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EX. HOUSE
5401
SUNNYBURKE
LL EL=955.85

EX. CMP CULVERT
W IE=956.09

EX. RETAINING WALL

EX. UTILITY POLE (TYP)

EX. TRANSFORMER

LOT 2 OF CSM 9224

N 88°31'54"E 192.79'

CAMY CIRCLE

EX. CMP CULVERT
S IE=957.91
N IE=957.62

EX. 12"x24" CMP CULVERT
E IE=957.78
W IE=957.56 (CRUSHED)

SUNNYBURKE DRIVE

EX. TV PEDESTAL

100-YEAR BACK-TO-BACK FLOOD LINE

EXISTING DRAINAGEWAY

EXISTING DRAINAGEWAY

10' PUBLIC UTILITY EASEMENT PER CSM NO. 1183

EX. FENCE LINE

PROPOSED 20' DRAINAGE EASEMENT

+EX=954.36

+EX=953.95

+EX=954.06

+EX=954.08

+EX=953.82

+EX=954.75

+EX=954.21

+EX=954.49

+EX=954.27

+EX=954.38

+EX=954.35

N 01°19'14"E 665.16'

LOT 1

LOT 2

EX. DECIDUOUS TREE (TYP)

100-YEAR BACK-TO-BACK FLOOD LINE

N 88°40'46"W 253.84'

PROPOSED 10' DRAINAGE EASEMENT

N 81°09'19"W 208.28'

N 81°09'19"W 208.21'

S 05°55'49"W 309.67'

| EXISTING DRAINAGEWAY SINGLE EVENT FLOOD ELEVATIONS | |
|---|---|
| STORM | ELEV |
| 1-YR | 952.56 |
| 25-YR | 954.17 |
| 100-YR | 954.39 |

| EXISTING DRAINAGEWAY BACK TO BACK FLOOD EVENT ELEVATIONS | |
|---|---|
| STORM | ELEV |
| 1-YR | 954.24 |
| 25-YR | 954.59 |
| 100-YR | 954.73 |

N

0 20 40

**SACHS PROPERTY – SUNNYBURKE DRIVE**
EXISTING SITE PLAN
PAGE: 1 OF 3
DATED: AUGUST 28, 2019

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**SACHS PROPERTY – SUNNYBURKE DRIVE**

EXISTING DRAINAGE AREA MAP

PAGE: 2 OF 3

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| EXISTING DRAINAGEWAY FLOOD ELEVATIONS W/ FUTURE HOMES & DRIVEWAYS ASSUMING STARTING DEPTH=EXISTING 1YR STORM ELEVATION (SINGLE EVENT) | |
|---|---|
| STORM | ELEV |
| 1–YR | 953.46 |
| 25–YR | 954.24 |
| 100–YR | 954.46 |

| EXISTING DRAINAGEWAY FLOOD ELEVATIONS W/ FUTURE HOMES & DRIVEWAYS ASSUMING STARTING DEPTH=EXISTING 1YR STORM ELEVATION (BACK TO BACK EVENTS) | |
|---|---|
| STORM | ELEV |
| 1–YR | 954.32 |
| 25–YR | 954.59 |
| 100–YR | 954.73 |

N

0 100 200

**SACHS PROPERTY – SUNNYBURKE DRIVE**

PROPOSED DRAINAGE AREA MAP

PAGE: 3 OF 3

DATED: AUGUST 28, 2019

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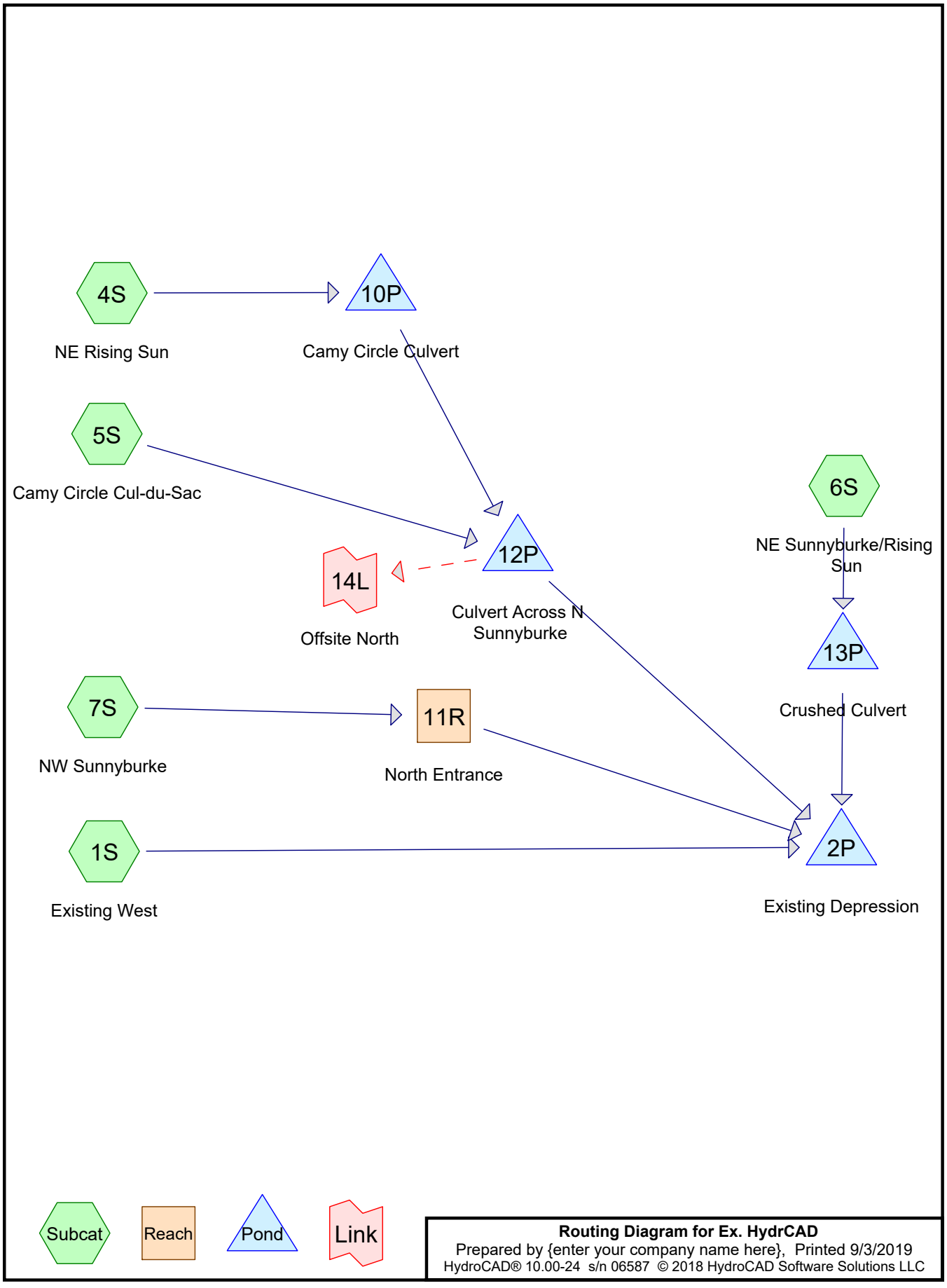



**Routing Diagram for Ex. HydrCAD**
Prepared by {enter your company name here}, Printed 9/3/2019

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 3.226 | 68 | 1 acre lots, 20% imp, HSG B (1S, 7S) |
| 7.728 | 70 | 1/2 acre lots, 25% imp, HSG B (1S, 4S, 5S, 6S) |
| 4.163 | 65 | 2 acre lots, 12% imp, HSG B (1S, 7S) |
| 2.767 | 58 | Meadow, non-grazed, HSG B (1S) |
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B (5S) |
| 7.952 | 55 | Woods, Good, HSG B (1S) |
| **26.200** | **64** | **TOTAL AREA** |

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=1.36"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=12.79 cfs 2.167 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=2.02"
Flow Length=775' Tc=39.9 min CN=70 Runoff=2.92 cfs 0.528 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=2.97"
Flow Length=534' Tc=14.5 min CN=81 Runoff=1.90 cfs 0.235 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=2.02"
Flow Length=358' Tc=31.7 min CN=70 Runoff=1.55 cfs 0.247 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=1.71"
Flow Length=565' Tc=27.9 min CN=66 Runoff=1.49 cfs 0.212 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.40' Max Vel=0.23 fps Inflow=1.49 cfs 0.212 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=0.99 cfs 0.212 af

**Pond 2P: Existing Depression** Peak Elev=954.24' Storage=95,353 cf Inflow=18.57 cfs 3.390 af
Outflow=7.85 cfs 1.515 af

**Pond 10P: Camy Circle Culvert** Peak Elev=959.03' Storage=382 cf Inflow=2.92 cfs 0.528 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=2.90 cfs 0.528 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=957.63' Storage=50 cf Inflow=3.51 cfs 0.764 af
Primary=3.51 cfs 0.764 af Secondary=0.00 cfs 0.000 af Outflow=3.51 cfs 0.764 af

**Pond 13P: Crushed Culvert** Peak Elev=958.40' Storage=30 cf Inflow=1.55 cfs 0.247 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=1.55 cfs 0.247 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 3.390 af Average Runoff Depth = 1.55"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 12.79 cfs @ 36.59 hrs, Volume= 2.167 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 2.92 cfs @ 36.53 hrs, Volume= 0.528 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 1.90 cfs @ 36.22 hrs, Volume= 0.235 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 1.49 cfs @ 36.39 hrs, Volume= 0.212 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 1.71" for 1-Year event
Inflow = 1.49 cfs @ 36.39 hrs, Volume= 0.212 af
Outflow = 0.99 cfs @ 36.62 hrs, Volume= 0.212 af, Atten= 33%, Lag= 14.1 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 28.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 98.2 min

Peak Storage= 1,722 cf @ 36.62 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 1.55" for 1-Year event
Inflow = 18.57 cfs @ 36.55 hrs, Volume= 3.390 af
Outflow = 7.85 cfs @ 37.16 hrs, Volume= 1.515 af, Atten= 58%, Lag= 36.3 min
Primary = 7.85 cfs @ 37.16 hrs, Volume= 1.515 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.24' @ 37.16 hrs Surf.Area= 74,261 sf Storage= 95,353 cf

Plug-Flow detention time= 773.8 min calculated for 1.515 af (45% of inflow)
Center-of-Mass det. time= 388.0 min ( 2,389.5 - 2,001.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=7.85 cfs @ 37.16 hrs HW=954.24' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 7.85 cfs @ 0.99 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 2.92 cfs @ 36.53 hrs, Volume= 0.528 af
Outflow = 2.90 cfs @ 36.58 hrs, Volume= 0.528 af, Atten= 1%, Lag= 2.8 min
Primary = 2.90 cfs @ 36.58 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.03' @ 36.58 hrs Surf.Area= 622 sf Storage= 382 cf

Plug-Flow detention time= 2.9 min calculated for 0.528 af (100% of inflow)
Center-of-Mass det. time= 2.8 min ( 1,928.6 - 1,925.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=2.90 cfs @ 36.58 hrs HW=959.03' TW=957.62' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 2.90 cfs @ 2.86 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 2.24" for 1-Year event
Inflow = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af
Outflow = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af, Atten= 0%, Lag= 0.3 min
Primary = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 957.63' @ 36.50 hrs Surf.Area= 81 sf Storage= 50 cf

Plug-Flow detention time= 0.4 min calculated for 0.764 af (100% of inflow)
Center-of-Mass det. time= 0.3 min ( 1,877.5 - 1,877.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=3.51 cfs @ 36.50 hrs HW=957.63' TW=953.93' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 3.51 cfs @ 2.69 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af
Outflow = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.1 min
Primary = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.40' @ 36.45 hrs Surf.Area= 70 sf Storage= 30 cf

Plug-Flow detention time= 0.6 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 0.6 min ( 1,918.7 - 1,918.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=1.55 cfs @ 36.45 hrs HW=958.40' TW=953.85' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 1.55 cfs @ 2.15 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=4.88"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=38.94 cfs 7.802 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=6.06"
Flow Length=775' Tc=39.9 min CN=70 Runoff=7.57 cfs 1.585 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=7.48"
Flow Length=534' Tc=14.5 min CN=81 Runoff=4.24 cfs 0.592 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=6.06"
Flow Length=358' Tc=31.7 min CN=70 Runoff=4.02 cfs 0.740 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=5.54"
Flow Length=565' Tc=27.9 min CN=66 Runoff=4.13 cfs 0.684 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.73' Max Vel=0.32 fps Inflow=4.13 cfs 0.684 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=3.09 cfs 0.684 af

