescription98Paved parking, HSG C74>75% Grass cover, God82Weighted Average66.68% Pervious Area33.32% Impervious AreaSlopeVelocityCapacity(ft/ft)(ft/sec)(cfs) |

Summary for Subcatchment 17S:

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

| A | rea (sf) | CN | Description | | | | |
|--------------|----------|--------|-------------------------------|--------------|-----------------------|--|--|
| | 3,155 | 98 | Paved parking, HSG C | | | | |
| | 1,929 | 74 | >75% Grass cover, Good, HSG C | | | | |
| | 5,084 | 89 | Weighted Av | verage | | | |
| | 1,929 | | 37.94% Per | vious Area | | | |
| | 3,155 | | 62.06% Imp | ervious Area | а | | |
| | | | | | | | |
| Тс | Length | Slope | e Velocity | Capacity | Description | | |
| <u>(min)</u> | (feet) | (ft/ft | :) (ft/sec) | (cfs) | | | |
| 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 | l 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"

| Α | rea (sf) | CN | Description | | | | |
|-------------|------------------|---------------|---------------------------|-------------------|-----------------------|--|--|
| | 1,421 | 98 | Paved parking, HSG C | | | | |
| | 2,420 | 74 | >75% Grass | s cover, Goo | d, HSG C | | |
| | 3,841 | 83 | Weighted Av | verage | | | |
| | 2,420 | | 63.00% Per | vious Area | | | |
| | 1,421 | | 37.00% Imp | ervious Area | а | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (ft/sec) | Capacity (cfs) | Description | | |
| 6.0 | | | | | Direct Entry, Minimum | | |
| | | | | | | | |

Summary for Subcatchment 19S: Offsite SE

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

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"

| A | rea (sf) | CN | Description | | |
|-------|----------|--------|-------------|--------------|------------------------|
| | 139 | 98 | Paved parki | ng, HSG C | |
| | 2,185 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 2,324 | 75 | Weighted Av | verage | |
| | 2,185 | | 94.02% Per | vious Area | |
| | 139 | | 5.98% Impe | rvious Area | |
| Tc | l enath | Slop | e Velocity | Canacity | Description |
| (min) | (feet) | (ft/fi | (ft/sec) | (cfs) | Description |
| 60 | (1901) | (101) | ., (| (010) | Direct Entry Minimum |
| 0.0 | | | | | Direct Littiy, 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 :

Kwik Trip - La Crosse, WI #762

Prepared by Sunde Engineering PLLC

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| Page 14 |
| - |
| |

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

| A | rea (sf) | CN | Description | | | |
|-------|----------|--------|----------------------|--------------|-----------------------|--|
| | 40,279 | 98 | Paved parking, HSG A | | | |
| | 8,410 | 39 | >75% Grass | cover, Goc | od, HSG A | |
| | 48,689 | 88 | Weighted Av | verage | | |
| | 8,410 | | 17.27% Per | vious Area | | |
| | 40,279 | | 82.73% Imp | ervious Area | а | |
| - | | ~ | | • • | | |
| IC | Length | Slope | e Velocity | Capacity | Description | |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cts) | | |
| 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 parki | ng, HSG A | |
| 3,880 |) 39 | >75% Grass | s cover, Goo | od, HSG A |
| 81,151 3,880 77,271 | 95 | Weighted A 4.78% Perv 95.22% Imp | verage ious Area ervious Area | a |
| Tc Lengt | h Slop | be Velocity | Capacity | Description |
| | (10 | (17360) | (03) | Direct Entry Minimum |
| 0.0 | | | | 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 :

| Α | rea (sf) | CN | Description | | | | |
|-------------|----------|-------|-------------------------------|--------------|-----------------------|--|--|
| | 8,189 | 98 | Paved parking, HSG A | | | | |
| | 1,757 | 39 | >75% Grass cover, Good, HSG A | | | | |
| | 9,946 | 88 | Weighted A | verage | | | |
| | 1,757 | | 17.67% Pervious Area | | | | |
| | 8,189 | | 82.33% Imp | ervious Area | а | | |
| То | Longth | Slop | - Volocity | Canacity | Description | | |
| IC (min) | (feet) | 010p | | Capacity | Description | | |
| <u>(mn)</u> | (ieet) | (ועוו |) (II/Sec) | (CIS) | | | |
| 6.0 | | | | | Direct Entry, Minimum | | |

Summary for Pond 4P:

| 1000 = 5.746 crs @ 12.13 nrs, Volume = 12,926 cr = 12,926 cr | 540 · |
|--|----------|
| Outflow = $0.411 \text{ cfs} @ 13.04 \text{ hrs}, \text{ Volume} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ Atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ Lag} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 93\%, \text{ atten} = 12,926 \text{ cf}, \text{ atten} = 12$ | 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= $0.00-96.00$ brs. dt= 0.05 brs. | |
| Starting Elev= 639 50' Surf Area= 6 295 sf Storage= 13 277 cf | |
| Peak Elev= $640.63' @ 13.04 \text{ hrs}$ Surf Area= 7.428 sf Storage= 20.992 cf (7.715 cf above) | start) |
| | otarty |
| 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 (Reca | lc) |
| | |
| Elevation Surf.Area Inc.Store Cum.Store | |
| (feet) (sq-ft) (cubic-feet) (cubic-feet) | |
| 634.00 698 0 0 | |
| | |
| 635.00 1,126 912 912 | |
| 635.00 1,126 912 912 636.00 1,652 1,389 2,301 | |
| 635.00 1,126 912 912 636.00 1,652 1,389 2,301 637.00 2,272 1,962 4,263 | |
| 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 | |
| 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 | |
| 635.001,126912912636.001,6521,3892,301637.002,2721,9624,263638.002,9802,6266,889638.503,3801,5908,479639.004,7592,03510,514 | |
| 635.001,126912912636.001,6521,3892,301637.002,2721,9624,263638.002,9802,6266,889638.503,3801,5908,479639.004,7592,03510,514639.506,2952,76413,277 | |

| 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 '/' 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) |

23,847 32,201

41,665

52,295

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)

7,300

8,354

9,464

10,631

7,812

8,895

10,033

11,228

641.00

642.00

643.00

644.00

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, Atten= 0%, Lag= 0.0 min

 Routed to Pond 4P :
 10.906 cf
 10,906 cf

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 Are | a = | 35,829 sf, | 95.87% Impervious, | Inflow Depth = 2.66 | 6" 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, A | Atten= 0%, Lag= 0.0 min |
| Primary | = | 3.460 cfs @ | 12.13 hrs, Volume= | 7,950 cf | - |
| Routed | l 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 Are | a = | 19,170 sf, | 99.02% Impervious, | Inflow Depth = 2.75" for 2-yr e | vent |
|------------|---------|-------------|--------------------|---------------------------------|--------------|
| Inflow | = | 1.878 cfs @ | 12.13 hrs, Volume= | 4,394 cf | |
| Outflow | = | 1.878 cfs @ | 12.13 hrs, Volume= | 4,394 cf, Atten= 0%, La | ag = 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 '/' Cc= 0.900 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 Are | ea = | 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, A | Atten= 0%, Lag= 0.0 min |
| Primary | = | 1.504 cfs @ | 12.13 hrs, Volume= | 3,514 cf | - |
| Routed | d to F | ond 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 '/' Cc= 0.900 |
| | | | n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 st |

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% Imper | vious, Inflow | / Depth = | 2.71' | for 2-y | r event |
|-------------|---------|-------------|---------------|---------------|-----------|-------|-----------|--------------|
| Inflow | = | 0.383 cfs @ | 12.13 hrs, Vo | olume= | 889 (| cf | | |
| Outflow | = | 0.383 cfs @ | 12.13 hrs, Vo | olume= | 889 (| cf, A | tten= 0%, | Lag= 0.0 min |
| Primary | = | 0.383 cfs @ | 12.13 hrs, Vo | olume= | 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 '/' Cc= 0.900 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 :
 12.13 hrs, Volume=
 809 cf

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 | a = | 49,227 sf, | 70.48% Impe | ervious, | Inflow Depth = | 2.0 |)9" for 2-y | r event |
|-------------|-----------|-------------|--------------|----------|----------------|-----|-------------|--------------|
| Inflow | = | 2.819 cfs @ | 12.16 hrs, V | /olume= | 8,571 | cf | - | |
| Outflow | = | 2.718 cfs @ | 12.19 hrs, V | /olume= | 8,571 | cf, | Atten= 4%, | Lag= 1.6 min |
| Primary | = | 2.718 cfs @ | 12.19 hrs, V | /olume= | 8,571 | cf | | • |
| Routed | to Link F | 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 | ١n | vert Avail | .Storage | Storage | Description | | | |
|----------|---------|------------|------------|--|-------------------|---------------------------------------|--|--|
| #1 | 639. | 00' | 4,022 cf | Custom | n Stage Data (Pr | ismatic) Listed below (Recalc) | | |
| Elevatio | on | Surf.Area | Inc | .Store | Cum.Store | | | |
| (tee | et) | (sq-ft) | (Cubi | c-feet) | (cubic-feet) | | | |
| 639.0 | 00 | 0 | | 0 | 0 | | | |
| 640.0 | 00 | 250 | | 125 | 125 | | | |
| 641.0 | 00 | 545 | | 398 | 523 | | | |
| 642.0 | 00 | 912 | | 729 | 1,251 | | | |
| 643.0 | 00 | 1,350 | | 1,131 | 2,382 | | | |
| 644.0 | 00 | 1,930 | | 1,640 | 4,022 | | | |
| Device | Routing | ١n | vert Outle | et Device | S | | | |
| #1 | Primary | 639. | 00' 12.0 | " Round | I Culvert L= 15. | 0' Ke= 0.500 | | |
| | • | | Inlet | Inlet / Outlet Invert= 639.00' / 637.96' S= 0.0693 '/' Cc= 0.900 | | | | |
| | | | n= 0 | .013 Cor | ncrete pipe, beno | ds & 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 | a = | 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, Atte | en= 30%, | Lag= 4.2 min |
| Primary | = | 2.011 cfs @ | 12.20 hrs, Volume= | 6,623 | cf | | - |
| Routed | to Pond | 15P : | | | | | |
| Routing by | Stor-Inc | l method Tim | e Span= 0 00-96 00 h | 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 | Inve | ert Ava | il.Storage | Storage | Description | |
|----------|---------|-----------|-------------------------------------|---|--|---|
| #1 | 639.0 | 00' | 13,329 cf | Custom | n Stage Data (Pr | ismatic) Listed below (Recalc) |
| | | | | _ | | |
| Elevatio | n | Surf.Area | Inc | Store | Cum.Store | |
| (feet | t) | (sq-ft) | (cubio | c-feet) | (cubic-feet) | |
| 639.0 | 0 | 44 | | 0 | 0 | |
| 640.0 | 0 | 174 | | 109 | 109 | |
| 640.5 | 0 | 261 | | 109 | 218 | |
| 641.0 | 0 | 741 | | 251 | 468 | |
| 641.5 | 0 | 1,394 | | 534 | 1,002 | |
| 642.0 | 0 | 1,655 | | 762 | 1,764 | |
| 643.0 | 0 | 2,222 | | 1,939 | 3,703 | |
| 644.0 | 0 | 2,831 | | 2,527 | 6,229 | |
| 645.0 | 0 | 3,528 | | 3,180 | 9,409 | |
| 646.0 | 0 | 4,312 | | 3,920 | 13,329 | |
| | | | | | | |
| Device | Routing | In | vert Outle | et Device | S | |
| #1 | Primary | 641 | .50' 12.0' Inlet n= 0. | ' Round / Outlet I 013 Cor | I Culvert L= 62. nvert= 641.50' / ncrete pipe, bend | 0' Ke= 0.500 640.00' S= 0.0242 '/' Cc= 0.900 ds & 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 | a = | 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

| Kwik | Trip - | La | Cr | osse, | WI | #76 | 2 | |
|-------|----------|----------|----|-------|----|------------|-----|--------|
| Drama | برط ام م | C | | | | | 1 1 | \sim |

| Prepared by Sunde Engineering PLLC | |
|---|--|
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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 | a = | 2,703 sf,1 | 00.00% Im | pervious, | Inflow Depth = | 2.7 | '8" for 2-y | r 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 | | 0 |
| 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 | a = | 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 mi |
| 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
 580 cf
 580 cf