**Pond 2P: Existing Depression** Peak Elev=954.59' Storage=125,661 cf Inflow=52.84 cfs 11.367 af
Outflow=47.73 cfs 9.493 af

**Pond 10P: Camy Circle Culvert** Peak Elev=960.31' Storage=1,669 cf Inflow=7.57 cfs 1.585 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=7.09 cfs 1.585 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.96' Storage=814 cf Inflow=8.20 cfs 2.178 af
Primary=7.31 cfs 2.141 af Secondary=0.81 cfs 0.037 af Outflow=8.12 cfs 2.178 af

**Pond 13P: Crushed Culvert** Peak Elev=958.85' Storage=67 cf Inflow=4.02 cfs 0.740 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=4.02 cfs 0.740 af

**Link 14L: Offsite North** Inflow=0.81 cfs 0.037 af
Primary=0.81 cfs 0.037 af

**Total Runoff Area = 26.200 ac Runoff Volume = 11.404 af Average Runoff Depth = 5.22"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 38.94 cfs @ 36.58 hrs, Volume= 7.802 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 7.57 cfs @ 36.53 hrs, Volume= 1.585 af, Depth= 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 4.24 cfs @ 36.22 hrs, Volume= 0.592 af, Depth= 7.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af, Depth= 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 4.13 cfs @ 36.37 hrs, Volume= 0.684 af, Depth= 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 5.54" for 25-Year event
Inflow = 4.13 cfs @ 36.37 hrs, Volume= 0.684 af
Outflow = 3.09 cfs @ 36.57 hrs, Volume= 0.684 af, Atten= 25%, Lag= 11.9 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 20.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 71.9 min

Peak Storage= 3,827 cf @ 36.57 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 5.21" for 25-Year event
Inflow = 52.84 cfs @ 36.55 hrs, Volume= 11.367 af
Outflow = 47.73 cfs @ 36.72 hrs, Volume= 9.493 af, Atten= 10%, Lag= 10.1 min
Primary = 47.73 cfs @ 36.72 hrs, Volume= 9.493 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.59' @ 36.72 hrs Surf.Area= 90,839 sf Storage= 125,661 cf

Plug-Flow detention time= 370.0 min calculated for 9.493 af (84% of inflow)
Center-of-Mass det. time= 242.4 min ( 2,068.9 - 1,826.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=47.73 cfs @ 36.72 hrs HW=954.59' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 47.73 cfs @ 1.88 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 7.57 cfs @ 36.53 hrs, Volume= 1.585 af
Outflow = 7.09 cfs @ 36.65 hrs, Volume= 1.585 af, Atten= 6%, Lag= 6.9 min
Primary = 7.09 cfs @ 36.65 hrs, Volume= 1.585 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 960.31' @ 36.65 hrs Surf.Area= 1,824 sf Storage= 1,669 cf

Plug-Flow detention time= 2.8 min calculated for 1.585 af (100% of inflow)
Center-of-Mass det. time= 2.7 min ( 1,773.0 - 1,770.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=7.09 cfs @ 36.65 hrs HW=960.31' TW=958.95' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 7.09 cfs @ 4.01 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 6.39" for 25-Year event
Inflow = 8.20 cfs @ 36.35 hrs, Volume= 2.178 af
Outflow = 8.12 cfs @ 36.61 hrs, Volume= 2.178 af, Atten= 1%, Lag= 15.2 min
Primary = 7.31 cfs @ 36.61 hrs, Volume= 2.141 af
Secondary = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.96' @ 36.61 hrs Surf.Area= 1,413 sf Storage= 814 cf

Plug-Flow detention time= 0.6 min calculated for 2.178 af (100% of inflow)
Center-of-Mass det. time= 0.6 min ( 1,739.7 - 1,739.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=7.31 cfs @ 36.61 hrs HW=958.96' TW=954.57' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 7.31 cfs @ 4.14 fps)

**Secondary OutFlow** Max=0.81 cfs @ 36.61 hrs HW=958.96' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.81 cfs @ 1.76 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af
Outflow = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af, Atten= 0%, Lag= 0.3 min
Primary = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.85' @ 36.43 hrs Surf.Area= 92 sf Storage= 67 cf

Plug-Flow detention time= 0.4 min calculated for 0.740 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 1,763.1 - 1,762.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=4.02 cfs @ 36.43 hrs HW=958.85' TW=954.48' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 4.02 cfs @ 2.89 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af
Primary = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=7.87"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=58.81 cfs 12.561 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=9.27"
Flow Length=775' Tc=39.9 min CN=70 Runoff=10.96 cfs 2.424 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=10.87"
Flow Length=534' Tc=14.5 min CN=81 Runoff=5.91 cfs 0.861 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=9.27"
Flow Length=358' Tc=31.7 min CN=70 Runoff=5.81 cfs 1.132 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=8.66"
Flow Length=565' Tc=27.9 min CN=66 Runoff=6.08 cfs 1.069 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.90' Max Vel=0.36 fps Inflow=6.08 cfs 1.069 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=4.70 cfs 1.069 af

**Pond 2P: Existing Depression** Peak Elev=954.73' Storage=137,984 cf Inflow=76.92 cfs 17.872 af
Outflow=70.73 cfs 15.997 af

**Pond 10P: Camy Circle Culvert** Peak Elev=961.27' Storage=4,514 cf Inflow=10.96 cfs 2.424 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=9.10 cfs 2.424 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=959.34' Storage=1,406 cf Inflow=10.85 cfs 3.286 af
Primary=8.27 cfs 3.109 af Secondary=2.05 cfs 0.177 af Outflow=10.32 cfs 3.286 af

**Pond 13P: Crushed Culvert** Peak Elev=959.14' Storage=97 cf Inflow=5.81 cfs 1.132 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=5.81 cfs 1.132 af

**Link 14L: Offsite North** Inflow=2.05 cfs 0.177 af
Primary=2.05 cfs 0.177 af

**Total Runoff Area = 26.200 ac Runoff Volume = 18.049 af Average Runoff Depth = 8.27"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 58.81 cfs @ 36.58 hrs, Volume= 12.561 af, Depth= 7.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 10.96 cfs @ 36.53 hrs, Volume= 2.424 af, Depth= 9.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 5.91 cfs @ 36.22 hrs, Volume= 0.861 af, Depth=10.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 5.81 cfs @ 36.42 hrs, Volume= 1.132 af, Depth= 9.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 6.08 cfs @ 36.37 hrs, Volume= 1.069 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 8.66" for 100-Year event
Inflow = 6.08 cfs @ 36.37 hrs, Volume= 1.069 af
Outflow = 4.70 cfs @ 36.56 hrs, Volume= 1.069 af, Atten= 23%, Lag= 11.1 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 18.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 64.2 min

Peak Storage= 5,184 cf @ 36.56 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 8.19" for 100-Year event
Inflow = 76.92 cfs @ 36.55 hrs, Volume= 17.872 af
Outflow = 70.73 cfs @ 36.70 hrs, Volume= 15.997 af, Atten= 8%, Lag= 9.2 min
Primary = 70.73 cfs @ 36.70 hrs, Volume= 15.997 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.73' @ 36.70 hrs Surf.Area= 97,580 sf Storage= 137,984 cf

Plug-Flow detention time= 239.9 min calculated for 15.997 af (90% of inflow)
Center-of-Mass det. time= 147.9 min ( 1,913.2 - 1,765.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=70.73 cfs @ 36.70 hrs HW=954.73' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 70.73 cfs @ 2.18 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 9.27" for 100-Year event
Inflow = 10.96 cfs @ 36.53 hrs, Volume= 2.424 af
Outflow = 9.10 cfs @ 36.75 hrs, Volume= 2.424 af, Atten= 17%, Lag= 13.1 min
Primary = 9.10 cfs @ 36.75 hrs, Volume= 2.424 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 961.27' @ 36.73 hrs Surf.Area= 4,055 sf Storage= 4,514 cf

Plug-Flow detention time= 3.6 min calculated for 2.424 af (100% of inflow)
Center-of-Mass det. time= 3.6 min ( 1,720.1 - 1,716.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=9.10 cfs @ 36.75 hrs HW=961.27' TW=959.31' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 9.10 cfs @ 5.15 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 9.64" for 100-Year event
Inflow = 10.85 cfs @ 36.26 hrs, Volume= 3.286 af
Outflow = 10.32 cfs @ 36.38 hrs, Volume= 3.286 af, Atten= 5%, Lag= 7.5 min
Primary = 8.27 cfs @ 36.38 hrs, Volume= 3.109 af
Secondary = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.34' @ 36.38 hrs Surf.Area= 1,651 sf Storage= 1,406 cf

Plug-Flow detention time= 1.0 min calculated for 3.286 af (100% of inflow)
Center-of-Mass det. time= 0.9 min ( 1,692.2 - 1,691.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=8.27 cfs @ 36.38 hrs HW=959.34' TW=954.57' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 8.27 cfs @ 4.68 fps)

**Secondary OutFlow** Max=2.05 cfs @ 36.38 hrs HW=959.34' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 2.44 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 9.27" for 100-Year event
Inflow = 5.81 cfs @ 36.42 hrs, Volume= 1.132 af
Outflow = 5.81 cfs @ 36.43 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.6 min
Primary = 5.81 cfs @ 36.43 hrs, Volume= 1.132 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.14' @ 36.43 hrs Surf.Area= 125 sf Storage= 97 cf

Plug-Flow detention time= 0.4 min calculated for 1.132 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 1,709.4 - 1,709.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

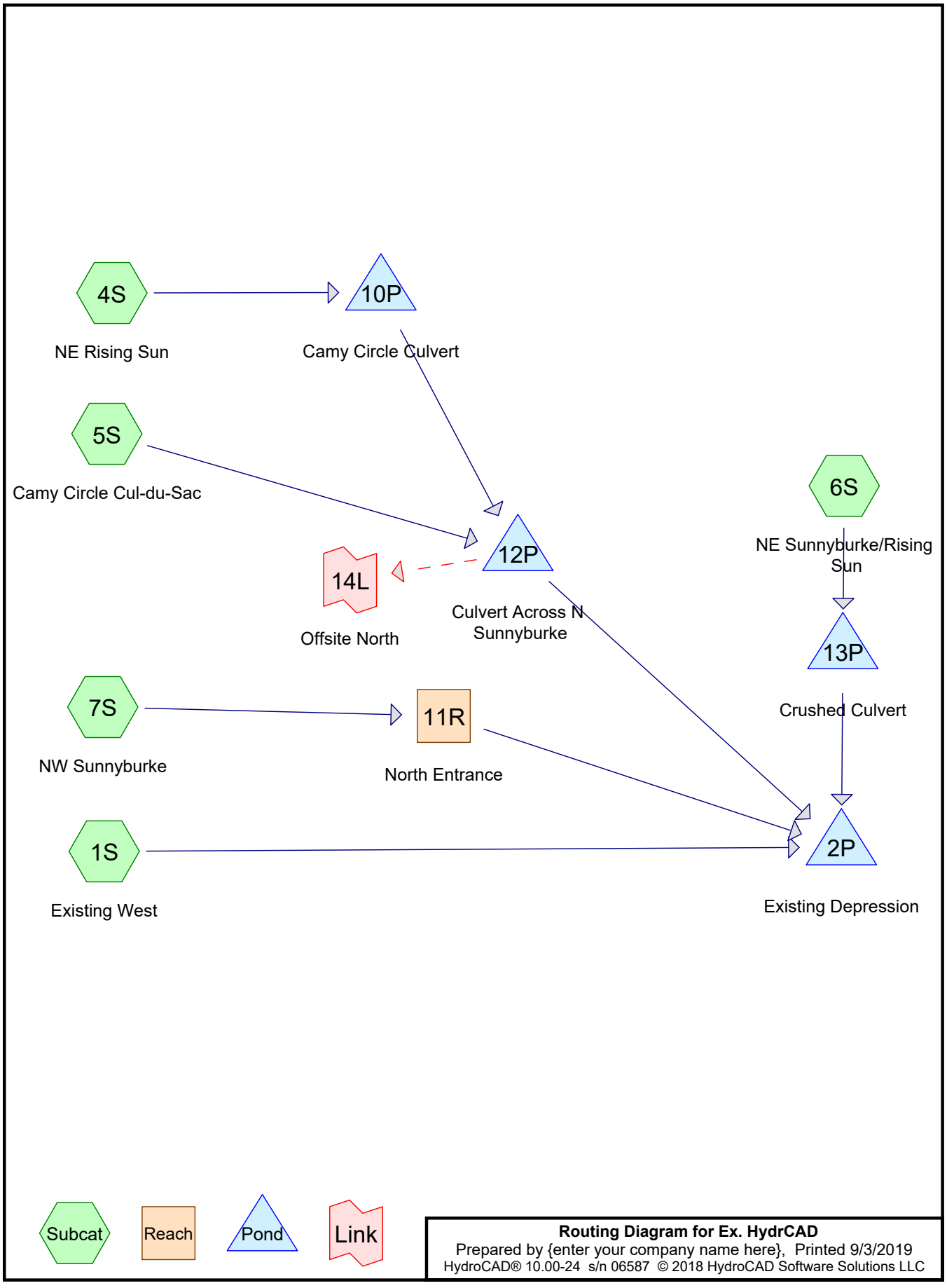
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=5.81 cfs @ 36.43 hrs HW=959.14' TW=954.61' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 5.81 cfs @ 3.22 fps)