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 A | Area | = | | 139,786 sf, | 89.95% Im | pervious, | Inflow Depth | n = 2.1 | 19" for | 2-yr even | t |
|----------|------|---|---|-------------|------------|-----------|--------------|---------|---------|-----------|---------|
| Inflow | | = | 1 | 1.872 cfs @ | 12.13 hrs, | Volume= | 25, | 558 cf | | - | |
| Primar | у | = | 1 | 1.872 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 | ı = | 139,786 sf, | 63.44% Im | pervious, | Inflow Depth = | 2.0 |)2" fo | or 2-y | r event | |
|----------|------|-----|-------------|------------|-----------|----------------|-----|--------|--------|----------|-------|
| Inflow | | = | 3.939 cfs @ | 12.16 hrs, | Volume= | 23,480 | cf | | • | | |
| Primar | у | = | 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

| Subcatchment1S: | 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 |
|--------------------------------|--|
| Subcatchment2S: | 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 |
| Subcatchment3S: | 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 |
| Subcatchment4S: 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 |
| Subcatchment7S: | Runoff Area=2,608 sf 95.55% Impervious Runoff Depth=4.12" Tc=6.0 min CN=97 Runoff=0.381 cfs 895 cf |
| Subcatchment8S: | Runoff Area=2,703 sf 100.00% Impervious Runoff Depth=4.23" Tc=6.0 min CN=98 Runoff=0.398 cfs 954 cf |
| Subcatchment9S: | 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 |
| Subcatchment10S: | 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 |
| Subcatchment11S: 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 |
| Subcatchment13S: | 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 |
| Subcatchment14b: | 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 |

| Kwik Trip - La Crosse, Prepared by Sunde Engin HydroCAD® 10.20-4a s/n 023 | WI #762 eering PLLC 50 © 2023 Hydrod | CAD Software Solutic | MSE 24-hr 3 | 10-yr Rainfall=4.47" Printed 1/17/2024 Page 24 |
|---|--|--|--|--|
| Subcatchment16S: Offsite | South | Runoff Area=7,202 Tc | 2 sf 33.32% Imperviou =6.0 min CN=82 Rui | is Runoff Depth=2.61" noff=0.765 cfs 1,566 cf |
| Subcatchment17S: | | Runoff Area=5,084 Tc | sf 62.06% Imperviou =6.0 min CN=89 Rui | is Runoff Depth=3.27" noff=0.650 cfs 1,384 cf |
| Subcatchment18S: Offsite | NE | Runoff Area=3,841 1 | sf 37.00% Imperviou c=6.0 min CN=83 R | is Runoff Depth=2.70" unoff=0.420 cfs 864 cf |
| Subcatchment 19S: Offsite | SE | Runoff Area=2,32 1 | 4 sf 5.98% Imperviou c=6.0 min CN=75 R | is Runoff Depth=2.03" unoff=0.194 cfs 393 cf |
| Subcatchment EX N: | | Runoff Area=48,689 Tc= | sf 82.73% Imperviou 6.0 min CN=88 Rund | is Runoff Depth=3.17" off=6.085 cfs 12,854 cf |
| Subcatchment EX S: | | Runoff Area=81,151 Tc=6 | sf 95.22% Imperviou 0 min CN=95 Runot | is Runoff Depth=3.90" ff=11.582 cfs 26,341 cf |
| Subcatchment OS-N: | | Runoff Area=9,946 Tc | sf 82.33% Imperviou =6.0 min CN=88 Rui | is Runoff Depth=3.17" noff=1.243 cfs 2,626 cf |
| Pond 4P: | F | Peak Elev=641.29' S | torage=26,141 cf Inflo Outflo | ow=9.143 cfs 20,866 cf ow=0.535 cfs 20,866 cf |
| Pond 7P: CB 7 | 18.0" Round Cu | Po Ivert n=0.013 L=25 | eak Elev=641.36' Inflo 0' S=0.0052 '/' Outflo | ow=7.221 cfs 16,901 cf ow=7.221 cfs 16,901 cf |
| Pond 8P: CB 8 | 18.0" Round Cul | Po vert n=0.013 L=107 | eak Elev=641.49' Inflo 0' S=0.0051 '/' Outflo | ow=5.221 cfs 12,279 cf ow=5.221 cfs 12,279 cf |
| Pond 9P: MH 9 | 15.0" Round (| F Culvert n=0.013 L=3 | Peak Elev=641.40' Inf 3.0' S=0.0058 '/' Outf | low=2.814 cfs 6,717 cf low=2.814 cfs 6,717 cf |
| Pond 10P: CB 10 | 15.0" Round Cu | ا Ilvert n=0.013 L=17 | Peak Elev=642.00' Inf 5.0' S=0.0040 '/' Outf | low=2.255 cfs 5,376 cf low=2.255 cfs 5,376 cf |
| Pond 11P: CB 11 | 12.0" Round C | F Culvert n=0.013 L=7 | Peak Elev=641.82' Inf 5.0' S=0.0030 '/' Outf | low=0.576 cfs 1,365 cf low=0.576 cfs 1,365 cf |
| Pond 13P: CB 13 | 12.0" Round 0 | ا 2-Culvert n=0.013 L=2 | Peak Elev=640.16' Inf).0' S=0.0115 '/' Outf | low=0.650 cfs 1,384 cf low=0.650 cfs 1,384 cf |
| Pond 15P: | 12.0" Round Cu | Peak Elev=640.65 Ilvert n=0.013 L=15 | Storage=352 cf Inflo 0' S=0.0693 '/' Outflo | ow=4.433 cfs 14,026 cf ow=4.063 cfs 14,026 cf |
| Pond 17P: | 12.0" Round Cu | Peak Elev=642.61' 3 Ilvert_n=0.013_L=62 | Storage=2,870 cf Inflc 0' S=0.0242 '/' Outflc | ow=4.507 cfs 10,477 cf ow=2.941 cfs 10,477 cf |
| Pond 19P: | 12.0" Round (| F Culvert n=0.013 L=8 | Peak Elev=642.77' Inf 5.0' S=0.0030 '/' Outf | low=1.946 cfs 4,595 cf low=1.946 cfs 4,595 cf |
| Pond 20P: | 12.0" Round | Culvert n=0.013 L=1 | Peak Elev=642.49' I 06.0' S=0.0030 '/' Ou | nflow=0.398 cfs 954 cf utflow=0.398 cfs 954 cf |

 Kwik Trip - La Crosse, WI #762
 MSE 24-hr 3 10-yr Rainfall=4.47"

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 Page 25

 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

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"

| 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 Length Slope Velocity Capacity Description | |
| (min) (feet) (ft/ft) (ft/sec) (cfs) | |
| 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"

| Α | rea (sf) | CN | Description | | |
|-------|-------------------------------------|------------|--|--|-----------------------|
| | 12,529 | 98 | Paved parki | ng, HSG C | |
| | 1,317 | 74 | >75% Grass | cover, Goo | od, HSG C |
| Тс | 13,846 1,317 12,529 Length | 96 Slop | Weighted Av 9.51% Pervi 90.49% Imp e Velocity | verage ous Area ervious Area Capacity | a Description |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | 1 |
| 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

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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 Length (min) (feet) | Slop (ft/ | be Velocity Capacity 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"

| A | rea (sf) | CN | Description | | | |
|-------|----------|-------|-------------|--------------|-----------------------|--|
| | 3,800 | 98 | Paved parki | ng, HSG C | | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C | |
| | 3,800 | 98 | Weighted A | verage | | |
| | 3,800 | | 100.00% Im | pervious Are | ea | |
| | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | |
| 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

| A | rea (sf) | CN | Description | | | |
|-------|----------|-------|-------------------------|------------|-----------------------|--|
| | 8,831 | 98 | Paved parki | ng, HSG C | | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C | |
| | 8,831 | 98 | Weighted Average | | | |
| | 8,831 | | 100.00% Impervious Area | | | |
| _ | | | | _ | | |
| Тс | Length | Slop | e Velocity | Capacity | Description | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | |
| 6.0 | | | | | Direct Entry, Minimum | |

895 cf, Depth= 4.12"

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"

| Α | rea (sf) | CN | Description | | | | |
|-------------|------------------|---------------|---------------------------|-------------------|-----------------------|--|--|
| | 2,199 | 98 | Paved parki | ng, HSG C | | | |
| | 71 | 74 | >75% Grass | cover, Goo | od, HSG C | | |
| | 2,270 | 97 | Weighted Av | Weighted Average | | | |
| | 71 | | 3.13% Pervi | ous Area | | | |
| | 2,199 | | 96.87% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (ft/sec) | Capacity (cfs) | Description | | |
| 6.0 | | | | | Direct Entry, Minimum | | |
| | | | | | | | |

Summary for Subcatchment 7S:

Runoff = 0.381 cfs @ 12.13 hrs, Volume= 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"

| A | rea (sf) | CN | Description | | | |
|-------------|------------------|---------------|--------------------------|-------------------|-----------------------|--|
| | 2,492 | 98 | Paved parki | ng, HSG C | | |
| | 116 | 74 | >75% Grass | s cover, Goo | od, HSG C | |
| | 2,608 | 97 | Weighted Average | | | |
| | 116 | | 4.45% Pervious Area | | | |
| | 2,492 | | 95.55% Impervious Area | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e 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 :

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| N | 1SE 24-hr 3 | 10-yr Rair | nfall=4.47" |
|----------------------|-------------|------------|-------------|
| | | Printed | 1/17/2024 |
| ftware Solutions LLC | | | Page 29 |

| A | rea (sf) | CN | Description | | |
|-------|----------|-------|-------------|-------------|-----------------------|
| | 2,703 | 98 | Paved parki | ng, HSG C | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C |
| | 2,703 | 98 | Weighted Av | /erage | |
| | 2,703 | | 100.00% Im | pervious Ar | ea |
| | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/f | :) (ft/sec) | (cfs) | |
| 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"

| A | rea (sf) | CN | Description | | | |
|-------------|------------------|---------------|--------------------------|-------------------|-----------------------|--|
| | 10,182 | 98 | Paved parki | ng, HSG C | | |
| | 426 | 74 | >75% Ġrass | s cover, Goo | od, HSG C | |
| | 10,608 | 97 | Weighted Av | verage | | |
| | 426 | | 4.02% Pervi | ous Area | | |
| | 10,182 | | 95.98% Impervious Area | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e 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 :

| A | rea (sf) | CN | Description | | | | |
|-------------|-----------------------|-----------------|--|-------------------|-----------------------|--|--|
| | 4,165 | 98 | Paved parki | ng, HSG C | | | |
| | 685 | 74 | >75% Grass | cover, Goo | od, HSG C | | |
| | 4,850 685 4,165 | 95 | Weighted Average 14.12% Pervious Area 85.88% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft | e 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"

| | | | 0 | | | | | |
|-------|----------|-------|-------------|------------------|-----------------------|--|--|--|
| 6.0 | | | | | Direct Entry, Minimum | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| Тс | Length | Slop | e Velocity | Capacity | Description | | | |
| | 9,454 | | 100.00% Im | pervious Are | ea | | | |
| | 9,454 | 98 | Weighted Av | Weighted Average | | | | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 9,454 | 98 | Paved parki | ng, HSG C | | | | |
| A | rea (sf) | CN | Description | | | | | |

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"

| rea (sf) | CN | Description | | | | | |
|----------|--|--|--|---|--|--|--|
| 1,661 | 98 | Paved parki | ng, HSG C | | | | |
| 0 | 74 | >75% Grass | cover, Goo | od, HSG C | | | |
| 1,661 | 98 | Weighted Av | Weighted Average | | | | |
| 1,661 | | 100.00% Im | pervious Are | ea | | | |
| | | | | | | | |
| Length | Slop | e Velocity | Capacity | Description | | | |
| (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| | | | | Direct Entry, Minimum | | | |
| | rea (sf) 1,661 0 1,661 1,661 Length (feet) | rea (sf) CN 1,661 98 0 74 1,661 98 1,661 Length Slop (feet) (ft/ft | rea (sf) CN Description 1,661 98 Paved parkin 0 74 >75% Grass 1,661 98 Weighted Av 1,661 100.00% Imp Length Slope Velocity (feet) (ft/ft) (ft/sec) | rea (sf)CNDescription1,66198Paved parking, HSG C074>75% Grass cover, Good1,66198Weighted Average1,661100.00% Impervious AreLengthSlopeVelocityCapacity(feet)(ft/ft) | | | |

Summary for Subcatchment 13S:

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

| Are | ea (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 |

| Kwik T | rip - La | Cross | e, WI # | ‡762 | | | MSE 24-hr 3 10-yr Rainfall=4.47" | | |
|---------------------|------------------------|--------------------|----------------------|-------------|-------------------|-----------------|----------------------------------|---------------------|--|
| Prepare | d by Sun | de En | gineerir | ig PL | LC | | | Printed 1/17/2024 | |
| HydroCA | D® 10.20-4 | 4a s/n (| 02350 © | 2023 | HydroCAD | Software Soluti | ons LLC | Page 31 | |
| Tc (min) | Length (feet) | Slope (ft/ft | e Velo) (ft/s | city ec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | | Direct Entry | , Minimum | | |
| | | | : | Sum | mary for | Subcatchm | nent 14a: | | |
| Runoff Route | = ed to Pond | 0.457 1 15P : | cfs @ | 12.1 | 4 hrs, Volu | ıme= | 923 cf, Dept | h= 1.95" | |
| Runoff b MSE 24- | y SCS TR -hr 3 10-y | R-20 me r Rainf | ethod, U all=4.47 | H=S(" | CS, Weighte | ed-CN, Time S | Span= 0.00-96.0 | 0 hrs, dt= 0.05 hrs | |
| A | rea (sf) | CN | Descrip | tion | | | | | |
| | 0 | 98 | Paved | barkir | ng, HSG C | | | | |
| | 5,685 | 74 | >75% (| Grass | cover, Goo | od, HSG C | | | |
| | 5,685 | 74 | Weighte | ed Av | verage | | | | |
| | 5,685 | | 100.009 | % Pe | rvious Area | l | | | |
| Tc (min) | Length (feet) | Slope (ft/ft | e Velo) (ft/s | city ec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | | Direct Entry | r, Minimum | | |
| | | | : | Sum | mary for | Subcatchm | ient 14b: | | |
| Runoff Route | = ed to Pond | 1.243 15P : | cfs @ | 12.1 | 3 hrs, Volu | ıme= | 2,626 cf, Dept | h= 3.17" | |
| Runoff b MSE 24- | y SCS TR hr 3 10-y | R-20 me r Rainf | ethod, U all=4.47 | H=S(" | CS, Weighte | ed-CN, Time S | Span= 0.00-96.0 | 0 hrs, dt= 0.05 hrs | |
| A | rea (sf) | CN | Descrip | tion | | | | | |
| | 8,189 | 98 | Paved | barkir | ng, HSG A | | | | |
| | 1,757 | 39 | >75% (| Grass | cover, Goo | od, HSG A | | | |

| | 8,189 | 98 | Paved parking, HSG A | | | | | | |
|-------------|--------|-------|----------------------|-------------------------------|-----------------------|--|--|--|--|
| | 1,757 | 39 | >75% Grass | >75% Grass cover, Good, HSG A | | | | | |
| | 9,946 | 88 | Weighted Av | Weighted Average | | | | | |
| | 1,757 | | 17.67% Per | vious Area | | | | | |
| | 8,189 | | 82.33% Imp | ervious Area | а | | | | |
| Tc (min) | Length | Slop | e Velocity | Capacity (cfs) | Description | | | | |
| 6.0 | (1001) | (101) | (14000) | (010) | 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 :

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|------------|--|-------------------------------|---|--|--|--|--|--|--|
| | | | - | | | | | | |
| Area (sf) | CN | Description | | | | | | | |
| 0 | 98 | Paved parking, HSG C | | | | | | | |
| 6,543 | 74 | >75% Grass cover, Good, HSG C | | | | | | | |
| | - 4 | | | | | | | | |

6,54374Weighted Average6,543100.00% Pervious Area

· · · · · · · · · · · · · ·

TcLengthSlopeVelocityCapacityDescription(min)(feet)(ft/ft)(ft/sec)(cfs)

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"

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|---------------|---------------------------|------------------------|-----------------------|--|--|--|
| | 2,400 | 98 | Paved parki | ng, HSG C | | | | |
| | 4,802 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 7,202 | 82 | Weighted Av | Weighted Average | | | | |
| | 4,802 | | 66.68% Per | vious Area | | | | |
| | 2,400 | | 33.32% Imp | 33.32% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|-------|-------------|------------------|-----------------------|--|--|--|
| | 3,155 | 98 | Paved parki | ng, HSG C | | | | |
| | 1,929 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 5,084 | 89 | Weighted Av | Weighted Average | | | | |
| | 1,929 | | 37.94% Per | vious Area | | | | |
| | 3,155 | | 62.06% Imp | ervious Area | а | | | |
| _ | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/f | i) (ft/sec) | (cfs) | | | | |
| 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 | l 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"

| A | rea (sf) | CN | Description | | | | |
|-------------|------------------|---------------|---------------------------|-------------------|-----------------------|--|--|
| | 1,421 | 98 | Paved parki | ng, HSG C | | | |
| | 2,420 | 74 | >75% Grass | cover, Goo | od, HSG C | | |
| | 3,841 | 83 | Weighted Av | Weighted Average | | | |
| | 2,420 | | 63.00% Per | vious Area | | | |
| | 1,421 | | 37.00% Imp | ervious Area | a | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (ft/sec) | Capacity (cfs) | Description | | |
| 6.0 | | | | | Direct Entry, Minimum | | |
| | | | | | | | |

Summary for Subcatchment 19S: Offsite SE

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

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"

| A | rea (sf) | CN | Description | | | | |
|--------------|----------|-------|-----------------------|--------------|-----------------------|--|--|
| | 139 | 98 | Paved parki | ng, HSG C | | | |
| | 2,185 | 74 | >75% Grass | s cover, Goo | od, HSG C | | |
| | 2,324 | 75 | Weighted Average | | | | |
| | 2,185 | | 94.02% Pervious Area | | | | |
| | 139 | | 5.98% Impervious Area | | | | |
| т. | 1 | | | 0 | Description | | |
| IC | Length | Slop | e Velocity | Capacity | Description | | |
| <u>(min)</u> | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | |
| 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 :

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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 | Length | Slope | Velocity | Capacity | Description |
|-------|--------|---------|----------|----------|-----------------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 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 parki | ng, HSG A | |
| 3,880 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| 81,151 | 95 | Weighted Av | verage | |
| 3,880 | | 4.78% Pervi | ious Area | |
| 77,271 | | 95.22% Imp | ervious Area | а |
| Tc Length (min) (feet) | Slop (ft/t | e Velocity t) (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 :

| Α | rea (sf) | CN | Description | | |
|--------------|----------|-------|-------------|--------------|-----------------------|
| | 8,189 | 98 | Paved parki | ng, HSG A | |
| | 1,757 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| | 9,946 | 88 | Weighted Av | verage | |
| | 1,757 | | 17.67% Per | vious Area | |
| | 8,189 | | 82.33% Imp | ervious Area | a |
| _ | | | | a | |
| IC | Length | Slop | e Velocity | Capacity | Description |
| <u>(min)</u> | (feet) | (ft/f | :) (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, Minimum |

Inflow Area =

Summary for Pond 4P:

70,649 sf, 70.82% Impervious, Inflow Depth = 3.54" for 10-yr event

| Inflow Outflow Primary Route | = = = ed to Link I | 9.143 cfs @ 0.535 cfs @ 0.535 cfs @ P-S : | 12.13 hrs, 13.26 hrs, 13.26 hrs, | Volume= Volume= Volume= | 20,866 cf 20,866 cf 20,866 cf | , Atten= 94%, | Lag= 67.7 min |
|---------------------------------------|--|---|--|---|---|-------------------------------|-------------------------------------|
| Routing Starting Peak Ele | by Stor-Inc Elev= 639 ev= 641.29 | d method, Time .50' Surf.Area= v' @ 13.26 hrs | Span= 0.0 = 6,295 sf Surf.Area= | 0-96.00 hrs Storage= 1 = 8,124 sf | , dt= 0.05 hrs 3,277 cf Storage= 26,141 | cf (12,864 cf | above start) |
| Plug-Flo Center-o | ow detentio of-Mass de | n time= 766.8 n t. time= 321.3 n | nin calcula nin (1,085 | ted for 7,585 .1 - 763.8) | 5 cf (36% of inflo | ow) | |
| Volume | Inve | ert Avail.Sto | rade Sto | rage Descrir | otion | | |
| #1 | 634.0 | 0' 52,29 | 95 cf Cu | stom Stage | Data (Prismati | c) Listed below | (Recalc) |
| Elevatio | on | Surf.Area | Inc.Stor | e Cu | m.Store | | |
| (fee | et) | (sq-ft) | (cubic-fee | t) (cut | pic-feet) | | |
| 634.0 | 00 | 698 | | 0 | 0 | | |
| 635.0 | 00 | 1,126 | 91 | 2 | 912 | | |
| 636.0 | 00 | 1,652 | 1,38 | 9 | 2,301 | | |
| 637.0 | 00 | 2,272 | 1,96 | j 2 | 4,263 | | |
| 638.0 | 00 | 2,980 | 2,62 | :6 | 6,889 | | |
| 638.5 | 50 | 3,380 | 1,59 | 0 | 8,479 | | |
| 639.0 | 00 | 4,759 | 2,03 | 5 | 10,514 | | |
| 639.5 | 50 | 6,295 | 2,76 | 64 | 13,277 | | |
| 640.0 | 00 | 6,787 | 3,27 | 1 | 16,548 | | |
| 641.0 | 00 | 7,812 | 7,30 | 10 | 23,847 | | |
| 642.0 | 00 | 8,895 | 8,35 | 4 | 32,201 | | |
| 643.0 | 00 | 10,033 | 9,46 | 4 | 41,665 | | |
| 644.(| 00 | 11,228 | 10,63 | 1 | 52,295 | | |
| Device | Routing | Invert | Outlet De | evices | | | |
| #1 | Primary | 639.50' | 12.0" Ro Inlet / Ou | ound Culve | rt L= 57.0' Ke 639.50'/639.32 | = 0.500 ' S= 0.0032 '/' | Cc= 0.900 |
| | | | n= 0.013 | Concrete p | ipe, bends & co | nnections, Flo | w Area= 0.79 sf |
| #2 #3 | Device 1 Device 1 | 639.50' 641.50' | 4.0" Vert | . Orifice/Gr | ate C= 0.600 sted Rectangul | Limited to weil | flow at low heads Contraction(s) |
| | 200001 | 000 | iong | | ited iteotaligui | | |

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, Atten= 0%, Lag= 0.0 min

 Primary =
 7.221 cfs @
 12.13 hrs, Volume=
 16,901 cf

 Routed to Pond 4P :
 12.13 hrs, Volume=
 16,901 cf

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 Are | a = | 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 | a = | 19,170 sf, | 99.02% Imper | vious, Inflow I | Depth = | 4.20" | for 10- | yr event |
|-------------|---------|-------------|---------------|-----------------|---------|----------|---------|--------------|
| Inflow | = | 2.814 cfs @ | 12.13 hrs, Vo | olume= | 6,717 | cf | | - |
| Outflow | = | 2.814 cfs @ | 12.13 hrs, Vo | olume= | 6,717 | cf, Atte | n= 0%, | Lag= 0.0 min |
| Primary | = | 2.814 cfs @ | 12.13 hrs, Vo | olume= | 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 Are | ea = | 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, Att | en= 0%, Lag= 0.0 min |
| Primary | = | 2.255 cfs @ | 12.13 hrs, Volume= | 5,376 cf | · |
| Routed | d to Po | nd 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 | a = | 3,931 sf, | 98.19% Impe | ervious, Ir | nflow Depth = | 4.17" | for 10- | yr event |
|-------------|---------|-------------|--------------|-------------|---------------|----------|---------|--------------|
| Inflow | = | 0.576 cfs @ | 12.13 hrs, V | 'olume= | 1,365 | cf | | |
| Outflow | = | 0.576 cfs @ | 12.13 hrs, V | 'olume= | 1,365 | cf, Atte | en= 0%, | Lag= 0.0 min |
| Primary | = | 0.576 cfs @ | 12.13 hrs, V | 'olume= | 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 :
 12.13 hrs, Volume=
 1,384 cf