## Summary for Link 14L: Offsite North

Inflow = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af
Primary = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs




**Routing Diagram for Ex. HydrCAD**
Prepared by {enter your company name here}, Printed 9/3/2019

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 3.226 | 68 | 1 acre lots, 20% imp, HSG B (1S, 7S) |
| 7.728 | 70 | 1/2 acre lots, 25% imp, HSG B (1S, 4S, 5S, 6S) |
| 4.163 | 65 | 2 acre lots, 12% imp, HSG B (1S, 7S) |
| 2.767 | 58 | Meadow, non-grazed, HSG B (1S) |
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B (5S) |
| 7.952 | 55 | Woods, Good, HSG B (1S) |
| **26.200** | **64** | **TOTAL AREA** |

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=0.19"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=1.17 cfs 0.308 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=0.45"
Flow Length=775' Tc=39.9 min CN=70 Runoff=0.76 cfs 0.118 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=0.94"
Flow Length=534' Tc=14.5 min CN=81 Runoff=1.01 cfs 0.074 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=0.45"
Flow Length=358' Tc=31.7 min CN=70 Runoff=0.40 cfs 0.055 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=0.32"
Flow Length=565' Tc=27.9 min CN=66 Runoff=0.26 cfs 0.040 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.12' Max Vel=0.11 fps Inflow=0.26 cfs 0.040 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=0.12 cfs 0.040 af

**Pond 2P: Existing Depression** Peak Elev=952.56' Storage=25,911 cf Inflow=2.49 cfs 0.595 af
Outflow=0.00 cfs 0.000 af

**Pond 10P: Camy Circle Culvert** Peak Elev=958.45' Storage=106 cf Inflow=0.76 cfs 0.118 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=0.75 cfs 0.118 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=956.99' Storage=15 cf Inflow=1.12 cfs 0.192 af
Primary=1.12 cfs 0.192 af Secondary=0.00 cfs 0.000 af Outflow=1.12 cfs 0.192 af

**Pond 13P: Crushed Culvert** Peak Elev=958.08' Storage=11 cf Inflow=0.40 cfs 0.055 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=0.40 cfs 0.055 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 0.595 af Average Runoff Depth = 0.27"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 1.17 cfs @ 12.83 hrs, Volume= 0.308 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 0.76 cfs @ 12.64 hrs, Volume= 0.118 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 1.01 cfs @ 12.23 hrs, Volume= 0.074 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 0.26 cfs @ 12.52 hrs, Volume= 0.040 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 0.32" for 1-Year event
Inflow = 0.26 cfs @ 12.52 hrs, Volume= 0.040 af
Outflow = 0.12 cfs @ 13.20 hrs, Volume= 0.040 af, Atten= 56%, Lag= 41.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.11 fps, Min. Travel Time= 59.4 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 117.8 min

Peak Storage= 412 cf @ 13.20 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 0.27" for 1-Year event
Inflow = 2.49 cfs @ 12.73 hrs, Volume= 0.595 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 952.56' @ 72.00 hrs Surf.Area= 16,518 sf Storage= 25,911 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=949.00' (Free Discharge)
**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 0.45" for 1-Year event
Inflow = 0.76 cfs @ 12.64 hrs, Volume= 0.118 af
Outflow = 0.75 cfs @ 12.69 hrs, Volume= 0.118 af, Atten= 1%, Lag= 2.9 min
Primary = 0.75 cfs @ 12.69 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.45' @ 12.69 hrs Surf.Area= 335 sf Storage= 106 cf

Plug-Flow detention time= 3.1 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 3.1 min ( 908.4 - 905.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=0.75 cfs @ 12.69 hrs HW=958.45' TW=956.95' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.75 cfs @ 1.95 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 0.56" for 1-Year event
Inflow = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af
Outflow = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.2 min
Primary = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 956.99' @ 12.26 hrs Surf.Area= 30 sf Storage= 15 cf

Plug-Flow detention time= 0.5 min calculated for 0.192 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 883.5 - 883.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=1.12 cfs @ 12.26 hrs HW=956.99' TW=949.40' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.12 cfs @ 1.89 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 0.45" for 1-Year event
Inflow = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af
Outflow = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.3 min
Primary = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.08' @ 12.53 hrs Surf.Area= 54 sf Storage= 11 cf

Plug-Flow detention time= 0.7 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 0.7 min ( 898.3 - 897.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=0.40 cfs @ 12.53 hrs HW=958.08' TW=950.06' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 0.40 cfs @ 1.39 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=1.32"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=14.95 cfs 2.101 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=1.97"
Flow Length=775' Tc=39.9 min CN=70 Runoff=4.11 cfs 0.515 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=2.91"
Flow Length=534' Tc=14.5 min CN=81 Runoff=3.21 cfs 0.230 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=1.97"
Flow Length=358' Tc=31.7 min CN=70 Runoff=2.20 cfs 0.240 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=1.67"
Flow Length=565' Tc=27.9 min CN=66 Runoff=1.98 cfs 0.206 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.45' Max Vel=0.25 fps Inflow=1.98 cfs 0.206 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=1.25 cfs 0.206 af

**Pond 2P: Existing Depression** Peak Elev=954.17' Storage=89,408 cf Inflow=22.93 cfs 3.292 af
Outflow=3.35 cfs 1.418 af

**Pond 10P: Camy Circle Culvert** Peak Elev=959.29' Storage=561 cf Inflow=4.11 cfs 0.515 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=4.06 cfs 0.515 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.07' Storage=95 cf Inflow=5.01 cfs 0.745 af
Primary=5.01 cfs 0.745 af Secondary=0.00 cfs 0.000 af Outflow=5.01 cfs 0.745 af

**Pond 13P: Crushed Culvert** Peak Elev=958.53' Storage=40 cf Inflow=2.20 cfs 0.240 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=2.20 cfs 0.240 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 3.292 af Average Runoff Depth = 1.51"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 14.95 cfs @ 12.64 hrs, Volume= 2.101 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 4.11 cfs @ 12.58 hrs, Volume= 0.515 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 3.21 cfs @ 12.23 hrs, Volume= 0.230 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 1.98 cfs @ 12.43 hrs, Volume= 0.206 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 1.67" for 25-Year event
Inflow = 1.98 cfs @ 12.43 hrs, Volume= 0.206 af
Outflow = 1.25 cfs @ 12.69 hrs, Volume= 0.206 af, Atten= 37%, Lag= 16.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.25 fps, Min. Travel Time= 26.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 90.0 min

Peak Storage= 2,025 cf @ 12.69 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 1.51" for 25-Year event
Inflow = 22.93 cfs @ 12.63 hrs, Volume= 3.292 af
Outflow = 3.35 cfs @ 14.45 hrs, Volume= 1.418 af, Atten= 85%, Lag= 109.2 min
Primary = 3.35 cfs @ 14.45 hrs, Volume= 1.418 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.17' @ 14.45 hrs Surf.Area= 71,009 sf Storage= 89,408 cf

Plug-Flow detention time= 324.4 min calculated for 1.418 af (43% of inflow)
Center-of-Mass det. time= 201.0 min ( 1,078.5 - 877.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=3.35 cfs @ 14.45 hrs HW=954.17' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 3.35 cfs @ 0.75 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 1.97" for 25-Year event
Inflow = 4.11 cfs @ 12.58 hrs, Volume= 0.515 af
Outflow = 4.06 cfs @ 12.63 hrs, Volume= 0.515 af, Atten= 1%, Lag= 2.7 min
Primary = 4.06 cfs @ 12.63 hrs, Volume= 0.515 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.29' @ 12.63 hrs Surf.Area= 752 sf Storage= 561 cf

Plug-Flow detention time= 2.5 min calculated for 0.515 af (100% of inflow)
Center-of-Mass det. time= 2.5 min ( 865.7 - 863.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=4.06 cfs @ 12.63 hrs HW=959.29' TW=958.04' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 4.06 cfs @ 3.13 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 2.19" for 25-Year event
Inflow = 5.01 cfs @ 12.55 hrs, Volume= 0.745 af
Outflow = 5.01 cfs @ 12.56 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.9 min
Primary = 5.01 cfs @ 12.56 hrs, Volume= 0.745 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.07' @ 12.56 hrs Surf.Area= 200 sf Storage= 95 cf

Plug-Flow detention time= 0.3 min calculated for 0.745 af (100% of inflow)
Center-of-Mass det. time= 0.3 min ( 850.5 - 850.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=5.01 cfs @ 12.56 hrs HW=958.07' TW=952.65' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 5.01 cfs @ 2.97 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 1.97" for 25-Year event
Inflow = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af
Outflow = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.2 min
Primary = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.53' @ 12.47 hrs Surf.Area= 76 sf Storage= 40 cf

Plug-Flow detention time= 0.4 min calculated for 0.240 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 856.0 - 855.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=2.20 cfs @ 12.47 hrs HW=958.53' TW=952.19' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 2.20 cfs @ 2.40 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West** Runoff Area=19.165 ac 8.22% Impervious Runoff Depth=2.46"
Flow Length=1,254' Tc=42.6 min CN=61 Runoff=29.87 cfs 3.928 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=3.34"
Flow Length=775' Tc=39.9 min CN=70 Runoff=7.12 cfs 0.873 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=4.49"
Flow Length=534' Tc=14.5 min CN=81 Runoff=4.90 cfs 0.356 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=3.34"
Flow Length=358' Tc=31.7 min CN=70 Runoff=3.80 cfs 0.407 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=2.94"
Flow Length=565' Tc=27.9 min CN=66 Runoff=3.60 cfs 0.363 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.66' Max Vel=0.31 fps Inflow=3.60 cfs 0.363 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=2.54 cfs 0.363 af

**Pond 2P: Existing Depression** Peak Elev=954.39' Storage=108,349 cf Inflow=42.78 cfs 5.895 af
Outflow=21.64 cfs 4.021 af

**Pond 10P: Camy Circle Culvert** Peak Elev=960.18' Storage=1,464 cf Inflow=7.12 cfs 0.873 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=6.72 cfs 0.873 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.92' Storage=767 cf Inflow=8.04 cfs 1.228 af
Primary=7.22 cfs 1.197 af Secondary=0.71 cfs 0.032 af Outflow=7.93 cfs 1.228 af

**Pond 13P: Crushed Culvert** Peak Elev=958.81' Storage=64 cf Inflow=3.80 cfs 0.407 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=3.80 cfs 0.407 af

**Link 14L: Offsite North** Inflow=0.71 cfs 0.032 af
Primary=0.71 cfs 0.032 af

**Total Runoff Area = 26.200 ac Runoff Volume = 5.927 af Average Runoff Depth = 2.71"**
**86.87% Pervious = 22.759 ac 13.13% Impervious = 3.441 ac**