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 | a = | 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 F | 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 | Inv | vert Avail | .Storage | rage Storage Description | | | |
|----------|---------|------------|------------------------------------|--|---|---|--|
| #1 | 639. | 00' | 4,022 cf | Custon | n Stage Data (Pr | ismatic) Listed below (Recalc) | |
| Elevatio | on | Surf.Area | Inc | .Store | Cum.Store | | |
| (fee | et) | (sq-ft) | (cubic | c-feet) | (cubic-feet) | | |
| 639.0 | 00 | 0 | | 0 | 0 | | |
| 640.0 | 00 | 250 | | 125 | 125 | | |
| 641.0 | 00 | 545 | | 398 | 523 | | |
| 642.0 | 00 | 912 | | 729 | 1,251 | | |
| 643.0 | 00 | 1,350 | | 1,131 | 2,382 | | |
| 644.0 | 00 | 1,930 | | 1,640 | 4,022 | | |
| Device | Routing | Inv | vert Outle | et Device | es | | |
| #1 | Primary | 639. | 00' 12.0 ' Inlet n= 0 | '' Round / Outlet .013 Co | 1 Culvert L= 15. Invert= 639.00' / ncrete pipe, bend | 0' Ke= 0.500 637.96' S= 0.0693 '/' Cc= 0.900 ds & 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 Inflow = Outflow = Primary = Routed to | = 33,596 = 4.507 cfs = 2.941 cfs = 2.941 cfs o Pond 15P : | sf, 78.89% Imperv @ 12.13 hrs, Vol @ 12.20 hrs, Vol @ 12.20 hrs, Vol | vious, Inflow Depth ume= 10,4 ume= 10,4 ume= 10,4 | n = 3.74" for 10-yr event 177 cf 177 cf, Atten= 35%, Lag= 4.5 min 177 cf | | | |
|--|---|---|--|---|--|--|--|
| 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 d Center-of-M | etention time= 91 ass det. time= 24 | .5 min calculated fo .4 min (782.1 - 757 | or 9,475 cf (90% of 7.7) | inflow) | | | |
| Volume | Invert Avai | I.Storage Storage | e Description | | | | |
| #1 | 639.00' | 13,329 cf Custor | n Stage Data (Pris | smatic)Listed below (Recalc) | | | |
| Elevation | Surf.Area | Inc.Store | Cum.Store | | | | |
| | (39-11) | | | | | | |
| 640.00 | 44 17/ | 100 | 100 | | | | |
| 640.00 | 261 | 109 | 218 | | | | |
| 641.00 | 741 | 251 | 468 | | | | |
| 641 50 | 1 394 | 534 | 1 002 | | | | |
| 642.00 | 1,655 | 762 | 1,002 | | | | |
| 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 '/' 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 | a = | 13,311 sf, | 96.80% Impervious, | Inflow Depth = 4.1 | 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

| Kwik 1 | Trip - La | Crosse, | WI #762 |
|--------|-----------|---------|---------|
|--------|-----------|---------|---------|

| 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 A | rea = | 2,703 sf,10 | 00.00% 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 | a = | 4,850 sf, | 85.88% Impervious, | Inflow Depth = 3.9 | 0" 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
 10
 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 A | Area | ı = | 139,786 sf, | 89.95% Im | pervious, | Inflow Depth = | 3.5 | 59" for | 10-yr event | |
|----------|------|-----|--------------|------------|-----------|----------------|-------|----------|-------------|-------|
| Inflow | | = | 18.908 cfs @ | 12.13 hrs, | Volume= | 41,82 | 0 cf | | - | |
| Primar | у | = | 18.908 cfs @ | 12.13 hrs, | Volume= | 41,82 | 0 cf, | Atten= (|)%, 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% lm | pervious, | Inflow Depth = | 3.3 | 33" for ⁻ | 10-yr ever | nt |
|----------|------|---|-------------|------------|-----------|----------------|-----|----------------------|------------|---------|
| Inflow | | = | 6.171 cfs @ | 12.16 hrs, | Volume= | 38,778 | cf | | | |
| Primar | у | = | 6.171 cfs @ | 12.16 hrs, | Volume= | 38,778 | cf, | Atten= 0° | %, Lag=(|).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

| Subcatchment1S: | 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 |
|-------------------------------|--|
| Subcatchment2S: | 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 |
| Subcatchment3S: | 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 |
| Subcatchment4S: 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 |
| Subcatchment7S: | 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 |
| Subcatchment8S: | 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 |
| Subcatchment9S: | 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 |
| Subcatchment10S: | 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 |
| Subcatchment11S: 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 |
| Subcatchment13S: | 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 |
| Subcatchment14b: | 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 |
| Subcatchment15S: 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 |

| Kwik Trip - La Crosse, Prepared by Sunde Engin HydroCAD® 10.20-4a s/n 023 | WI #762 eering PLLC 50 © 2023 Hydro | CAD Software Solut | MS | SE 24-hr | 3 25- | <i>yr Raini</i> Printed | fall=5.59 ^r 1/17/2024 Page 44 |
|---|---|---|--------------------------|--------------------------|---------------------|----------------------------|--|
| Subcatchment16S: Offsite | South | Runoff Area=7,20 T | 02 sf 33.3 c=6.0 min | 2% Imper CN=82 | vious Runoff | Runoff De =1.045 cf | epth=3.61' s 2,168 cl |
| Subcatchment17S: | | Runoff Area=5,08 T | 34 sf 62.0 c=6.0 min | 6% Imper CN=89 | vious Runoff | Runoff De =0.849 cf | epth=4.34" s 1,838 cl |
| Subcatchment18S: Offsite | NE | Runoff Area=3,84 T | 41 sf 37.0 c=6.0 min | 0% Imper CN=83 | vious Runoff | Runoff De =0.570 cf | epth=3.71" s 1,188 cl |
| Subcatchment19S: Offsite | SE | Runoff Area=2,3 | 324 sf 5.9 Tc=6.0 mi | 8% Imper n CN=7 | vious 5 Runo | Runoff De off=0.280 | epth=2.94" cfs 569 cf |
| Subcatchment EX N: | | Runoff Area=48,68 Tc | 39 sf 82.7 =6.0 min | 3% Imper CN=88 I | ⁺vious Runoff= | Runoff De 7.988 cfs | epth=4.23' 17,171 cl |
| Subcatchment EX S: | | Runoff Area=81,15 Tc= | 51 sf 95.2 6.0 min C | 2% Imper N=95 R | ∿ious unoff=1 | Runoff De 4.656 cfs | epth=5.00' 33,843 ct |
| Subcatchment OS-N: | | Runoff Area=9,94 T | 46 sf 82.3 c=6.0 min | 3% Imper CN=88 | ∿ious Runoff | Runoff De =1.632 cf | epth=4.23' s 3,508 cl |
| Pond 4P: | Ρ | eak Elev=641.64' S | torage=29 | ,096 cf II C | nflow=1)utflow= | 1.786 cfs 1.325 cfs | 27,120 ct 27,120 ct |
| Pond 7P: CB 7 | 18.0" Round C | ا ulvert n=0.013 L=2 | Peak Elev= 5.0' S=0.0 | =641.82' 052 '/' O | Inflow= outflow= | 9.086 cfs 9.086 cfs | 21,516 ct 21,516 ct |
| Pond 8P: CB 8 | 18.0" Round Cu | ا اvert n=0.013 L=10 | Peak Elev= 7.0' S=0.0 | =641.72' 051 '/' O | Inflow= outflow= | 6.564 cfs 6.564 cfs | 15,610 ct 15,610 ct |
| Pond 9P: MH 9 | 15.0" Round | Culvert n=0.013 L= | Peak Elev 38.0' S=0. | /=641.56' 0058 '/' | Inflow Outflow | =3.529 cf =3.529 cf | s 8,503 c s 8,503 cl |
| Pond 10P: CB 10 | 15.0" Round C | ulvert n=0.013 L=1 | Peak Elev 76.0' S=0. | /=642.14' 0040 '/' | Inflow Outflow | =2.829 cf =2.829 cf | s 6,808 c s 6,808 cl |
| Pond 11P: CB 11 | 12.0" Round | Culvert n=0.013 L= | Peak Elev 76.0' S=0. | /=641.88' .0030 '/' | Inflow Outflow | =0.723 cf =0.723 cf | s 1,731 c s 1,731 c |
| Pond 13P: CB 13 | 12.0" Round | Culvert n=0.013 L= | Peak Elev 20.0' S=0. | /=640.23' .0115 '/' | Inflow Outflow | =0.849 cf =0.849 cf | s 1,838 cl s 1,838 cl |
| Pond 15P: | 12.0" Round C | Peak Elev=641.1 ulvert_n=0.013_L=1 | 5' Storage 5.0' S=0.0 | e=606 cf 693 '/' C | Inflow= outflow= | 5.540 cfs 4.853 cfs | 18,345 cl 18,345 cl |
| Pond 17P: | 12.0" Round C | Peak Elev=642.87' ulvert_n=0.013_L=6 | Storage= 2.0' S=0.0 | 3,414 cf 242 '/' O | Inflow= outflow= | 5.760 cfs 3.522 cfs | 13,490 ct 13,490 ct |
| Pond 19P: | 12.0" Round | Culvert n=0.013 L= | Peak Elev 86.0' S=0. | /=643.00' .0030 '/' | Inflow Outflow | =2.444 cf =2.444 cf | s 5,834 c s 5,834 cl |
| Pond 20P: | 12.0" Round C | ulvert_n=0.013_l=1 | Peak Elev | /=642.54' 0030 '/' | Inflow Outflow | =0.498 cf =0 498 cf | s 1,206 cl |

Kwik Trip - La Crosse, WI #762 MSE 24-hr 3 25-yr Rainfall=5.59" Prepared by Sunde Engineering PLLC Printed 1/17/2024 HydroCAD® 10.20-4a s/n 02350 © 2023 HydroCAD Software Solutions LLC Page 45 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 Peak Elev=641.85' Inflow=0.478 cfs 1,138 cf Pond 23P: CB 23 12.0" Round Culvert n=0.013 L=99.0' S=0.0030 '/' Outflow=0.478 cfs 1,138 cf Inflow=5.203 cfs 19,533 cf Link P-N: Primary=5.203 cfs 19,533 cf Link P-S: Inflow=2.579 cfs 31,406 cf Primary=2.579 cfs 31,406 cf Inflow=24.275 cfs 54,522 cf Link TEX: Primary=24.275 cfs 54,522 cf Inflow=9.620 cfs 20,678 cf Link TEX-N: Primary=9.620 cfs 20,678 cf Inflow=7.663 cfs 50,939 cf Link TP: 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 parkir | ng, HSG C | |
| 15, | 890 | 74 | >75% Grass | cover, Goo | d, HSG C |
| 15, 15, | 890 890 | 74 | Weighted Av 100.00% Pe | verage rvious Area | |
| Tc Le (min) (| ength (feet) | Slope (ft/ft | e 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"

| A | rea (sf) | CN | Description | | |
|-------------|------------------|----------------|---------------------------|-------------------|-----------------------|
| | 12,529 | 98 | Paved parki | ng, HSG C | |
| | 1,317 | 74 | >75% Grass | cover, Goo | od, HSG C |
| | 13,846 | 96 | Weighted Av | /erage | |
| | 1,317 | | 9.51% Pervi | ous Area | |
| | 12,529 | | 90.49% imp | ervious Area | d |
| Tc (min) | Length (feet) | Slop (ft/ft | e 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

6.0

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| А | rea (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) | Slop (ft/f | e Velocity Capacity Description t) (ft/sec) (cfs) | | | | |

| Direct Entry | Minimum |
|--------------|-----------|
| | Willingth |

Summary for Subcatchment 4S: Pump Canopy

0.701 cfs @ 12.13 hrs, Volume= 1,695 cf, Depth= 5.35" Runoff = 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"

| A | rea (sf) | CN | Description | | |
|--------------|----------|-------|-------------|--------------|-----------------------|
| | 3,800 | 98 | Paved parki | ng, HSG C | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 3,800 | 98 | Weighted Av | verage | |
| | 3,800 | | 100.00% Im | pervious Are | ea |
| | | | | | |
| Тс | Length | Slop | e Velocity | Capacity | Description |
| <u>(min)</u> | (feet) | (ft/f | t) (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, Minimum |
| | | | | | |

Summary for Subcatchment 5S:

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

| A | rea (sf) | CN | Description | | | | | | |
|-------|----------|-------|-------------------------|-------------------------------|-----------------------|--|--|--|--|
| | 8,831 | 98 | Paved parki | Paved parking, HSG C | | | | | |
| | 0 | 74 | >75% Grass | >75% Grass cover, Good, HSG C | | | | | |
| | 8,831 | 98 | Weighted Av | /erage | | | | | |
| | 8,831 | | 100.00% Impervious Area | | | | | | |
| - | | | | 0 1 | | | | | |
| IC | Length | Slop | e Velocity | Capacity | Description | | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | | |
| 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"

| A | rea (sf) | CN | Description | | |
|-------------|------------------|----------------|--------------------------|-------------------|-----------------------|
| | 2,199 | 98 | Paved parki | ng, HSG C | |
| | 71 | 74 | >75% Ġrass | s cover, Goo | od, HSG C |
| | 2,270 | 97 | Weighted Av | verage | |
| | 71 | | 3.13% Pervi | ous Area | |
| | 2,199 | | 96.87% Imp | ervious Area | a |
| Tc (min) | Length (feet) | Slop (ft/fl | e 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"

| Α | rea (sf) | CN | Description | | | | | | |
|---------------|------------------|-------|---------------------|--------------|-----------------------|--|--|--|--|
| | 2,492 | 98 | Paved parki | ng, HSG C | | | | | |
| | 116 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | | |
| | 2,608 | 97 | Weighted A | verage | | | | | |
| | 116 | | 4.45% Pervious Area | | | | | | |
| | 2,492 | | 95.55% Imp | ervious Area | ea | | | | |
| То | Longth | Slop | o Volocity | Capacity | Description | | | | |
| IC (maine) | Lengin (feet) | Siop | | Capacity | Description | | | | |
| <u>(min)</u> | (leet) | (11/1 | .) (II/sec) | (CIS) | | | | | |
| 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 :

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| MSE 24-hr 3 | 25-yr Rair | nfall=5.59" |
|---------------|------------|-------------|
| | Printed | 1/17/2024 |
| Solutions LLC | | Page 49 |

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|----------------|---|-------------------|-----------------------|--|--|--|
| | 2,703 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C | | | |
| | 2,703 2,703 | 98 | Weighted Average 100.00% Impervious Area | | | | | |
| Tc (min) | Length (feet) | Slop (ft/fl | e Velocity t) (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"

| A | rea (sf) | CN | Description | | |
|-------------|------------------|---------------|---------------------------|-------------------|-----------------------|
| | 10,182 | 98 | Paved parki | ng, HSG C | |
| | 426 | 74 | >75% Ġrass | s cover, Goo | od, HSG C |
| | 10,608 | 97 | Weighted Av | verage | |
| | 426 | | 4.02% Pervi | ous Area | |
| | 10,182 | | 95.98% Imp | ervious Area | a |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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 :

| A | rea (sf) | CN | Description | | |
|-------|----------|--------|-------------|--------------|-----------------------|
| | 4,165 | 98 | Paved parki | ng, HSG C | |
| | 685 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 4,850 | 95 | Weighted Av | verage | |
| | 685 | | 14.12% Per | vious Area | |
| | 4,165 | | 85.88% Imp | ervious Area | a |
| | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | |
| 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"

| Are | ea (sf) | CN | Description | | | | | |
|--|---------|-------|-------------|-------------|-----------------------|--|--|--|
| | 9,454 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C | | | |
| | 9,454 | 98 | Weighted Av | /erage | | | | |
| | 9,454 | | 100.00% Im | pervious Ar | ea | | | |
| | | | | | | | | |
| Tc I | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| 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"

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|-------|-------------|------------------|-----------------------|--|--|--|
| | 1,661 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C | | | |
| | 1,661 | 98 | Weighted Av | Weighted Average | | | | |
| | 1,661 | | 100.00% Im | pervious Ar | ea | | | |
| | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| 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 :

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

| Kwik T | rip - La (| Crosse | e, WI #762 | 2 | | MSE 24-hr 3 25-yr Rainfall=5.59 |
|---------------------|------------------------|--------------------------------|-------------------------|----------------------------|-----------------|------------------------------------|
| Prepare | d by Sund | de Eng | ineering P | LLC 2 Undre CAD | Software Soluti | Printed 1/17/2024 |
| | D® 10.20-4 | a s/n 02 | 2350 @ 202 | | Sollware Soluli | ons LLC Page 5 |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | |
| 6.0 | | | | | Direct Entry | r, Minimum |
| | | | Sun | nmary for | Subcatchm | nent 14a: |
| Runoff Route | = ed to Pond | 0.665 15P : | cfs @ 12. | 13 hrs, Volu | ime= | 1,347 cf, Depth= 2.84" |
| Runoff b MSE 24- | y SCS TR hr 3 25-yı | -20 met ⁻ Rainfa | hod, UH=S II=5.59" | CS, Weighte | ed-CN, Time S | Span= 0.00-96.00 hrs, dt= 0.05 hrs |
| A | rea (sf) | CN [| Description | | | |
| | 0 5,685 | 98 F 74 > | Paved park •75% Gras | ing, HSG C s cover, Goc | od, HSG C | |
| | 5,685 5,685 | 74 N 1 | Veighted A | verage ervious Area | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | |
| 6.0 | | | | | Direct Entry | v, Minimum |
| | | | Sun | nmary for | Subcatchm | nent 14b: |
| Runoff Route | = ed to Pond | 1.632 (15P : | cfs @ 12. | 13 hrs, Volu | ime= | 3,508 cf, Depth= 4.23" |
| Runoff b MSE 24- | y SCS TR hr 3 25-yı | -20 met ⁻ Rainfa | hod, UH=S II=5.59" | CS, Weighte | ed-CN, Time S | Span= 0.00-96.00 hrs, dt= 0.05 hrs |
| A | rea (sf) | CN [| Description | | | |
| | 8,189 1,757 | 98 F 39 > | Paved park 75% Gras | ing, HSG A s cover, Goc | od, HSG A | |
| | 0.046 | 00 \ | Naightad A | Vorogo | | |

| | 1,707 | <u> </u> | 70% Glass | s cover, God | ING A | | | | |
|-------|--------|----------|------------------|--------------|-----------------------|--|--|--|--|
| | 9,946 | 88 \ | Weighted Average | | | | | | |
| | 1,757 | | 7.67% Per | vious Area | | | | | |
| | 8,189 | 8 | 32.33% Imp | ervious Area | а | | | | |
| | | | | | | | | | |
| Tc | Length | Slope | Velocity | Capacity | Description | | | | |
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | | |
| | | | | | | | | | |

Summary for Subcatchment 15S: Offsite West

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

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| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|-----------------|---|-------------------|--------------|------------|--|--|
| | 0 | 98 | Paved parki | ng, HSG C | | | | |
| | 6,543 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 6,543 6,543 | 74 | Weighted Average 100.00% Pervious Area | | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft | e Velocity) (ft/sec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry | Minimaruma | | |

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"

| Are | ea (sf) | CN | Description | | |
|-------|---------|-------|-------------|--------------|-----------------------|
| | 2,400 | 98 | Paved parki | ng, HSG C | |
| | 4,802 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 7,202 | 82 | Weighted A | verage | |
| | 4,802 | | 66.68% Per | vious Area | |
| | 2,400 | | 33.32% Imp | ervious Area | а |
| | | | | | |
| Тс | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | |
| 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

| A | rea (sf) | CN | Description | | |
|-------------|-------------------------|---------------|--|--------------------------------------|-----------------------|
| | 3,155 | 98 | Paved parki | ng, HSG C | |
| | 1,929 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 5,084 1,929 3,155 | 89 | Weighted A 37.94% Per 62.06% Imp | verage vious Area ervious Area | a |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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"

| A | rea (sf) | CN | Description | | |
|-------------|------------------|---------------|---------------------------|-------------------|-----------------------|
| | 1,421 | 98 | Paved parki | ng, HSG C | |
| | 2,420 | 74 | >75% Ġrass | cover, Goo | od, HSG C |
| | 3,841 | 83 | Weighted Av | /erage | |
| | 2,420 | | 63.00% Pervious Area | | |
| | 1,421 | | 37.00% Imp | ervious Area | a |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (ft/sec) | Capacity (cfs) | Description |
| 6.0 | | | | | Direct Entry, Minimum |
| | | | | | |

Summary for Subcatchment 19S: Offsite SE

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

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"

| A | rea (sf) | CN | Description | | |
|---------------|----------|--------|-------------|--------------|-----------------------|
| | 139 | 98 | Paved parki | ng, HSG C | |
| | 2,185 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 2,324 | 75 | Weighted Av | verage | |
| | 2,185 | | 94.02% Per | vious Area | |
| | 139 | | 5.98% Impe | rvious Area | |
| То | Longth | Slop | o Volocity | Conocity | Description |
| UT (maine) | Lengin | 210p | | Capacity | Description |
| <u>(mn)</u> | (ieet) | (11/11 | .) (II/SeC) | (CIS) | |
| 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 :

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| ND@ 10.20 | 4 u 5/11 | | |
|-----------|---------------------|-------------------------------|--|
| 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 parki | ng, HSG A | |
| 3,880 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| 81,151 | 95 | Weighted Av | verage | |
| 3,880 | | 4.78% Pervi | ious Area | |
| 77,271 | | 95.22% Imp | ervious Area | а |
| Tc Length (min) (feet) | Slop (ft/i | e Velocity t) (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 :

| Α | rea (sf) | CN | Description | | |
|--------------|----------|-------|-------------|--------------|-----------------------|
| | 8,189 | 98 | Paved parki | ng, HSG A | |
| | 1,757 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| | 9,946 | 88 | Weighted Av | verage | |
| | 1,757 | | 17.67% Per | vious Area | |
| | 8,189 | | 82.33% Imp | ervious Area | a |
| _ | | | | a | |
| IC | Length | Slop | e Velocity | Capacity | Description |
| <u>(min)</u> | (feet) | (ft/f | :) (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, Minimum |

Inflow Area =

#3

Device 1

Summary for Pond 4P:

70,649 sf, 70.82% Impervious, Inflow Depth = 4.61" for 25-yr event

| Inflow Outflow Primary Route | = = = ed to Link F | 11.786 cfs @ 1.325 cfs @ 1.325 cfs @ P-S : | 12.13 hrs, V 12.60 hrs, V 12.60 hrs, V | olume= olume= olume= | 27,120 cf 27,120 cf, Atten= 89%, Lag= 28.1 min 27,120 cf | |
|---------------------------------------|---|---|---|---|--|---|
| Routing Starting Peak Ele | by Stor-Inc Elev= 639. ev= 641.64 | l method, Time 50' Surf.Area ' @ 12.60 hrs | Span= 0.00- = 6,295 sf = S Surf.Area= 8 | -96.00 hrs, dt= 0 Storage= 13,277 3,509 sf Storag |).05 hrs ′ cf ge= 29,096 cf (15,819 cf above start) | |
| Plug-Flo Center-c | ow detention of-Mass det | n time= 656.3 r t. time= 313.9 r | nin calculate nin (1,074.3 | d for 13,842 cf (- 760.4) | 51% of inflow) | |
| Volume | Inve | <u>rt Avail.Sto</u> | rage Stora | ge Description | | |
| #1 | 634.00 | D' 52,29 | 95 cf Cust | om Stage Data | (Prismatic)Listed below (Recalc) | |
| | | | | | | |
| Elevatio | on S | Surf.Area | Inc.Store | Cum.Stor | re | |
| (fee | et) | (sq-ft) | (cubic-feet) | (cubic-fee | <u>et)</u> | |
| 634.0 | 00 | 698 | 0 | | 0 | |
| 635.0 | 00 | 1,126 | 912 | 91 | 12 | |
| 636.0 | 00 | 1,652 | 1,389 | 2,30 | 01 | |
| 637.0 | 00 | 2,272 | 1,962 | 4,26 | 63 | |
| 638.0 | 00 | 2,980 | 2,626 | 6,88 | 89 | |
| 638.5 | 50 | 3,380 | 1,590 | 8,47 | 79 | |
| 639.0 | 00 | 4,759 | 2,035 | 10,51 | 14 | |
| 639.5 | 50 | 6,295 | 2,764 | 13,27 | 77 | |
| 640.0 | 00 | 6,787 | 3,271 | 16,54 | 48 | |
| 641.0 | 00 | 7,812 | 7,300 | 23,84 | 47 | |
| 642.0 | 00 | 8,895 | 8,354 | 32,20 | 01 | |
| 643.0 | 00 | 10,033 | 9,464 | 41,66 | 65 | |
| 644.0 | 00 | 11,228 | 10,631 | 52,29 | 95 | |
| Device | Routing | Invert | Outlet Devi | ices | | |
| #1 | Primary | 639.50' | 12.0" Rou | nd Culvert L= | 57.0' Ke= 0.500 | |
| | , | | Inlet / Outle | et Invert= 639.50 | 0' / 639.32' S= 0.0032 '/' Cc= 0.900 | |
| | | | n= 0.013 (| Concrete pipe. b | ends & 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 | ; |

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 :
 12.13 hrs, Volume=
 21,516 cf

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 Are | a = | 35,829 sf, | 95.87% Impervious | Inflow Depth = 5.2 | 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 | a = | 19,170 sf, | 99.02% Imp | ervious, | Inflow Depth = | 5.3 | 32" for | 25-yr eve | ent |
|-------------|---------|-------------|--------------|----------|----------------|-----|---------|-----------|-----------|
| Inflow | = | 3.529 cfs @ | 12.13 hrs, | Volume= | 8,503 | cf | | • | |
| Outflow | = | 3.529 cfs @ | 12.13 hrs, ` | Volume= | 8,503 | cf, | Atten= |)%, 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 Ar | ea = | 15,370 sf, | 98.78% Impervious, | Inflow Depth = 5.32 | 2" 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 | - |
| Route | ed to Po | ond 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 | ı = | 3,931 sf, | 98.19% Im | pervious, | Inflow Depth = | 5.2 | 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 :
 12.13 hrs, Volume=
 1,838 cf