## Summary for Subcatchment 1S: Existing West

Runoff = 29.87 cfs @ 12.63 hrs, Volume= 3.928 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| 2.767 | 58 | Meadow, non-grazed, HSG B |
| 7.952 | 55 | Woods, Good, HSG B |
| 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| 19.165 | 61 | Weighted Average |
| 17.590 | | 91.78% Pervious Area |
| 1.575 | | 8.22% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 7.12 cfs @ 12.55 hrs, Volume= 0.873 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 4.90 cfs @ 12.23 hrs, Volume= 0.356 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 3.80 cfs @ 12.44 hrs, Volume= 0.407 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 3.60 cfs @ 12.41 hrs, Volume= 0.363 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 2.94" for 100-Year event
Inflow = 3.60 cfs @ 12.41 hrs, Volume= 0.363 af
Outflow = 2.54 cfs @ 12.63 hrs, Volume= 0.363 af, Atten= 29%, Lag= 13.4 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 21.9 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 81.4 min

Peak Storage= 3,330 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 13.13% Impervious, Inflow Depth = 2.70" for 100-Year event
Inflow = 42.78 cfs @ 12.60 hrs, Volume= 5.895 af
Outflow = 21.64 cfs @ 13.14 hrs, Volume= 4.021 af, Atten= 49%, Lag= 32.4 min
Primary = 21.64 cfs @ 13.14 hrs, Volume= 4.021 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.39' @ 13.14 hrs Surf.Area= 81,369 sf Storage= 108,349 cf

Plug-Flow detention time= 185.3 min calculated for 4.020 af (68% of inflow)
Center-of-Mass det. time= 91.3 min ( 954.7 - 863.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 949.00' | 161,356 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 949.00 | 639 | 0 | 0 |
| 950.00 | 3,857 | 2,248 | 2,248 |
| 951.00 | 7,071 | 5,464 | 7,712 |
| 952.00 | 11,456 | 9,264 | 16,976 |
| 953.00 | 20,510 | 15,983 | 32,959 |
| 954.00 | 62,960 | 41,735 | 74,694 |
| 955.00 | 110,364 | 86,662 | 161,356 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=21.64 cfs @ 13.14 hrs HW=954.39' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 21.64 cfs @ 1.40 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 3.34" for 100-Year event
Inflow = 7.12 cfs @ 12.55 hrs, Volume= 0.873 af
Outflow = 6.72 cfs @ 12.67 hrs, Volume= 0.873 af, Atten= 6%, Lag= 7.2 min
Primary = 6.72 cfs @ 12.67 hrs, Volume= 0.873 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 960.18' @ 12.67 hrs Surf.Area= 1,537 sf Storage= 1,464 cf

Plug-Flow detention time= 2.7 min calculated for 0.872 af (100% of inflow)
Center-of-Mass det. time= 2.7 min ( 853.1 - 850.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=6.72 cfs @ 12.67 hrs HW=960.18' TW=958.91' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 6.72 cfs @ 3.80 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 3.61" for 100-Year event
Inflow = 8.04 cfs @ 12.41 hrs, Volume= 1.228 af
Outflow = 7.93 cfs @ 12.48 hrs, Volume= 1.228 af, Atten= 1%, Lag= 4.2 min
Primary = 7.22 cfs @ 12.48 hrs, Volume= 1.197 af
Secondary = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.92' @ 12.48 hrs Surf.Area= 1,367 sf Storage= 767 cf

Plug-Flow detention time= 0.9 min calculated for 1.228 af (100% of inflow)
Center-of-Mass det. time= 0.8 min ( 840.0 - 839.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=7.22 cfs @ 12.48 hrs HW=958.92' TW=953.31' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 7.22 cfs @ 4.08 fps)

**Secondary OutFlow** Max=0.71 cfs @ 12.48 hrs HW=958.92' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 1.69 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 3.34" for 100-Year event
Inflow = 3.80 cfs @ 12.44 hrs, Volume= 0.407 af
Outflow = 3.80 cfs @ 12.45 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.3 min
Primary = 3.80 cfs @ 12.45 hrs, Volume= 0.407 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.81' @ 12.45 hrs Surf.Area= 91 sf Storage= 64 cf

Plug-Flow detention time= 0.4 min calculated for 0.407 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 843.1 - 842.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

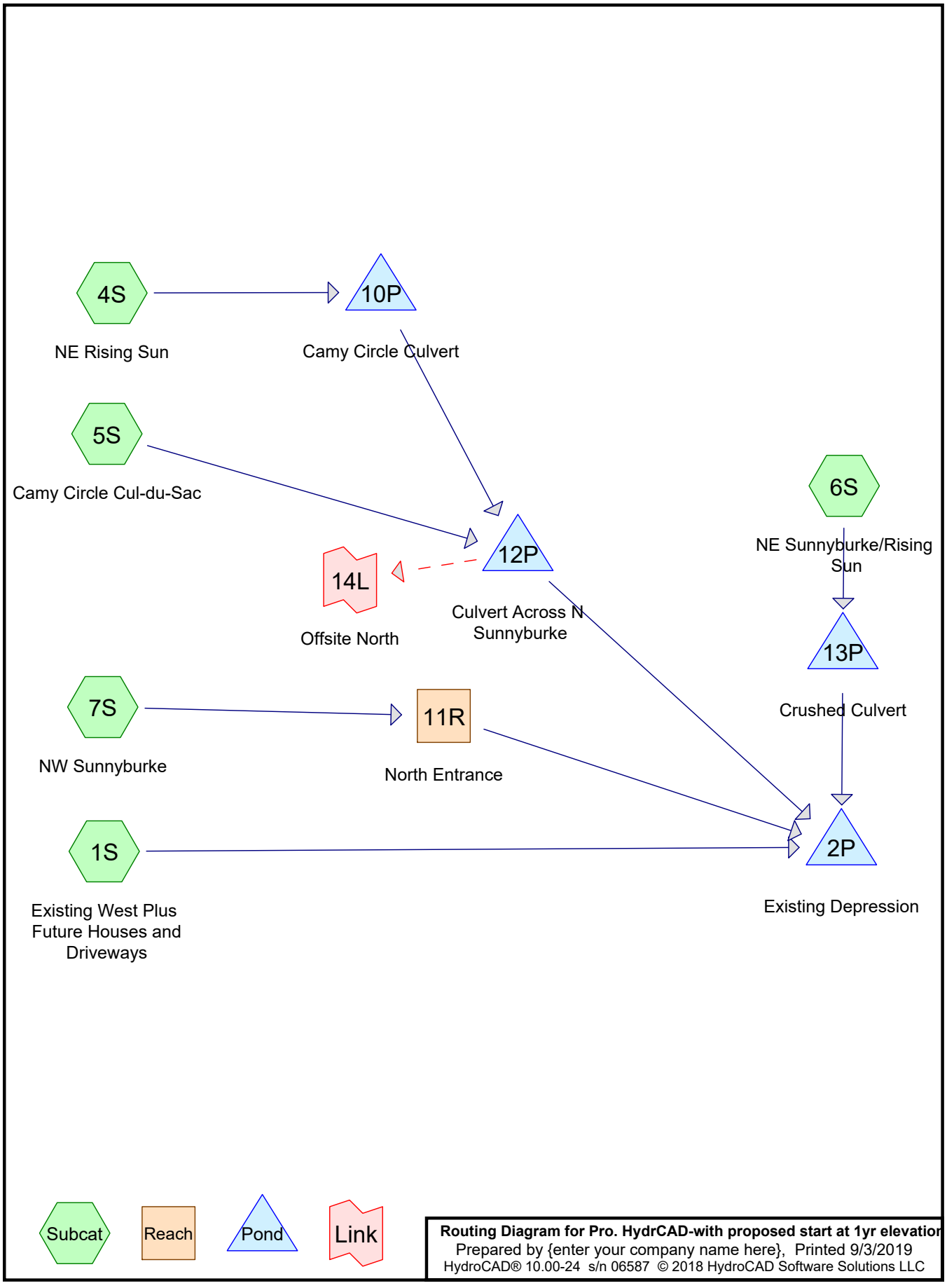
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=3.80 cfs @ 12.45 hrs HW=958.81' TW=953.20' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 3.80 cfs @ 2.84 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af
Primary = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs


4S
NE Rising Sun
10P
Camy Circle Culvert
5S
Camy Circle Cul-du-Sac
6S
NE Sunnyburke/Rising Sun
12P
14L
Offsite North
Culvert Across N Sunnyburke
13P
Crushed Culvert
7S
NW Sunnyburke
11R
North Entrance
1S
Existing West Plus Future Houses and Driveways
2P
Existing Depression
Subcat
Reach
Pond
Link

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 3.226 | 68 | 1 acre lots, 20% imp, HSG B (1S, 7S) |
| 7.728 | 70 | 1/2 acre lots, 25% imp, HSG B (1S, 4S, 5S, 6S) |
| 4.163 | 65 | 2 acre lots, 12% imp, HSG B (1S, 7S) |
| 0.217 | 98 | Future Driveways (1S) |
| 0.184 | 98 | Future Roofs (1S) |
| 2.472 | 58 | Meadow, non-grazed, HSG B (1S) |
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B (5S) |
| 7.846 | 55 | Woods, Good, HSG B (1S) |
| **26.200** | **64** | **TOTAL AREA** |

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=1.43"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=13.29 cfs 2.278 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=2.02"
Flow Length=775' Tc=39.9 min CN=70 Runoff=2.92 cfs 0.528 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=2.97"
Flow Length=534' Tc=14.5 min CN=81 Runoff=1.90 cfs 0.235 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=2.02"
Flow Length=358' Tc=31.7 min CN=70 Runoff=1.55 cfs 0.247 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=1.71"
Flow Length=565' Tc=27.9 min CN=66 Runoff=1.49 cfs 0.212 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.40' Max Vel=0.23 fps Inflow=1.49 cfs 0.212 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=0.99 cfs 0.212 af

**Pond 2P: Existing Depression** Peak Elev=954.32' Storage=77,533 cf Inflow=19.07 cfs 3.500 af
Outflow=14.31 cfs 2.188 af

**Pond 10P: Camy Circle Culvert** Peak Elev=959.03' Storage=382 cf Inflow=2.92 cfs 0.528 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=2.90 cfs 0.528 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=957.63' Storage=50 cf Inflow=3.51 cfs 0.764 af
Primary=3.51 cfs 0.764 af Secondary=0.00 cfs 0.000 af Outflow=3.51 cfs 0.764 af

**Pond 13P: Crushed Culvert** Peak Elev=958.40' Storage=30 cf Inflow=1.55 cfs 0.247 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=1.55 cfs 0.247 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 3.500 af Average Runoff Depth = 1.60"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 13.29 cfs @ 36.59 hrs, Volume= 2.278 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 2.92 cfs @ 36.53 hrs, Volume= 0.528 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 1.90 cfs @ 36.22 hrs, Volume= 0.235 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 1.49 cfs @ 36.39 hrs, Volume= 0.212 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 1.71" for 1-Year event
Inflow = 1.49 cfs @ 36.39 hrs, Volume= 0.212 af
Outflow = 0.99 cfs @ 36.62 hrs, Volume= 0.212 af, Atten= 33%, Lag= 14.1 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 28.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 98.2 min

Peak Storage= 1,722 cf @ 36.62 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 1.60" for 1-Year event
Inflow = 19.07 cfs @ 36.55 hrs, Volume= 3.500 af
Outflow = 14.31 cfs @ 36.83 hrs, Volume= 2.188 af, Atten= 25%, Lag= 16.9 min
Primary = 14.31 cfs @ 36.83 hrs, Volume= 2.188 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.32' @ 36.83 hrs Surf.Area= 77,919 sf Storage= 77,533 cf

Plug-Flow detention time= 566.2 min calculated for 2.188 af (63% of inflow)
Center-of-Mass det. time= 342.7 min ( 2,336.3 - 1,993.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=14.30 cfs @ 36.83 hrs HW=954.32' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 14.30 cfs @ 1.21 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 2.92 cfs @ 36.53 hrs, Volume= 0.528 af
Outflow = 2.90 cfs @ 36.58 hrs, Volume= 0.528 af, Atten= 1%, Lag= 2.8 min
Primary = 2.90 cfs @ 36.58 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.03' @ 36.58 hrs Surf.Area= 622 sf Storage= 382 cf

Plug-Flow detention time= 2.9 min calculated for 0.528 af (100% of inflow)
Center-of-Mass det. time= 2.8 min ( 1,928.6 - 1,925.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=2.90 cfs @ 36.58 hrs HW=959.03' TW=957.62' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 2.90 cfs @ 2.86 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 2.24" for 1-Year event
Inflow = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af
Outflow = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af, Atten= 0%, Lag= 0.3 min
Primary = 3.51 cfs @ 36.50 hrs, Volume= 0.764 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 957.63' @ 36.50 hrs Surf.Area= 81 sf Storage= 50 cf