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 Are | a = | 49,227 sf, | 70.48% Impervious, | Inflow Depth = 4.4 | 17" 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 | l to Link l | 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 | Inv | /ert Avai | I.Storage | e Storage Description | | | | | |
|----------|---------|-----------|-----------------------------------|---|------------------|--|--|--|--|
| #1 | 639. | 00' | 4,022 cf | Custon | n Stage Data (Pi | rismatic) Listed below (Recalc) | | | |
| Elevatio | on | Surf.Area | Inc | .Store | Cum.Store | | | | |
| (fee | et) | (sq-ft) | (cubi | c-feet) | (cubic-feet) | | | | |
| 639.0 | 00 | 0 | | 0 | 0 | | | | |
| 640.0 | 00 | 250 | | 125 | 125 | | | | |
| 641.0 | 00 | 545 | | 398 | 523 | | | | |
| 642.0 | 00 | 912 | | 729 | 1,251 | | | | |
| 643.0 | 00 | 1,350 | | 1,131 | 2,382 | | | | |
| 644.0 | 00 | 1,930 | | 1,640 | 4,022 | | | | |
| Device | Routing | In | vert Outle | et Device | S | | | | |
| #1 | Primary | 639 | .00' 12.0 Inlet n= 0 | 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, | | 33,596 sf, | 78.89% Imper | rvious, Inflov | w Deptł | n = 4.82" | for 25- | yr event | |
|--|---|-------------|---------------|----------------|---------|-------------|---------|----------------|--|
| Inflow | = | 5.760 cfs @ | 12.13 hrs, Vo | olume= | 13,4 | 490 cf | | - | |
| Outflow | = | 3.522 cfs @ | 12.21 hrs, Vo | olume= | 13,4 | 490 cf, Att | en= 39% | , Lag= 5.0 min | |
| Primary | = | 3.522 cfs @ | 12.21 hrs, Vo | olume= | 13,4 | 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 of Center-of-N | 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 | In | vert Ava | il.Storage | Storage | Description | |
|---|---------|-----------|-------------------|------------|------------------|---|
| #1 | 639 | .00' | 13,329 cf | Custom | n Stage Data (Pr | r ismatic) Listed below (Recalc) |
| | | | | | | |
| Elevatio | on | Surf.Area | Inc | Store. | Cum.Store | |
| (fee | et) | (sq-ft) | (cubi | c-feet) | (cubic-feet) | |
| 639.0 |)0 | 44 | | 0 | 0 | |
| 640.0 |)0 | 174 | | 109 | 109 | |
| 640.5 | 50 | 261 | | 109 | 218 | |
| 641.0 |)0 | 741 | | 251 | 468 | |
| 641.5 | 50 | 1,394 | | 534 | 1,002 | |
| 642.0 |)0 | 1,655 | | 762 | 1,764 | |
| 643.0 |)0 | 2,222 | | 1,939 | 3,703 | |
| 644.0 |)0 | 2,831 | | 2,527 | 6,229 | |
| 645.0 |)0 | 3,528 | | 3,180 | 9,409 | |
| 646.0 | 00 | 4,312 | | 3,920 | 13,329 | |
| | | | | | | |
| Device | Routing | j Ir | ivert Outl | et Device | S | |
| #1 | Primary | v 641 | 1.50' 12.0 | " Round | I Culvert L= 62. | .0' Ke= 0.500 |
| | | | Inlet | / Outlet I | nvert= 641.50' / | 640.00' S= 0.0242 '/' Cc= 0.900 |
| n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.7 | | | | | | |
| | | | | | | |

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 | a = | 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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|-------------------|----------|-----------|---------|
|-------------------|----------|-----------|---------|

| HydroCA | D® 10.20-4a | s/n 02350 © 2 | 2023 HydroCAD Software Solutions LLC | Page 60 |
|---------|-------------|---------------|--|------------------------|
| 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= n= 0.013 Concrete pipe, bends & connections, Flow Are | = 0.900 ea= 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 | a = | 2,703 sf,1 | 00.00% Im | pervious, | Inflow Depth = | 5.3 | 5" 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 | a = | 4,850 sf, | 85.88% Impervious, | Inflow Depth = 5.0 | 0" 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
 10
 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 | ı = | | 139,786 sf, | 89.95% Im | pervious, | Inflow Depth | n = 4.6 | 68" for | 25-yr event | |
|----------|------|-----|---|-------------|------------|-----------|--------------|---------|----------|-------------|-----|
| Inflow | | = | 2 | 4.275 cfs @ | 12.13 hrs, | Volume= | 54,5 | 522 cf | | - | |
| Primar | у | = | 2 | 4.275 cfs @ | 12.13 hrs, | Volume= | 54,5 | 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 | 1 = | 139,786 sf, | 63.44% Im | pervious, | Inflow Depth = | 4.3 | 37" for 2 | 5-yr event | |
|----------|------|-----|-------------|------------|-----------|----------------|-----|-----------|-------------|-------|
| Inflow | | = | 7.663 cfs @ | 12.15 hrs, | Volume= | 50,939 | cf | | - | |
| Primar | у | = | 7.663 cfs @ | 12.15 hrs, | Volume= | 50,939 | cf, | Atten= 0% | 6, 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

| Subcatchment1S: | 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 |
|-------------------------------|--|
| Subcatchment2S: | 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 |
| Subcatchment3S: | 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 |
| Subcatchment4S: 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 |
| Subcatchment5S: | 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 |
| Subcatchment6S: | 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 |
| Subcatchment7S: | 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 |
| Subcatchment8S: | 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 |
| Subcatchment9S: | 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 |
| Subcatchment10S: | 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 |
| Subcatchment11S: 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 |
| Subcatchment13S: | 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 |
| Subcatchment14b: | 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 |
| Subcatchment15S: 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 |

| Kwik Trip - La Crosse, Prepared by Sunde Engin HydroCAD® 10.20-4a s/n 023 | WI #762 eering PLLC 50 © 2023 Hydro | CAD Software S | MS olutions LLC | SE 24-hi | r 3 100 |)- <i>yr Rail</i> Printed | nfall=7.60 1/17/202 Page (| <i>0"</i> 24 <u>64</u> |
|---|---|---------------------------------|--------------------------------------|-------------------------------------|----------------------|------------------------------|----------------------------------|------------------------------|
| Subcatchment16S: Offsite | South | Runoff Area= | 7,202 sf 33 Tc=6.0 mi | .32% Imp n CN=82 | ervious 2 Runot | Runoff I ff=1.551 | Depth=5.4 cfs 3,289 | .8" cf |
| Subcatchment17S: | | Runoff Area= | 5,084 sf 62 Tc=6.0 mi | .06% Imp n CN=89 | ervious) Runoi | Runoff I ff=1.201 | Depth=6.2 cfs 2,667 | :9" cf |
| Subcatchment18S: Offsite | NE | Runoff Area= | 3,841 sf 37 Tc=6.0 mi | .00% Imp n CN=83 | ervious 3 Runot | Runoff I ff=0.840 | Depth=5.6 cfs 1,791 | 0" cf |
| Subcatchment19S: Offsite | SE | Runoff Area | =2,324 sf 5 Tc=6.0 r | .98% Imp nin CN= | ervious 75 Rur | Runoff I off=0.44 | Depth=4.6 0 cfs 907 | 8" cf |
| Subcatchment EX N: | | Runoff Area=4 | 8,689 sf 82 Tc=6.0 min | .73% Imp CN=88 | ervious Runoff= | Runoff I 11.378 c | Depth=6.1 fs 25,065 | 8" cf |
| Subcatchment EX S: | | Runoff Area=8 | 1,151 sf 95 Tc=6.0 min | .22% Imp CN=95 | ervious Runoff=: | Runoff I 20.138 c | Depth=7.0 fs 47,358 | 0" cf |
| SubcatchmentOS-N: | | Runoff Area= | 9,946 sf 82 Tc=6.0 mi | .33% Imp n CN=88 | ervious 3 Runot | Runoff I ff=2.324 | Depth=6.1 cfs 5,120 | 8" cf |
| Pond 4P: | F | eak Elev=642.03 | 3' Storage=3 | 2,448 cf | Inflow= Outflow | 16.560 c =4.541 c | is 38,532 fs 38,532 | cf cf |
| Pond 7P: CB 7 | 18.0" Round Cu | lvert n=0.013 L | Peak Elev: =25.0' S=0.0 | =642.49')052 '/' C | Inflow=)utflow= | 12.418 c 12.418 c | fs 29,814 fs 29,814 | cf cf |
| Pond 8P: CB 8 | 18.0" Round Cu | lvert n=0.013 L | Peak Elev =107.0' S=0 | v=642.50' .0051 '/' | Inflow Outflow | =8.965 c =8.965 c | fs 21,597 fs 21,597 | cf cf |
| Pond 9P: MH 9 | 15.0" Round C | ulvert n=0.013 | Peak Ele [,] L=38.0' S=0 | v=641.87' .0058 '/' | Inflow Outflow | =4.811 c =4.811 c | fs 11,710 fs 11,710 | cf cf |
| Pond 10P: CB 10 | 15.0" Round C | ulvert n=0.013 | Peak El L=176.0' S= | ev=642.39 0.0040 '/' | 9' Inflov Outflov | v=3.856 v=3.856 | cfs 9,379 cfs 9,379 | cf cf |
| Pond 11P: CB 11 | 12.0" Round | Culvert n=0.013 | Peak El L=76.0' S= | ev=641.99 0.0030 '/' | 9' Inflov Outflov | v=0.986 v=0.986 | cfs 2,389 cfs 2,389 | cf cf |
| Pond 13P: CB 13 | 12.0" Round | Culvert n=0.013 | Peak El L=20.0' S= | ev=640.3 0.0115 '/' | 5' Inflov Outflov | v=1.201 v=1.201 | cfs 2,667 cfs 2,667 | cf cf |
| Pond 15P: | 12.0" Round C | Peak Elev=641 ulvert n=0.013 | .96' Storage L=15.0' S=0 | =1,212 cf .0693 '/' | Inflow Outflow | =7.382 c =5.928 c | is 26,251 is 26,251 | cf cf |
| Pond 17P: | 12.0" Round C | Peak Elev=643 ulvert_n=0.013 | .35' Storage L=62.0' S=0 | =4,529 cf .0242 '/' | Inflow Outflow | =8.019 c =4.403 c | is 18,966 is 18,966 | cf cf |
| Pond 19P: | 12.0" Round | Culvert n=0.013 | Peak El L=86.0' S= | ev=643.6 [°] 0.0030 '/' | 7' Inflov Outflov | v=3.335 v=3.335 | cfs 8,059 cfs 8,059 | cf cf |
| Pond 20P: | 12.0" Round C | ulvert n=0.013 | Peak El L=106.0' S= | ev=642.62 0.0030 '/' | 2' Inflov Outflov | v=0.679 v=0.679 | cfs 1,658 cfs 1,658 | cf cf |

| Kwik Trip - La Crosse, W Prepared by Sunde Engine HydroCAD® 10.20-4a s/n 0235 | VI #762 ering PLLC 0 © 2023 HydroCAD S | oftware Solutions | MSE 24-hr | <i>3 100-yr Rainfa</i> Printed 1 | a <i>ll=7.60"</i> /17/2024 Page 65 |
|---|---|-------------------|---------------|-------------------------------------|--|
| | - | | - | | |
| Pond 22P: | | Pea | k Elev=642.30 | ' Inflow=1.204 cfs | s 2,830 cf |
| | 12.0" Round Culvert | n=0.013 L=22.0' | S=0.0032 '/' | Outflow=1.204 cfs | s 2,830 cf |
| Pond 23P: CB 23 | 12.0" Round Culvert | Pea | k Elev=641.93 | ' Inflow=0.653 cfs | 1,574 cf |
| | 12.0 Round Guiven | H-0.013 L-33.0 | 3-0.0030 / | | 5 1,074 01 |
| Link P-N: | | | | Inflow=6.402 cfs | 28,042 cf |
| | | | F | rimary=6.402 cfs | 28,042 cf |
| Link P-S: | | | | Inflow=6.077 cfs | 45,220 cf |
| | | | F | Primary=6.077 cfs | 45,220 cf |
| Link TEX: | | | | Inflow=33.839 cfs | 77,543 cf |
| | | | Pr | imary=33.839 cfs | 77,543 cf |
| Link TEX-N: | | | | Inflow=13.702 cfs | 30,185 cf |
| | | | Pr | imary=13.702 cfs | 30,185 cf |
| Link TP: | | | | Inflow=12.453 cfs | 73,262 cf |
| | | | Pr | imary=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 (s | f) CN | Description | | |
|-----------|---------|---------------|------------|-----------------------|
| | 0 98 | Paved parking | g, HSG C | |
| 15,89 | 0 74 | >75% Ġrass o | cover, Goo | d, HSG C |
| 15,89 | 0 74 | Weighted Ave | erage | |
| 15,89 | 90 | 100.00% Perv | vious Area | |
| | | | | |
| Tc Leng | gth Slo | pe Velocity | Capacity | Description |
| (min) (fe | et) (ft | /ft) (ft/sec) | (cfs) | |
| 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"

| Α | rea (sf) | CN | Description | | |
|--------------|---|----------------------|---|---|-----------------------|
| | 12,529 | 98 | Paved parki | ng, HSG C | |
| | 1,317 | 74 | >75% Grass | cover, Goo | od, HSG C |
| Tc _(min) | 13,846 1,317 12,529 Length (feet) | 96 Slop (ft/ft | Weighted Av 9.51% Pervi 90.49% Imp e Velocity :) (ft/sec) | verage ous Area ervious Area Capacity (cfs) | a 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