Plug-Flow detention time= 0.4 min calculated for 0.764 af (100% of inflow)
Center-of-Mass det. time= 0.3 min ( 1,877.5 - 1,877.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=3.51 cfs @ 36.50 hrs HW=957.63' TW=954.24' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 3.51 cfs @ 2.69 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af
Outflow = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.1 min
Primary = 1.55 cfs @ 36.45 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.40' @ 36.45 hrs Surf.Area= 70 sf Storage= 30 cf

Plug-Flow detention time= 0.6 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 0.6 min ( 1,918.7 - 1,918.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=1.55 cfs @ 36.45 hrs HW=958.40' TW=954.22' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 1.55 cfs @ 2.15 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=5.02"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=39.62 cfs 8.012 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=6.06"
Flow Length=775' Tc=39.9 min CN=70 Runoff=7.57 cfs 1.585 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=7.48"
Flow Length=534' Tc=14.5 min CN=81 Runoff=4.24 cfs 0.592 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=6.06"
Flow Length=358' Tc=31.7 min CN=70 Runoff=4.02 cfs 0.740 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=5.54"
Flow Length=565' Tc=27.9 min CN=66 Runoff=4.13 cfs 0.684 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.73' Max Vel=0.32 fps Inflow=4.13 cfs 0.684 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=3.09 cfs 0.684 af

**Pond 2P: Existing Depression** Peak Elev=954.59' Storage=101,525 cf Inflow=53.53 cfs 11.577 af
Outflow=48.39 cfs 10.266 af

**Pond 10P: Camy Circle Culvert** Peak Elev=960.31' Storage=1,669 cf Inflow=7.57 cfs 1.585 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=7.09 cfs 1.585 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.96' Storage=814 cf Inflow=8.20 cfs 2.178 af
Primary=7.31 cfs 2.141 af Secondary=0.81 cfs 0.037 af Outflow=8.12 cfs 2.178 af

**Pond 13P: Crushed Culvert** Peak Elev=958.85' Storage=67 cf Inflow=4.02 cfs 0.740 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=4.02 cfs 0.740 af

**Link 14L: Offsite North** Inflow=0.81 cfs 0.037 af
Primary=0.81 cfs 0.037 af

**Total Runoff Area = 26.200 ac Runoff Volume = 11.614 af Average Runoff Depth = 5.32"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 39.62 cfs @ 36.58 hrs, Volume= 8.012 af, Depth= 5.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 7.57 cfs @ 36.53 hrs, Volume= 1.585 af, Depth= 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 4.24 cfs @ 36.22 hrs, Volume= 0.592 af, Depth= 7.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af, Depth= 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 4.13 cfs @ 36.37 hrs, Volume= 0.684 af, Depth= 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 5.54" for 25-Year event
Inflow = 4.13 cfs @ 36.37 hrs, Volume= 0.684 af
Outflow = 3.09 cfs @ 36.57 hrs, Volume= 0.684 af, Atten= 25%, Lag= 11.9 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 20.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 71.9 min

Peak Storage= 3,827 cf @ 36.57 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 5.30" for 25-Year event
Inflow = 53.53 cfs @ 36.55 hrs, Volume= 11.577 af
Outflow = 48.39 cfs @ 36.72 hrs, Volume= 10.266 af, Atten= 10%, Lag= 10.1 min
Primary = 48.39 cfs @ 36.72 hrs, Volume= 10.266 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.59' @ 36.72 hrs Surf.Area= 91,042 sf Storage= 101,525 cf

Plug-Flow detention time= 262.3 min calculated for 10.266 af (89% of inflow)
Center-of-Mass det. time= 169.1 min ( 1,989.3 - 1,820.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)** Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=48.39 cfs @ 36.72 hrs HW=954.59' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 48.39 cfs @ 1.89 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 7.57 cfs @ 36.53 hrs, Volume= 1.585 af
Outflow = 7.09 cfs @ 36.65 hrs, Volume= 1.585 af, Atten= 6%, Lag= 6.9 min
Primary = 7.09 cfs @ 36.65 hrs, Volume= 1.585 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 960.31' @ 36.65 hrs Surf.Area= 1,824 sf Storage= 1,669 cf

Plug-Flow detention time= 2.8 min calculated for 1.585 af (100% of inflow)
Center-of-Mass det. time= 2.7 min ( 1,773.0 - 1,770.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=7.09 cfs @ 36.65 hrs HW=960.31' TW=958.95' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 7.09 cfs @ 4.01 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 6.39" for 25-Year event
Inflow = 8.20 cfs @ 36.35 hrs, Volume= 2.178 af
Outflow = 8.12 cfs @ 36.61 hrs, Volume= 2.178 af, Atten= 1%, Lag= 15.2 min
Primary = 7.31 cfs @ 36.61 hrs, Volume= 2.141 af
Secondary = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.96' @ 36.61 hrs Surf.Area= 1,413 sf Storage= 814 cf

Plug-Flow detention time= 0.6 min calculated for 2.178 af (100% of inflow)
Center-of-Mass det. time= 0.6 min ( 1,739.7 - 1,739.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=7.31 cfs @ 36.61 hrs HW=958.96' TW=954.58' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 7.31 cfs @ 4.14 fps)

**Secondary OutFlow** Max=0.81 cfs @ 36.61 hrs HW=958.96' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.81 cfs @ 1.76 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af
Outflow = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af, Atten= 0%, Lag= 0.3 min
Primary = 4.02 cfs @ 36.43 hrs, Volume= 0.740 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.85' @ 36.43 hrs Surf.Area= 92 sf Storage= 67 cf

Plug-Flow detention time= 0.4 min calculated for 0.740 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 1,763.1 - 1,762.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=4.02 cfs @ 36.43 hrs HW=958.85' TW=954.49' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 4.02 cfs @ 2.89 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af
Primary = 0.81 cfs @ 36.61 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=8.03"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=59.52 cfs 12.819 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=9.27"
Flow Length=775' Tc=39.9 min CN=70 Runoff=10.96 cfs 2.424 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=10.87"
Flow Length=534' Tc=14.5 min CN=81 Runoff=5.91 cfs 0.861 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=9.27"
Flow Length=358' Tc=31.7 min CN=70 Runoff=5.81 cfs 1.132 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=8.66"
Flow Length=565' Tc=27.9 min CN=66 Runoff=6.08 cfs 1.069 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.90' Max Vel=0.36 fps Inflow=6.08 cfs 1.069 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=4.70 cfs 1.069 af

**Pond 2P: Existing Depression** Peak Elev=954.73' Storage=113,833 cf Inflow=77.63 cfs 18.129 af
Outflow=71.40 cfs 16.818 af

**Pond 10P: Camy Circle Culvert** Peak Elev=961.27' Storage=4,514 cf Inflow=10.96 cfs 2.424 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=9.10 cfs 2.424 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=959.34' Storage=1,406 cf Inflow=10.85 cfs 3.286 af
Primary=8.27 cfs 3.109 af Secondary=2.05 cfs 0.177 af Outflow=10.32 cfs 3.286 af

**Pond 13P: Crushed Culvert** Peak Elev=959.14' Storage=97 cf Inflow=5.81 cfs 1.132 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=5.81 cfs 1.132 af

**Link 14L: Offsite North** Inflow=2.05 cfs 0.177 af
Primary=2.05 cfs 0.177 af

**Total Runoff Area = 26.200 ac Runoff Volume = 18.306 af Average Runoff Depth = 8.38"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 59.52 cfs @ 36.58 hrs, Volume= 12.819 af, Depth= 8.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 10.96 cfs @ 36.53 hrs, Volume= 2.424 af, Depth= 9.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 5.91 cfs @ 36.22 hrs, Volume= 0.861 af, Depth=10.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 5.81 cfs @ 36.42 hrs, Volume= 1.132 af, Depth= 9.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 6.08 cfs @ 36.37 hrs, Volume= 1.069 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66" x 2

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 8.66" for 100-Year event
Inflow = 6.08 cfs @ 36.37 hrs, Volume= 1.069 af
Outflow = 4.70 cfs @ 36.56 hrs, Volume= 1.069 af, Atten= 23%, Lag= 11.1 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 18.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 64.2 min

Peak Storage= 5,184 cf @ 36.56 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 8.30" for 100-Year event
Inflow = 77.63 cfs @ 36.55 hrs, Volume= 18.129 af
Outflow = 71.40 cfs @ 36.70 hrs, Volume= 16.818 af, Atten= 8%, Lag= 9.2 min
Primary = 71.40 cfs @ 36.70 hrs, Volume= 16.818 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.73' @ 36.70 hrs Surf.Area= 97,775 sf Storage= 113,833 cf

Plug-Flow detention time= 174.9 min calculated for 16.818 af (93% of inflow)
Center-of-Mass det. time= 107.5 min ( 1,867.2 - 1,759.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)** Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=71.39 cfs @ 36.70 hrs HW=954.73' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 71.39 cfs @ 2.18 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 9.27" for 100-Year event
Inflow = 10.96 cfs @ 36.53 hrs, Volume= 2.424 af
Outflow = 9.10 cfs @ 36.75 hrs, Volume= 2.424 af, Atten= 17%, Lag= 13.1 min
Primary = 9.10 cfs @ 36.75 hrs, Volume= 2.424 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 961.27' @ 36.73 hrs Surf.Area= 4,055 sf Storage= 4,514 cf

Plug-Flow detention time= 3.6 min calculated for 2.424 af (100% of inflow)
Center-of-Mass det. time= 3.6 min ( 1,720.1 - 1,716.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=9.10 cfs @ 36.75 hrs HW=961.27' TW=959.31' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 9.10 cfs @ 5.15 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 9.64" for 100-Year event
Inflow = 10.85 cfs @ 36.26 hrs, Volume= 3.286 af
Outflow = 10.32 cfs @ 36.38 hrs, Volume= 3.286 af, Atten= 5%, Lag= 7.5 min
Primary = 8.27 cfs @ 36.38 hrs, Volume= 3.109 af
Secondary = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.34' @ 36.38 hrs Surf.Area= 1,651 sf Storage= 1,406 cf

Plug-Flow detention time= 1.0 min calculated for 3.286 af (100% of inflow)
Center-of-Mass det. time= 0.9 min ( 1,692.2 - 1,691.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=8.27 cfs @ 36.38 hrs HW=959.34' TW=954.57' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 8.27 cfs @ 4.68 fps)

**Secondary OutFlow** Max=2.05 cfs @ 36.38 hrs HW=959.34' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 2.44 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 9.27" for 100-Year event
Inflow = 5.81 cfs @ 36.42 hrs, Volume= 1.132 af
Outflow = 5.81 cfs @ 36.43 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.6 min
Primary = 5.81 cfs @ 36.43 hrs, Volume= 1.132 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.14' @ 36.43 hrs Surf.Area= 125 sf Storage= 97 cf

Plug-Flow detention time= 0.4 min calculated for 1.132 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 1,709.4 - 1,709.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

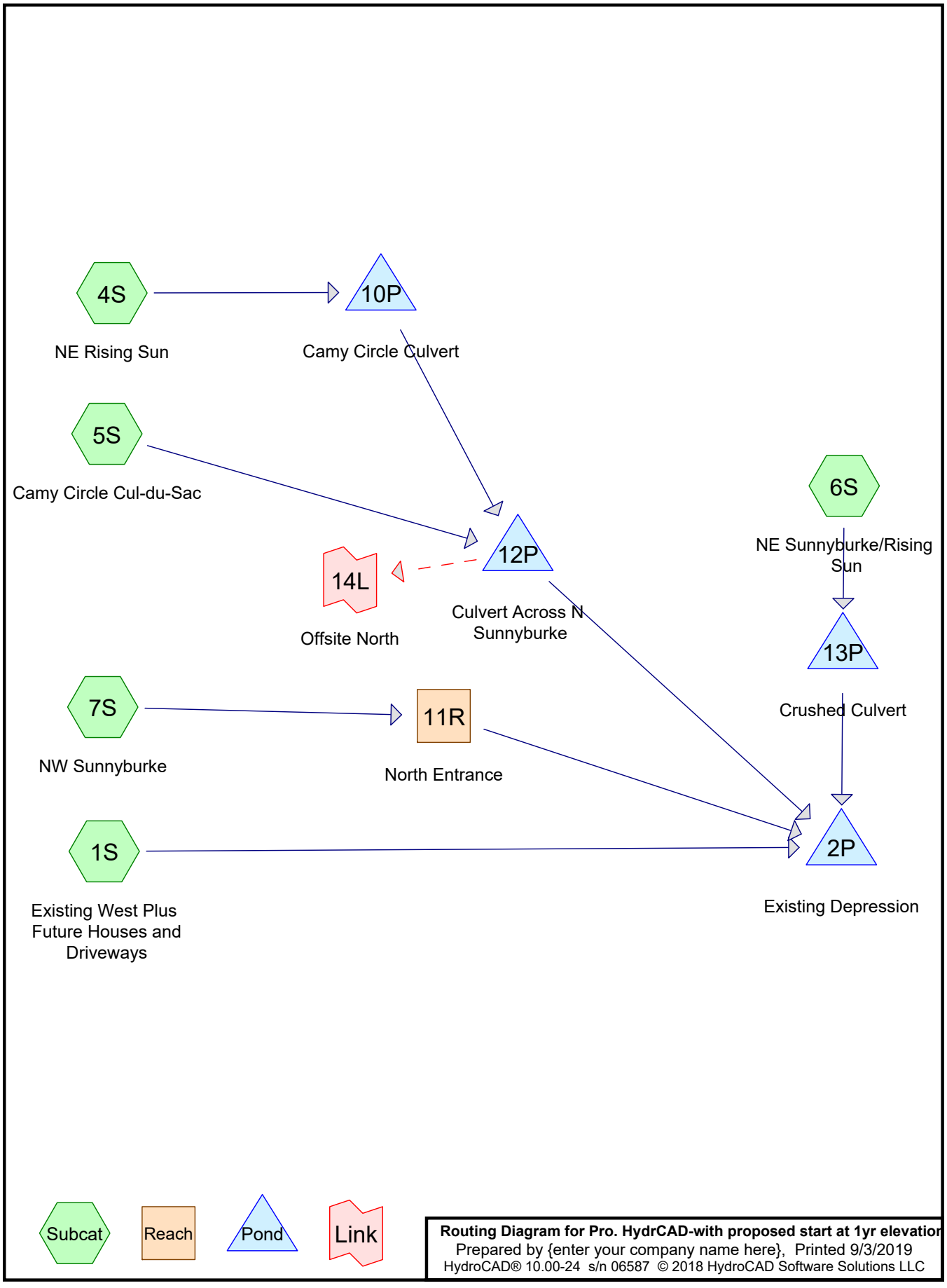
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=5.81 cfs @ 36.43 hrs HW=959.14' TW=954.62' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 5.81 cfs @ 3.22 fps)

## Summary for Link 14L: Offsite North

Inflow = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af
Primary = 2.05 cfs @ 36.38 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs


4S
NE Rising Sun
10P
Camy Circle Culvert
5S
Camy Circle Cul-du-Sac
6S
NE Sunnyburke/Rising Sun
12P
14L
Offsite North
Culvert Across N Sunnyburke
13P
Crushed Culvert
7S
NW Sunnyburke
11R
North Entrance
1S
Existing West Plus Future Houses and Driveways
2P
Existing Depression
Subcat
Reach
Pond
Link

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 3.226 | 68 | 1 acre lots, 20% imp, HSG B (1S, 7S) |
| 7.728 | 70 | 1/2 acre lots, 25% imp, HSG B (1S, 4S, 5S, 6S) |
| 4.163 | 65 | 2 acre lots, 12% imp, HSG B (1S, 7S) |
| 0.217 | 98 | Future Driveways (1S) |
| 0.184 | 98 | Future Roofs (1S) |
| 2.472 | 58 | Meadow, non-grazed, HSG B (1S) |
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B (5S) |
| 7.846 | 55 | Woods, Good, HSG B (1S) |
| **26.200** | **64** | **TOTAL AREA** |

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=0.22"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=1.43 cfs 0.345 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=0.45"
Flow Length=775' Tc=39.9 min CN=70 Runoff=0.76 cfs 0.118 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=0.94"
Flow Length=534' Tc=14.5 min CN=81 Runoff=1.01 cfs 0.074 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=0.45"
Flow Length=358' Tc=31.7 min CN=70 Runoff=0.40 cfs 0.055 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=0.32"
Flow Length=565' Tc=27.9 min CN=66 Runoff=0.26 cfs 0.040 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.12' Max Vel=0.11 fps Inflow=0.26 cfs 0.040 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=0.12 cfs 0.040 af

**Pond 2P: Existing Depression** Peak Elev=953.46' Storage=27,527 cf Inflow=2.76 cfs 0.632 af
Outflow=0.00 cfs 0.000 af

**Pond 10P: Camy Circle Culvert** Peak Elev=958.45' Storage=106 cf Inflow=0.76 cfs 0.118 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=0.75 cfs 0.118 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=956.99' Storage=15 cf Inflow=1.12 cfs 0.192 af
Primary=1.12 cfs 0.192 af Secondary=0.00 cfs 0.000 af Outflow=1.12 cfs 0.192 af

**Pond 13P: Crushed Culvert** Peak Elev=958.08' Storage=11 cf Inflow=0.40 cfs 0.055 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=0.40 cfs 0.055 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 0.632 af Average Runoff Depth = 0.29"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 1.43 cfs @ 12.83 hrs, Volume= 0.345 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 0.76 cfs @ 12.64 hrs, Volume= 0.118 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 1.01 cfs @ 12.23 hrs, Volume= 0.074 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 0.26 cfs @ 12.52 hrs, Volume= 0.040 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 1-Year Rainfall=2.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 0.32" for 1-Year event
Inflow = 0.26 cfs @ 12.52 hrs, Volume= 0.040 af
Outflow = 0.12 cfs @ 13.20 hrs, Volume= 0.040 af, Atten= 56%, Lag= 41.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.11 fps, Min. Travel Time= 59.4 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 117.8 min

Peak Storage= 412 cf @ 13.20 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 0.29" for 1-Year event
Inflow = 2.76 cfs @ 12.73 hrs, Volume= 0.632 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 953.46' @ 72.00 hrs Surf.Area= 39,913 sf Storage= 27,527 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=952.56' (Free Discharge)
**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 0.45" for 1-Year event
Inflow = 0.76 cfs @ 12.64 hrs, Volume= 0.118 af
Outflow = 0.75 cfs @ 12.69 hrs, Volume= 0.118 af, Atten= 1%, Lag= 2.9 min
Primary = 0.75 cfs @ 12.69 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.45' @ 12.69 hrs Surf.Area= 335 sf Storage= 106 cf

Plug-Flow detention time= 3.1 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 3.1 min ( 908.4 - 905.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=0.75 cfs @ 12.69 hrs HW=958.45' TW=956.95' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 0.75 cfs @ 1.95 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 0.56" for 1-Year event
Inflow = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af
Outflow = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.2 min
Primary = 1.12 cfs @ 12.26 hrs, Volume= 0.192 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 956.99' @ 12.26 hrs Surf.Area= 30 sf Storage= 15 cf

Plug-Flow detention time= 0.5 min calculated for 0.192 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 883.5 - 883.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=1.12 cfs @ 12.26 hrs HW=956.99' TW=952.61' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 1.12 cfs @ 1.89 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 0.45" for 1-Year event
Inflow = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af
Outflow = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.3 min
Primary = 0.40 cfs @ 12.53 hrs, Volume= 0.055 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.08' @ 12.53 hrs Surf.Area= 54 sf Storage= 11 cf

Plug-Flow detention time= 0.7 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 0.7 min ( 898.3 - 897.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=0.40 cfs @ 12.53 hrs HW=958.08' TW=952.70' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 0.40 cfs @ 1.39 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=1.38"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=15.93 cfs 2.209 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=1.97"
Flow Length=775' Tc=39.9 min CN=70 Runoff=4.11 cfs 0.515 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=2.91"
Flow Length=534' Tc=14.5 min CN=81 Runoff=3.21 cfs 0.230 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=1.97"
Flow Length=358' Tc=31.7 min CN=70 Runoff=2.20 cfs 0.240 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=1.67"
Flow Length=565' Tc=27.9 min CN=66 Runoff=1.98 cfs 0.206 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.45' Max Vel=0.25 fps Inflow=1.98 cfs 0.206 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=1.25 cfs 0.206 af

**Pond 2P: Existing Depression** Peak Elev=954.24' Storage=71,031 cf Inflow=23.92 cfs 3.401 af
Outflow=8.01 cfs 2.089 af

**Pond 10P: Camy Circle Culvert** Peak Elev=959.29' Storage=561 cf Inflow=4.11 cfs 0.515 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=4.06 cfs 0.515 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.07' Storage=95 cf Inflow=5.01 cfs 0.745 af
Primary=5.01 cfs 0.745 af Secondary=0.00 cfs 0.000 af Outflow=5.01 cfs 0.745 af

**Pond 13P: Crushed Culvert** Peak Elev=958.53' Storage=40 cf Inflow=2.20 cfs 0.240 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=2.20 cfs 0.240 af

**Link 14L: Offsite North** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 26.200 ac Runoff Volume = 3.401 af Average Runoff Depth = 1.56"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 15.93 cfs @ 12.64 hrs, Volume= 2.209 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 4.11 cfs @ 12.58 hrs, Volume= 0.515 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 3.21 cfs @ 12.23 hrs, Volume= 0.230 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 1.98 cfs @ 12.43 hrs, Volume= 0.206 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 25-Year Rainfall=4.91"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 1.67" for 25-Year event
Inflow = 1.98 cfs @ 12.43 hrs, Volume= 0.206 af
Outflow = 1.25 cfs @ 12.69 hrs, Volume= 0.206 af, Atten= 37%, Lag= 16.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.25 fps, Min. Travel Time= 26.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 90.0 min

Peak Storage= 2,025 cf @ 12.69 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 1.56" for 25-Year event
Inflow = 23.92 cfs @ 12.63 hrs, Volume= 3.401 af
Outflow = 8.01 cfs @ 13.53 hrs, Volume= 2.089 af, Atten= 67%, Lag= 54.4 min
Primary = 8.01 cfs @ 13.53 hrs, Volume= 2.089 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.24' @ 13.53 hrs Surf.Area= 74,363 sf Storage= 71,031 cf

Plug-Flow detention time= 230.3 min calculated for 2.089 af (61% of inflow)
Center-of-Mass det. time= 123.2 min ( 999.3 - 876.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=8.01 cfs @ 13.53 hrs HW=954.24' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 8.01 cfs @ 1.00 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 1.97" for 25-Year event
Inflow = 4.11 cfs @ 12.58 hrs, Volume= 0.515 af
Outflow = 4.06 cfs @ 12.63 hrs, Volume= 0.515 af, Atten= 1%, Lag= 2.7 min
Primary = 4.06 cfs @ 12.63 hrs, Volume= 0.515 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 959.29' @ 12.63 hrs Surf.Area= 752 sf Storage= 561 cf

Plug-Flow detention time= 2.5 min calculated for 0.515 af (100% of inflow)
Center-of-Mass det. time= 2.5 min ( 865.7 - 863.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=4.06 cfs @ 12.63 hrs HW=959.29' TW=958.04' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 4.06 cfs @ 3.13 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 2.19" for 25-Year event
Inflow = 5.01 cfs @ 12.55 hrs, Volume= 0.745 af
Outflow = 5.01 cfs @ 12.56 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.9 min
Primary = 5.01 cfs @ 12.56 hrs, Volume= 0.745 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.07' @ 12.56 hrs Surf.Area= 200 sf Storage= 95 cf

Plug-Flow detention time= 0.3 min calculated for 0.745 af (100% of inflow)
Center-of-Mass det. time= 0.3 min ( 850.5 - 850.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=5.01 cfs @ 12.56 hrs HW=958.07' TW=953.49' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 5.01 cfs @ 2.97 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=956.25' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 1.97" for 25-Year event
Inflow = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af
Outflow = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.2 min
Primary = 2.20 cfs @ 12.47 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.53' @ 12.47 hrs Surf.Area= 76 sf Storage= 40 cf

Plug-Flow detention time= 0.4 min calculated for 0.240 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 856.0 - 855.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=2.20 cfs @ 12.47 hrs HW=958.53' TW=953.30' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 2.20 cfs @ 2.40 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Time span=5.00-72.00 hrs, dt=0.01 hrs, 6701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Existing West Plus** Runoff Area=19.165 ac 10.31% Impervious Runoff Depth=2.55"
Flow Length=1,254' Tc=42.6 min CN=62 Runoff=31.18 cfs 4.079 af