Kwik Trip - La Crosse, WI #762

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| A | rea (sf) | CN | Description | | | | | |
|--------------|----------|--------|------------------------|--------------|-----------------------|--|--|--|
| | 15,366 | 98 | Paved parki | ng, HSG C | | | | |
| | 1,293 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 16,659 | 96 | Weighted Av | verage | | | | |
| | 1,293 | | 7.76% Pervious Area | | | | | |
| | 15,366 | | 92.24% Impervious Area | | | | | |
| _ | | | | | | | | |
| Tc | Length | Slope | e Velocity | Capacity | Description | | | |
| <u>(min)</u> | (feet) | (ft/ft |) (ft/sec) | (cfs) | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | |

6.0

Summary for Subcatchment 4S: Pump Canopy

0.954 cfs @ 12.13 hrs, Volume= 2,331 cf, Depth= 7.36" Runoff = 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"

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|-------|-------------|-------------------------|-----------------------|--|--|--|
| | 3,800 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 3,800 | 98 | Weighted A | verage | | | | |
| | 3,800 | | 100.00% Im | 100.00% Impervious Area | | | | |
| | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | |
| | | | | | - | | | |

Summary for Subcatchment 5S:

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

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|---------------|---------------------------|-------------------------|-----------------------|--|--|--|
| | 8,831 | 98 | Paved parki | ng, HSG C | | | | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 8,831 | 98 | Weighted Av | verage | | | | |
| | 8,831 | | 100.00% Im | 100.00% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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"

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|---------------|---------------------------|------------------------|-----------------------|--|--|--|
| | 2,199 | 98 | Paved parki | ng, HSG C | | | | |
| | 71 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 2,270 | 97 | Weighted Average | | | | | |
| | 71 | | 3.13% Pervious Area | | | | | |
| | 2,199 | | 96.87% Imp | 96.87% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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"

| A | rea (sf) | CN | Description | | | | | |
|--------------|----------|--------|------------------------|--------------|-----------------------|--|--|--|
| | 2,492 | 98 | Paved parki | ng, HSG C | | | | |
| | 116 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 2,608 | 97 | Weighted Av | verage | | | | |
| | 116 | | 4.45% Pervious Area | | | | | |
| | 2,492 | | 95.55% Impervious Area | | | | | |
| - | | 01 | | O | | | | |
| IC | Length | Slop | e Velocity | Capacity | Description | | | |
| <u>(min)</u> | (feet) | (ft/ft | i) (ft/sec) | (cts) | | | | |
| 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 :

Kwik Trip - La Crosse, WI #762

Prepared by Sunde Engineering PLLC

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| MSE 24-hr 3 | 100-yr Rair | nfall=7.60" |
|---------------|-------------|-------------|
| | Printed | 1/17/2024 |
| Solutions LLC | | Page 69 |

| A | rea (sf) | CN | Description | | | | |
|-------------|------------------|---------------|---|-------------------|-----------------------|--|--|
| | 2,703 | 98 | Paved parki | ng, HSG C | | | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C | | |
| | 2,703 2,703 | 98 | Weighted Average 100.00% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (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"

| Are | a (sf) | CN | Description | | | | | |
|---------------|------------------|------------------------|--------------------------|-------------------|-----------------------|--|--|--|
| 1(| 0,182 | 98 | Paved parki | ng, HSG C | | | | |
| | 426 | 74 | >75% Grass | cover, Goo | d, HSG C | | | |
| 1(| 0,608 | 97 | Weighted Av | Weighted Average | | | | |
| | 426 | | 4.02% Pervi | ous Area | | | | |
| 1(| 0,182 | 95.98% Impervious Area | | | | | | |
| Tc L (min) | _ength (feet) | Slop (ft/ft | e 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 :

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|--------|------------------------|--------------|-----------------------|--|--|--|
| | 4,165 | 98 | Paved parki | ng, HSG C | | | | |
| | 685 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 4,850 | 95 | Weighted Av | verage | | | | |
| | 685 | | 14.12% Per | vious Area | | | | |
| | 4,165 | | 85.88% Impervious Area | | | | | |
| | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | | | | |
| 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"

| A | rea (sf) | CN | Description | | |
|-------|----------|-------|-------------|--------------|-----------------------|
| | 9,454 | 98 | Paved parki | ng, HSG C | |
| | 0 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 9,454 | 98 | Weighted Av | verage | |
| | 9,454 | | 100.00% Im | pervious Are | ea |
| | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, Minimum |
| | | | | | |
| | | | O | . f O l | |

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"

| A | rea (sf) | CN | Description | | |
|-------|----------|--------|-------------|--------------|-----------------------|
| | 1,661 | 98 | Paved parki | ng, HSG C | |
| | 0 | 74 | >75% Grass | cover, Goo | od, HSG C |
| | 1,661 | 98 | Weighted Av | /erage | |
| | 1,661 | | 100.00% Im | pervious Are | ea |
| | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | |
| 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 :

| Area (sf) | CN | Description |
|----------------|----|---|
| 0 | 98 | Paved parking, HSG C |
| 5,981 | 74 | >75% Grass cover, Good, HSG C |
| 5,981 5,981 | 74 | Weighted Average 100 00% Pervious Area |

| Kwik T Prepare <u>HydroCA</u> | rip - La (d by Sun <u>D® 10.20-</u> 4 | Cross de Eng la s/n 0 | e, WI #7 jineering 2350 © 20 | 62 PLLC 023 HydroCAD | Software Solut | MSE 24-hr 3 | 100-yr Rainfall=7.60" Printed 1/17/2024 Page 71 | |
|--|--|------------------------------------|---|----------------------------|----------------|--------------------|---|--|
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocit (ft/sec | y Capacity ;) (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry | y, Minimum | | |
| | | | Sı | ummary for | Subcatchn | nent 14a: | | |
| Runoff Route | = ed to Ponc | 1.054 115P : | cfs @ 1 | 2.13 hrs, Volu | ume= | 2,165 cf, Depth= | 4.57" | |
| Runoff b MSE 24- | 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" | | | | | | | |
| A | rea (sf) | CN | Descriptio | on | | | | |
| | 0 | 98 | Paved pa | rking, HSG C | | | | |
| | 5,685 | 74 | >75% Gra | ass cover, Go | od, HSG C | | | |
| | 5,685 5,685 | 74 | vveighted 100.00% | Average Pervious Area | a | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocit (ft/sec | y Capacity) (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry | y, Minimum | | |
| | Summary for Subcatchment 14b: | | | | | | | |
| Runoff Route | Runoff = 2.324 cfs @ 12.13 hrs, Volume= 5,120 cf, Depth= 6.18" Routed to Pond 15P : | | | | | | | |
| Runoff b MSE 24- | y SCS TR hr 3 100- | -20 me yr Rain | thod, UH= fall=7.60" | -SCS, Weight | ed-CN, Time S | Span= 0.00-96.00 h | rs, dt= 0.05 hrs | |
| А | rea (sf) | CN | Descriptio | on | | | | |
| | 8,189 | 98 39 | Paved pa | rking, HSG A | od HSG A | | | |

| | 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) | Slop (ft/ff | e Velocity) (ft/sec) | Capacity (cfs) | Description | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | |

Summary for Subcatchment 15S: Offsite West

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

Kwik Trip - La Crosse, WI #762

Area (sf)

0 6,543

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|---------|--|---------|
| | | - |
| CN | Description | |
| 98 | Paved parking, HSG C | |
| 74 | >75% Grass cover, Good, HSG C | |

6,543 74 Weighted Average

6,543 100.00% Pervious Area

| Tc | Length | Slope | Velocity | Capacity | / Description |
|-------|--------|---------|----------|----------|---------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs |) |

6.0

Direct Entry, Minimum

Summary for Subcatchment 16S: Offsite South

1.551 cfs @ 12.13 hrs, Volume= 3,289 cf, Depth= 5.48" Runoff = 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"

| A | rea (sf) | CN | Description | | | | | | |
|-------|----------|-------|-------------|----------------------|-----------------------|--|--|--|--|
| | 2,400 | 98 | Paved parki | ng, HSG C | | | | | |
| | 4,802 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | | |
| | 7,202 | 82 | Weighted A | Weighted Average | | | | | |
| | 4,802 | | 66.68% Per | 66.68% Pervious Area | | | | | |
| | 2,400 | | 33.32% Imp | ervious Area | а | | | | |
| | | | | | | | | | |
| Tc | Length | Slop | e Velocity | Capacity | Description | | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | | |
| | | | | | • | | | | |

Summary for Subcatchment 17S:

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

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|-------|----------------------|------------------------|-----------------------|--|--|--|
| | 3,155 | 98 | Paved parki | ng, HSG C | | | | |
| | 1,929 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | |
| | 5,084 | 89 | Weighted A | verage | | | | |
| | 1,929 | | 37.94% Pervious Area | | | | | |
| | 3,155 | | 62.06% Imp | 62.06% Impervious Area | | | | |
| _ | | | | | | | | |
| Тс | Length | Slop | e Velocity | Capacity | Description | | | |
| (min) | (feet) | (ft/f | t) (ft/sec) | (cfs) | | | | |
| 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"

| A | rea (sf) | CN | Description | | | | | | |
|-------------|------------------|---------------|---------------------------|------------------------|-----------------------|--|--|--|--|
| | 1,421 | 98 | Paved parki | ng, HSG C | | | | | |
| | 2,420 | 74 | >75% Grass | s cover, Goo | od, HSG C | | | | |
| | 3,841 | 83 | Weighted Av | Weighted Average | | | | | |
| | 2,420 | | 63.00% Per | 63.00% Pervious Area | | | | | |
| | 1,421 | | 37.00% Imp | 37.00% Impervious Area | | | | | |
| Tc (min) | Length (feet) | Slop (ft/f | e Velocity t) (ft/sec) | Capacity (cfs) | Description | | | | |
| 6.0 | | | | | Direct Entry, Minimum | | | | |

Summary for Subcatchment 19S: Offsite SE

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

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"

| A | rea (sf) | CN | Description | | |
|--------------|----------|-------|-------------|--------------|-----------------------|
| | 139 | 98 | Paved parki | ng, HSG C | |
| | 2,185 | 74 | >75% Grass | s cover, Goo | od, HSG C |
| | 2,324 | 75 | Weighted A | verage | |
| | 2,185 | | 94.02% Per | vious Area | |
| | 139 | | 5.98% Impe | rvious Area | |
| т. | 1 | | | 0 | Description |
| IC | Length | Slop | e Velocity | Capacity | Description |
| <u>(min)</u> | (feet) | (ft/f | t) (ft/sec) | (cfs) | |
| 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 :

Kwik Trip - La Crosse, WI #762

Area (sf)

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CN

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|--|---------|
| Description | |
| Paved parking, HSG A | |

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

Printed 1/17/2024

| | 40,279 | 98 | Paved parki | ng, HSG A | |
|-------|--------------|---------|------------------|--------------|-----------------------|
| | 8,410 | 39 | >75% Ġrass | s cover, Goo | d, HSG A |
| | 48,689 | 88 | Weighted Av | verage | |
| | 8,410 | | 17.27% Per | vious Area | |
| | 40,279 | i | 32.73% Imp | ervious Area | 3 |
| т. | I a u autila | 01 |) (a l a aite c | 0 | Description |
| IC | Length | Siope | velocity | Capacity | Description |
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, Minimum |

Summary for Subcatchment EX S:

20.138 cfs @ 12.13 hrs, Volume= 47,358 cf, Depth= 7.00" Runoff = 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 parki | ng, HSG A | |
| 3,880 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| 81,151 | 95 | Weighted Av | verage | |
| 3,880 | | 4.78% Pervi | ious Area | |
| 77,271 | | 95.22% Impervious Area | | |
| Tc Length (min) (feet) | Slop (ft/i | e Velocity t) (ft/sec) | Capacity (cfs) | Description |
| 6.0 | | | | Direct Entry, Minimum |
| | | | | |

Summary for Subcatchment OS-N:

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

| Α | rea (sf) | CN | Description | | |
|-------------|----------|-------|-------------|--------------|-----------------------|
| | 8,189 | 98 | Paved parki | ng, HSG A | |
| | 1,757 | 39 | >75% Grass | s cover, Goo | od, HSG A |
| | 9,946 | 88 | Weighted A | verage | |
| | 1,757 | | 17.67% Per | vious Area | |
| | 8,189 | | 82.33% Imp | ervious Area | а |
| То | Longth | Slop | - Volocity | Canacity | Description |
| IC (min) | (feet) | 010p | | Capacity | Description |
| <u>(mn)</u> | (ieet) | (ועוו |) (II/Sec) | (CIS) | |
| 6.0 | | | | | Direct Entry, Minimum |

Summary for Pond 4P:

| Inflow Area Inflow = Outflow = Primary = | = 70,649 = 16.560 cfs = 4.541 cfs = 4.541 cfs | 9 sf, 70.82% Impo 5 @ 12.13 hrs, \ 5 @ 12.33 hrs, \ 5 @ 12.33 hrs, \ | ervious, Inflow Dep /olume= 38 /olume= 38 /olume= 38 | th = 6.54" for 100-yr event ,532 cf ,532 cf, Atten= 73%, Lag= 11.9 min |
|---|--|---|---|--|
| Routed t | o Link P-S : | i (go 12.00 mio, i | | ,002 01 |
| Routing by Starting Ele | Stor-Ind method, v= 639.50' Surf. | Time Span= 0.00 Area= 6.295 sf |)-96.00 hrs, dt= 0.09 Storage= 13.277 cf | 5 hrs |
| Peak Elev= | 642.03' @ 12.33 | hrs Surf.Area= | 8,927 sf Storage= | 32,448 cf (19,170 cf above start) |
| Plug-Flow d Center-of-M | etention time= 48 lass det. time= 28 | 32.0 min calculate 53.7 min (1,009.6 | ed for 25,255 cf (66 5 - 755.9) | % of inflow) |
| Volume | Invert Ava | il.Storage Stora | age Description | |
| #1 | 634.00' | 52,295 cf Cust | tom Stage Data (P | ismatic) Listed below (Recalc) |
| Elevation | Surf.Area | Inc.Store | cum.Store | |
| (feet) | (sq-ft) | (cubic-feet) | (cubic-feet) | |
| 634.00 | 698 | C | 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 | 5 10,514 | |
| 639.50 | 6,295 | 2,764 | 13,277 | |

| 640.0 | 00 | 6,787 | 3,271 | 16,548 | |
|--------|----------|---------|---------------------|------------------|---------------------------------------|
| 641.0 | 00 | 7,812 | 7,300 | 23,847 | |
| 642.0 | 00 | 8,895 | 8,354 | 32,201 | |
| 643.0 | 00 | 10,033 | 9,464 | 41,665 | |
| 644.0 | 00 | 11,228 | 10,631 | 52,295 | |
| Device | Routing | Invert | Outlet Devices | | |
| #1 | Primary | 639.50' | 12.0" Round Cu | Ilvert L= 57.0' | Ke= 0.500 |
| | | | Inlet / Outlet Inve | rt= 639.50' / 63 | 9.32' S= 0.0032 '/' Cc= 0.900 |
| | | | n= 0.013 Concre | ete pipe, bends | & connections, Flow Area= 0.79 sf |
| #2 | Device 1 | 639.50' | 4.0" Vert. Orifice | e/Grate C= 0.6 | 600 Limited to weir flow at low heads |
| #3 | Device 1 | 641.50' | 4.0' long Sharp- | Crested Recta | ngular 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 :
 12.13 hrs, Volume=
 29,814 cf

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

35,829 sf, 95.87% Impervious, Inflow Depth = 7.23" Inflow Area = 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 = = 8.965 cfs @ 12.13 hrs, Volume= Primary 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 | a = | 19,170 sf, | 99.02% Impervious, | Inflow Depth = 7.3 | 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 Are | ea = | 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, At | ten= 0%, Lag= 0.0 min |
| Primary | = | 3.856 cfs @ | 12.13 hrs, Volume= | 9,379 cf | - |
| Routed | d to Po | nd 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% Impe | ervious, | Inflow Depth = | 7.2 | 29" for | 100-yr event | <u>:</u> |
|-------------|---------|-------------|--------------|----------|----------------|-----|----------|--------------|----------|
| Inflow | = | 0.986 cfs @ | 12.13 hrs, V | /olume= | 2,389 | cf | | - | |
| Outflow | = | 0.986 cfs @ | 12.13 hrs, V | /olume= | 2,389 | cf, | Atten= 0 | %, Lag= 0.0 |) min |
| Primary | = | 0.986 cfs @ | 12.13 hrs, V | /olume= | 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 :
 12.13 hrs, Volume=
 2,667 cf

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 | a = | 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 F | 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 | ١n | vert Avai | I.Storage | age Storage Description | | | | | | |
|----------|---------|-----------|-----------------------------------|--|------------------|---------------------------------------|--|--|--|--|
| #1 | 639. | 00' | 4,022 cf | Custon | n Stage Data (Pr | ismatic) Listed below (Recalc) | | | | |
| Elevatio | on | Surf.Area | Inc | .Store | Cum.Store | | | | | |
| (fee | et) | (sq-ft) | (cubi | c-feet) | (cubic-feet) | | | | | |
| 639.0 | 00 | 0 | | 0 | 0 | | | | | |
| 640.0 | 00 | 250 | | 125 | 125 | | | | | |
| 641.0 | 00 | 545 | | 398 | 523 | | | | | |
| 642.0 | 00 | 912 | | 729 | 1,251 | | | | | |
| 643.0 | 00 | 1,350 | | 1,131 | 2,382 | | | | | |
| 644.0 | 00 | 1,930 | | 1,640 | 4,022 | | | | | |
| Device | Routing | Inv | vert Outle | et Device | es | | | | | |
| #1 | Primary | 639. | .00' 12.0 Inlet n= 0 | 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% Impervior | is, Inflow D | Depth = 6.77 | 7" for ´ | 100-yr event | | | |
|---|-------------------|------------------|--------------|--------------|-----------|------------------|--|--|--|
| Inflow = | 8.019 cfs @ | 12.13 hrs, Volum | e= | 18,966 cf | | | | | |
| Outflow = | 4.403 cfs @ | 12.22 hrs, Volum | e= | 18,966 cf, / | Atten= 45 | 5%, Lag= 5.6 min | | | |
| Primary = | 4.403 cfs @ | 12.22 hrs, Volum | e= | 18,966 cf | | | | | |
| Routed to I | 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 sfStorage= 1.002 cf | | | | | | | | | |
| Peak Elev= 64 | 3.35' @ 12.22 hrs | Surf.Area= 2,438 | sf Storag | e= 4,529 cf | (3,527 0 | 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.S | torage Storage E | escription | | | | | | |
| #1 6 | 39.00' 13 | 329 cf Custom S | tage Data | (Prismatic) | isted be | low (Recalc) | | | |
| | | | | | | | | | |

| Elevation | Surf.Area | Inc.Store | Cum.Store |
|-----------|-----------|--------------|--------------|
| (feet) | (sq-ft) | (cubic-feet) | (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 '/' 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 | a = | 13,311 sf, | 96.80% Impervious, | Inflow Depth = 7.2 | 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 Kwik Trip - La Crosse, WI #762

Prepared by Sunde Engineering PLLC

MSE 24-hr 3 100-yr Rainfall=7.60" Printed 1/17/2024 HydroCAD® 10.20-4a s/n 02350 © 2023 HydroCAD Software Solutions LLC Page 80

| 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 | a = | 2,703 sf,1 | 00.00% Im | pervious, | Inflow Depth = | 7.3 | 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% Im | pervious, | Inflow Depth = | 7.0 | 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
 10
 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% Impervio | us, Inflow Dep | th = 6.0 | 66" for | 100-yr event |
|----------|------|---|--------------|------------------|----------------|----------|----------|------------------|
| Inflow | = | = | 33.839 cfs @ | 12.13 hrs, Volur | ne= 77 | ,543 cf | | |
| Primar | у = | = | 33.839 cfs @ | 12.13 hrs, Volur | ne= 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 = 6.2 | 9" for 100-yr event |
|----------|------|---|--------------|--------------------|----------------------|-------------------------|
| Inflow | | = | 12.453 cfs @ | 12.22 hrs, Volume= | 73,262 cf | - |
| Primar | у | = | 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

Precipitation Frequency Data Server



NOAA Atlas 14, Volume 8, Version 2 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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹ | | | | | | | | | | | |
|--|----------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--|
| Duration | | Average recurrence interval (years) | | | | | | | | | |
| Duration | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 | |
| 5-min | 0.385 | 0.451 | 0.562 | 0.654 | 0.783 | 0.884 | 0.986 | 1.09 | 1.23 | 1.34 | |
| | (0.329-0.458) | (0.385-0.538) | (0.477-0.671) | (0.552-0.785) | (0.632-0.967) | (0.693-1.10) | (0.740-1.26) | (0.777-1.43) | (0.835-1.65) | (0.879-1.82) | |
| 10-min | 0.563 | 0.661 | 0.822 | 0.958 | 1.15 | 1.29 | 1.44 | 1.60 | 1.80 | 1.96 | |
| | (0.481-0.671) | (0.564-0.788) | (0.699-0.983) | (0.808-1.15) | (0.926-1.42) | (1.02-1.62) | (1.08-1.84) | (1.14-2.09) | (1.22-2.42) | (1.29-2.67) | |
| 15-min | 0.687 | 0.806 | 1.00 | 1.17 | 1.40 | 1.58 | 1.76 | 1.95 | 2.20 | 2.39 | |
| | (0.587-0.819) | (0.688-0.961) | (0.852-1.20) | (0.985-1.40) | (1.13-1.73) | (1.24-1.97) | (1.32-2.25) | (1.39-2.55) | (1.49-2.95) | (1.57-3.25) | |
| 30-min | 0.938 | 1.11 | 1.39 | 1.62 | 1.95 | 2.20 | 2.46 | 2.72 | 3.07 | 3.33 | |
| | (0.801-1.12) | (0.946-1.32) | (1.18-1.66) | (1.37-1.95) | (1.57-2.41) | (1.73-2.76) | (1.85-3.14) | (1.94-3.56) | (2.08-4.12) | (2.19-4.54) | |
| 60-min | 1.22 | 1.44 | 1.82 | 2.14 | 2.59 | 2.95 | 3.32 | 3.69 | 4.20 | 4.60 | |
| | (1.04-1.45) | (1.23-1.72) | (1.55-2.18) | (1.81-2.57) | (2.10-3.21) | (2.32-3.70) | (2.49-4.25) | (2.63-4.84) | (2.86-5.65) | (3.02-6.26) | |
| 2-hr | 1.50 | 1.78 | 2.25 | 2.66 | 3.24 | 3.70 | 4.17 | 4.67 | 5.34 | 5.86 | |
| | (1.29-1.77) | (1.53-2.10) | (1.93-2.67) | (2.26-3.17) | (2.64-3.99) | (2.92-4.61) | (3.16-5.31) | (3.35-6.09) | (3.65-7.14) | (3.88-7.94) | |
| 3-hr | 1.68 | 2.00 | 2.53 | 3.00 | 3.67 | 4.22 | 4.79 | 5.39 | 6.22 | 6.88 | |
| | (1.45-1.98) | (1.72-2.35) | (2.17-2.99) | (2.55-3.55) | (3.01-4.52) | (3.35-5.25) | (3.64-6.09) | (3.89-7.02) | (4.28-8.30) | (4.57-9.28) | |
| 6-hr | 2.00 | 2.35 | 2.97 | 3.52 | 4.36 | 5.06 | 5.80 | 6.60 | 7.73 | 8.64 | |
| | (1.74-2.34) | (2.04-2.75) | (2.56-3.48) | (3.02-4.15) | (3.61-5.36) | (4.05-6.27) | (4.45-7.35) | (4.80-8.56) | (5.36-10.3) | (5.78-11.6) | |
| 12-hr | 2.30 | 2.67 | 3.34 | 3.97 | 4.94 | 5.77 | 6.67 | 7.66 | 9.09 | 10.3 | |
| | (2.01-2.67) | (2.33-3.10) | (2.90-3.88) | (3.42-4.63) | (4.13-6.05) | (4.67-7.13) | (5.17-8.43) | (5.63-9.91) | (6.36-12.0) | (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 | 3.38 | 4.21 | 4.98 | 6.15 | 7.15 | 8.24 | 9.42 | 11.1 | 12.5 | |
| | (2.59-3.34) | (2.99-3.86) | (3.71-4.82) | (4.35-5.72) | (5.21-7.42) | (5.86-8.70) | (6.46-10.2) | (7.01-12.0) | (7.88-14.5) | (8.53-16.4) | |
| 3-day | 3.20 | 3.67 | 4.52 | 5.31 | 6.51 | 7.53 | 8.63 | 9.82 | 11.5 | 12.9 | |
| | (2.84-3.63) | (3.26-4.17) | (4.00-5.15) | (4.66-6.07) | (5.53-7.80) | (6.19-9.10) | (6.80-10.7) | (7.34-12.5) | (8.22-15.0) | (8.88-16.9) | |
| 4-day | 3.44 | 3.93 | 4.80 | 5.60 | 6.83 | 7.86 | 8.98 | 10.2 | 11.9 | 13.4 | |
| | (3.07-3.90) | (3.50-4.45) | (4.25-5.45) | (4.93-6.39) | (5.82-8.14) | (6.49-9.47) | (7.10-11.1) | (7.65-12.9) | (8.53-15.5) | (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.

Back to Top

PF graphical





NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Wed Dec 27 18:31:41 2023

Back to Top

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Back to Top

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