**Subcatchment 4S: NE Rising Sun** Runoff Area=3.137 ac 25.00% Impervious Runoff Depth=3.34"
Flow Length=775' Tc=39.9 min CN=70 Runoff=7.12 cfs 0.873 af

**Subcatchment 5S: Camy Circle Cul-du-Sac** Runoff Area=0.951 ac 53.71% Impervious Runoff Depth=4.49"
Flow Length=534' Tc=14.5 min CN=81 Runoff=4.90 cfs 0.356 af

**Subcatchment 6S: NE Sunnyburke/Rising** Runoff Area=1.465 ac 25.00% Impervious Runoff Depth=3.34"
Flow Length=358' Tc=31.7 min CN=70 Runoff=3.80 cfs 0.407 af

**Subcatchment 7S: NW Sunnyburke** Runoff Area=1.482 ac 13.80% Impervious Runoff Depth=2.94"
Flow Length=565' Tc=27.9 min CN=66 Runoff=3.60 cfs 0.363 af

**Reach 11R: North Entrance** Avg. Flow Depth=0.66' Max Vel=0.31 fps Inflow=3.60 cfs 0.363 af
n=0.240 L=400.0' S=0.0065 '/' Capacity=62.23 cfs Outflow=2.54 cfs 0.363 af

**Pond 2P: Existing Depression** Peak Elev=954.46' Storage=89,794 cf Inflow=44.11 cfs 6.046 af
Outflow=29.54 cfs 4.734 af

**Pond 10P: Camy Circle Culvert** Peak Elev=960.18' Storage=1,464 cf Inflow=7.12 cfs 0.873 af
18.0" Round Culvert n=0.025 L=42.0' S=0.0069 '/' Outflow=6.72 cfs 0.873 af

**Pond 12P: Culvert Across N Sunnyburke** Peak Elev=958.92' Storage=767 cf Inflow=8.04 cfs 1.228 af
Primary=7.22 cfs 1.197 af Secondary=0.71 cfs 0.032 af Outflow=7.93 cfs 1.228 af

**Pond 13P: Crushed Culvert** Peak Elev=958.81' Storage=64 cf Inflow=3.80 cfs 0.407 af
24.0" x 18.0", R=12.5"/34.6" Pipe Arch Culvert n=0.025 L=40.0' S=0.0055 '/' Outflow=3.80 cfs 0.407 af

**Link 14L: Offsite North** Inflow=0.71 cfs 0.032 af
Primary=0.71 cfs 0.032 af

**Total Runoff Area = 26.200 ac Runoff Volume = 6.078 af Average Runoff Depth = 2.78"**
**85.34% Pervious = 22.358 ac 14.66% Impervious = 3.842 ac**

## Summary for Subcatchment 1S: Existing West Plus Future Houses and Driveways

Runoff = 31.18 cfs @ 12.63 hrs, Volume= 4.079 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 2.539 | 70 | 1/2 acre lots, 25% imp, HSG B |
| | 2.892 | 68 | 1 acre lots, 20% imp, HSG B |
| | 2.472 | 58 | Meadow, non-grazed, HSG B |
| | 7.846 | 55 | Woods, Good, HSG B |
| | 3.015 | 65 | 2 acre lots, 12% imp, HSG B |
| * | 0.217 | 98 | Future Driveways |
| * | 0.184 | 98 | Future Roofs |
| | 19.165 | 62 | Weighted Average |
| | 17.189 | | 89.69% Pervious Area |
| | 1.976 | | 10.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.7 | 300 | 0.0900 | 0.16 | | **Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.84" |
| 11.9 | 954 | 0.0367 | 1.34 | | **Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps |
| 42.6 | 1,254 | Total | | | |

## Summary for Subcatchment 4S: NE Rising Sun

Runoff = 7.12 cfs @ 12.55 hrs, Volume= 0.873 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 3.137 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 2.353 | | 75.00% Pervious Area |
| 0.784 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 300 | 0.0567 | 0.14 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.7 | 200 | 0.1000 | 5.09 | | **Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps |
| 2.3 | 275 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 39.9 | 775 | Total | | | |

## Summary for Subcatchment 5S: Camy Circle Cul-du-Sac

Runoff = 4.90 cfs @ 12.23 hrs, Volume= 0.356 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.364 | 98 | Paved roads w/curbs & sewers, HSG B |
| 0.587 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 0.951 | 81 | Weighted Average |
| 0.440 | | 46.29% Pervious Area |
| 0.511 | | 53.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.8 | 84 | 0.0952 | 0.13 | | **Sheet Flow, sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 3.7 | 450 | 0.0180 | 2.01 | | **Shallow Concentrated Flow, ditch** Grassed Waterway Kv= 15.0 fps |
| 14.5 | 534 | Total | | | |

## Summary for Subcatchment 6S: NE Sunnyburke/Rising Sun

Runoff = 3.80 cfs @ 12.44 hrs, Volume= 0.407 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.465 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 1.099 | | 75.00% Pervious Area |
| 0.366 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 31.2 | 280 | 0.0750 | 0.15 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 0.5 | 78 | 0.0250 | 2.37 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 31.7 | 358 | Total | | | |

## Summary for Subcatchment 7S: NW Sunnyburke

Runoff = 3.60 cfs @ 12.41 hrs, Volume= 0.363 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 100-Year Rainfall=6.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.334 | 68 | 1 acre lots, 20% imp, HSG B |
| 1.148 | 65 | 2 acre lots, 12% imp, HSG B |
| 1.482 | 66 | Weighted Average |
| 1.277 | | 86.20% Pervious Area |
| 0.205 | | 13.80% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.5 | 160 | 0.0625 | 0.12 | | **Sheet Flow, Sheet** Grass: Bermuda n= 0.410 P2= 2.84" |
| 6.4 | 405 | 0.0050 | 1.06 | | **Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps |
| 27.9 | 565 | Total | | | |

## Summary for Reach 11R: North Entrance

Inflow Area = 1.482 ac, 13.80% Impervious, Inflow Depth = 2.94" for 100-Year event
Inflow = 3.60 cfs @ 12.41 hrs, Volume= 0.363 af
Outflow = 2.54 cfs @ 12.63 hrs, Volume= 0.363 af, Atten= 29%, Lag= 13.4 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 21.9 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 81.4 min

Peak Storage= 3,330 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 3.00' Flow Area= 87.0 sf, Capacity= 62.23 cfs

8.00' x 3.00' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 7.0 '/' Top Width= 50.00'
Length= 400.0' Slope= 0.0065 '/'
Inlet Invert= 959.00', Outlet Invert= 956.42'

‡

## Summary for Pond 2P: Existing Depression

Inflow Area = 26.200 ac, 14.66% Impervious, Inflow Depth = 2.77" for 100-Year event
Inflow = 44.11 cfs @ 12.60 hrs, Volume= 6.046 af
Outflow = 29.54 cfs @ 12.98 hrs, Volume= 4.734 af, Atten= 33%, Lag= 23.0 min
Primary = 29.54 cfs @ 12.98 hrs, Volume= 4.734 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 954.46' @ 12.98 hrs Surf.Area= 84,626 sf Storage= 89,794 cf

Plug-Flow detention time= 145.9 min calculated for 4.734 af (78% of inflow)
Center-of-Mass det. time= 67.5 min ( 929.8 - 862.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 952.56' | 136,847 cf | **Custom Stage Data (Prismatic)**Listed below |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 952.56 | 17,901 | 0 | 0 |
| 953.00 | 20,510 | 8,450 | 8,450 |
| 954.00 | 62,960 | 41,735 | 50,185 |
| 955.00 | 110,364 | 86,662 | 136,847 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 954.08' | **50.0' long x 10.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=29.54 cfs @ 12.98 hrs HW=954.46' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 29.54 cfs @ 1.57 fps)

## Summary for Pond 10P: Camy Circle Culvert

Inflow Area = 3.137 ac, 25.00% Impervious, Inflow Depth = 3.34" for 100-Year event
Inflow = 7.12 cfs @ 12.55 hrs, Volume= 0.873 af
Outflow = 6.72 cfs @ 12.67 hrs, Volume= 0.873 af, Atten= 6%, Lag= 7.2 min
Primary = 6.72 cfs @ 12.67 hrs, Volume= 0.873 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 960.18' @ 12.67 hrs Surf.Area= 1,537 sf Storage= 1,464 cf

Plug-Flow detention time= 2.7 min calculated for 0.872 af (100% of inflow)
Center-of-Mass det. time= 2.7 min ( 853.1 - 850.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.91' | 8,070 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.91 | 10 | 0 | 0 |
| 958.00 | 110 | 5 | 5 |
| 960.00 | 1,106 | 1,216 | 1,221 |
| 961.00 | 3,454 | 2,280 | 3,501 |
| 962.00 | 5,684 | 4,569 | 8,070 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.91' | **18.0" Round Culvert**<br>L= 42.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 957.91' / 957.62' S= 0.0069 '/' Cc= 0.900 |

n= 0.025 Corrugated metal, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.72 cfs @ 12.67 hrs HW=960.18' TW=958.91' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 6.72 cfs @ 3.80 fps)

## Summary for Pond 12P: Culvert Across N Sunnyburke

Inflow Area = 4.088 ac, 31.68% Impervious, Inflow Depth = 3.61" for 100-Year event
Inflow = 8.04 cfs @ 12.41 hrs, Volume= 1.228 af
Outflow = 7.93 cfs @ 12.48 hrs, Volume= 1.228 af, Atten= 1%, Lag= 4.2 min
Primary = 7.22 cfs @ 12.48 hrs, Volume= 1.197 af
Secondary = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.92' @ 12.48 hrs Surf.Area= 1,367 sf Storage= 767 cf

Plug-Flow detention time= 0.9 min calculated for 1.228 af (100% of inflow)
Center-of-Mass det. time= 0.8 min ( 840.0 - 839.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 956.25' | 2,611 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 956.25 | 10 | 0 | 0 |
| 957.00 | 30 | 15 | 15 |
| 958.00 | 110 | 70 | 85 |
| 959.00 | 1,471 | 791 | 876 |
| 960.00 | 2,000 | 1,736 | 2,611 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 956.25' | **18.0" Round Culvert**<br>L= 48.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 956.25' / 956.09' S= 0.0033 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2 | Secondary | 958.50' | **1.0' long x 3.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50<br>Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32 |

**Primary OutFlow** Max=7.22 cfs @ 12.48 hrs HW=958.92' TW=953.94' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 7.22 cfs @ 4.08 fps)

**Secondary OutFlow** Max=0.71 cfs @ 12.48 hrs HW=958.92' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 1.69 fps)

## Summary for Pond 13P: Crushed Culvert

Inflow Area = 1.465 ac, 25.00% Impervious, Inflow Depth = 3.34" for 100-Year event
Inflow = 3.80 cfs @ 12.44 hrs, Volume= 0.407 af
Outflow = 3.80 cfs @ 12.45 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.3 min
Primary = 3.80 cfs @ 12.45 hrs, Volume= 0.407 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.81' @ 12.45 hrs Surf.Area= 91 sf Storage= 64 cf

Plug-Flow detention time= 0.4 min calculated for 0.407 af (100% of inflow)
Center-of-Mass det. time= 0.4 min ( 843.1 - 842.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 957.78' | 662 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 957.78 | 10 | 0 | 0 |
| 958.00 | 50 | 7 | 7 |
| 959.00 | 100 | 75 | 82 |
| 960.00 | 280 | 190 | 272 |
| 961.00 | 500 | 390 | 662 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 957.78' | **24.0" W x 18.0" H, R=12.5"/34.6" Pipe Arch CMP_Arch_1/2 24x18**<br>L= 40.0' CMP, mitered to conform to fill, Ke= 0.700<br>Inlet / Outlet Invert= 957.78' / 957.56' S= 0.0055 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 2.40 sf |

**Primary OutFlow** Max=3.80 cfs @ 12.45 hrs HW=958.81' TW=953.83' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 24x18** (Barrel Controls 3.80 cfs @ 2.84 fps)

## Summary for Link 14L: Offsite North

Inflow = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af
Primary = 0.71 cfs @ 12.48 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.01 hrs

# CERTIFIED SURVEY MAP

**Lot 1, Certified Survey Map No. 1183, located in part of the Northwest 1/4 of the Southeast 1/4 of Section 24, T8N, R10E, Town of Burke, Dane County, Wisconsin**


BIRRENKOTT SURVEYING, INC.

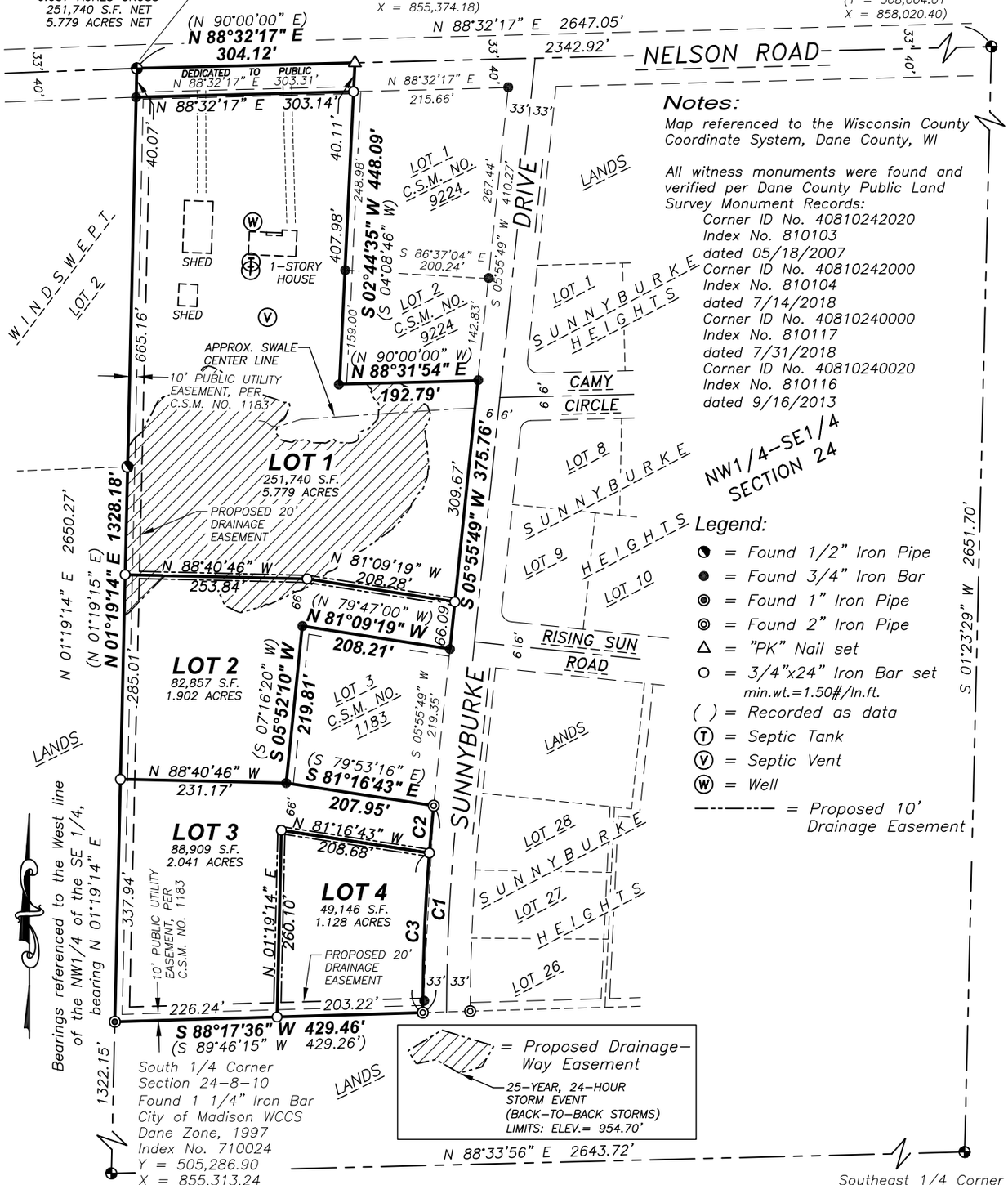
P.O. Box 237
1677 N. Bristol Street
Sun Prairie, WI. 53590
Phone (608) 837-7463
Fax (608) 837-1081


**Prepared For:**
Peter & Chelsea Sachs
3285 Nelson Road
Sun Prairie, WI 53590

263,885 S.F. GROSS
6.057 ACRES GROSS
251,740 S.F. NET
5.779 ACRES NET

Center Section 24-8-10
Found Brass Cap
City of Madison WCCS
Dane Zone, 1997
Index No. 710024
Y = 507,936.47
X = 855,374.32
(Y = 507,936.44
X = 855,374.18)

East 1/4 Corner
Section 24-8-10
Found Alum. Mon.
City of Madison WCCS
Dane Zone, 1997
Index No. 710024
Y = 508,004.00
X = 858,020.51
(Y = 508,004.01
X = 858,020.40)




**Legend:**

- ◔ = Found 1/2" Iron Pipe
- ● = Found 3/4" Iron Bar
- ◉ = Found 1" Iron Pipe
- ◎ = Found 2" Iron Pipe
- △ = "PK" Nail set
- ○ = 3/4"x24" Iron Bar set min.wt.=1.50#/ln.ft.
- ( ) = Recorded as data
- Ⓣ = Septic Tank
- Ⓥ = Septic Vent
- Ⓦ = Well
- ---—---- = Proposed 10' Drainage Easement

| CURVE | ARC LENGTH | RADIUS | DELTA ANGLE | CHORD BEARING | CHORD LENGTH | TANGENT BEARING-IN | TANGENT BEARING-OUT |
|---|---|---|---|---|---|---|---|
| C1 | 288.71' | 2866.00' | 5°46'18" | N 03°00'52" E | 288.59' | S 05°54'01" W | S 00°07'43" W |
| | | | | (S 04°27' W) | (288.34') | | |
| C2 | 66.12' | 2866.00' | 1°19'19" | S 05°14'22" W | 66.12' | S 05°54'01" W | S 04°34'42" W |
| C3 | 222.58' | 2866.00' | 4°26'59" | S 02°21'13" W | 222.53' | S 04°34'42" W | S 00°07'43" W |

CERTIFIED SURVEY MAP NO. _____

VOLUME _____ PAGE _____

DOCUMENT NO. _____

SHEET 1 OF 4

Office Map No. **180694**

SCALE 1" = 200'

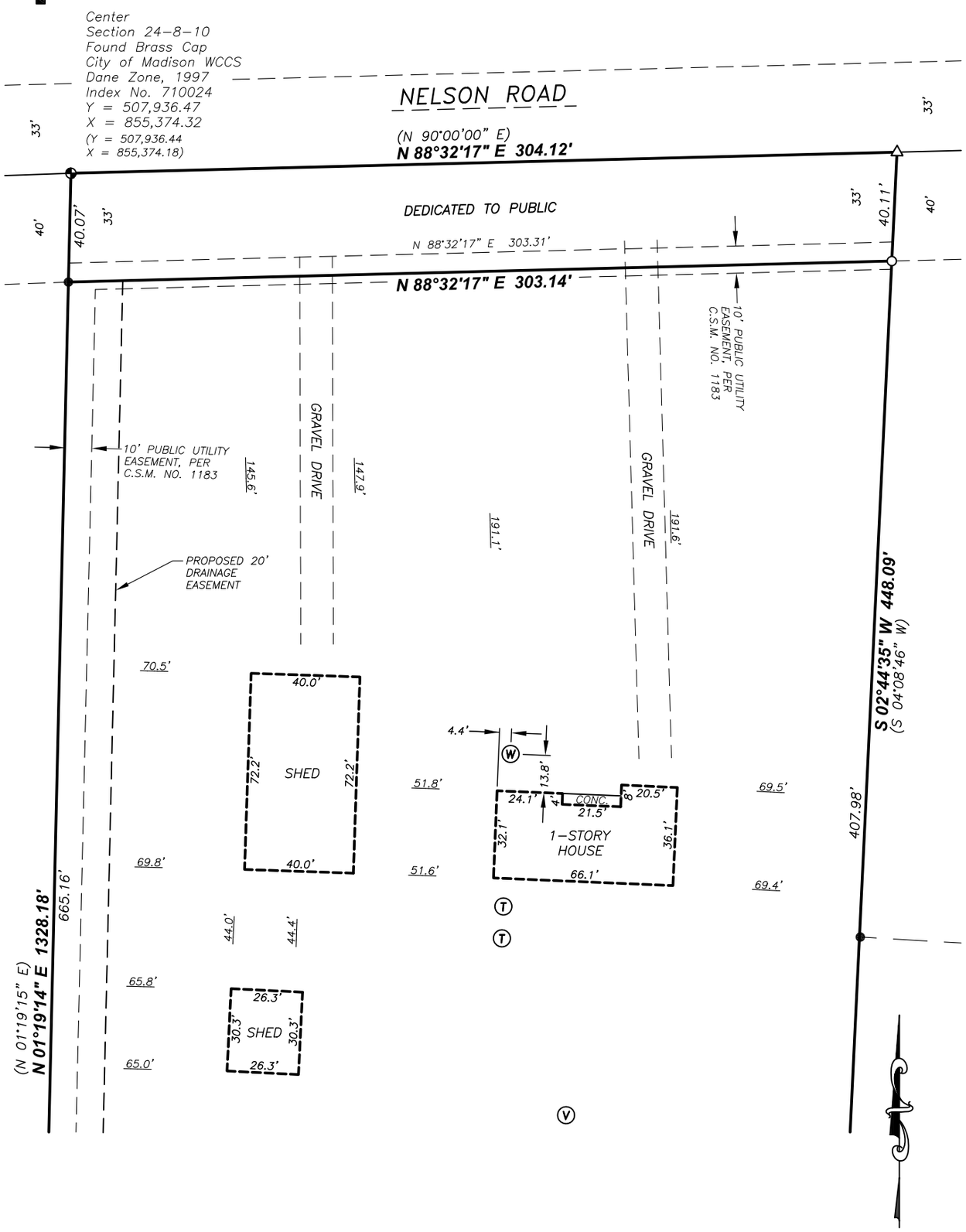
0 200 400

BIRRENKOTT
SURVEYING, INC.

P.O. Box 237
1677 N. Bristol Street
Sun Prairie, WI. 53590
Phone (608) 837-7463
Fax (608) 837-1081

# CERTIFIED SURVEY MAP

**Lot 1, Certified Survey Map No. 1183, located in part of the Northwest 1/4 of the Southeast 1/4 of Section 24, T8N, R10E, Town of Burke, Dane County, Wisconsin**




SHEET 2 OF 4
Office Map No. **180694**

SCALE 1" = 50'
0 50 100

CERTIFIED SURVEY MAP NO. _____
VOLUME _____ PAGE _____
DOCUMENT NO. _____

# CERTIFIED SURVEY MAP

**Birrenkott Surveying, Inc.**

P.O. Box 237
1677 N. Bristol Street
Sun Prairie, Wisconsin 53590
Phone (608) 837-7463
Fax (608) 837-1081

Surveyor's Certificate:
I, Daniel V. Birrenkott, herby certify that this survey is in full compliance with Chapter 236.34 of Wisconsin Statutes. I also certify that by the direction of the owners listed hereon, I have surveyed and mapped the lands described hereon and that the map is a correct representation of all the exterior boundaries of the land surveyed and the division of that land, in accordance with the information provided.

_____
Daniel V. Birrenkott, Registered Land Surveyor No. S-1531

**Description:**
Lot 1, Certified Survey Map No. 1183, located in part of the Northwest 1/4 of the Southeast 1/4, Section 24, T8N, R10E, Town of Burke, Dane County, Wisconsin; Containing 472,653 square feet, or 10.850 acres.

**Owners Certificate:**
As owners, Peter Sachs and Chelsea Sachs hereby certify that they have caused the lands described on this Certified Survey Map to be surveyed, divided, mapped and dedicated as shown on this Certified Survey Map. They also certify that this Certified Survey Map is required to be submitted to the Village of Burke and the City of Madison as approving authorities. They also certify that this Certified Survey Map is required by S.75.17 (1)(a), Dane County Code of Ordinances to be submitted to the Dane County Zoning and Land Regulation Committee for approval.

_____ _____
Peter Sachs, Owner — Chelsea Sachs, Owner

**State of Wisconsin)**
**Dane County ) ss** Personally came before me this _____ day of _____, 2019, the above-named Peter Sachs and Chelsea Sachs, known to me to be the persons who executed the foregoing instrument and acknowledged the same.

_____
Notary Public, Dane County, Wisconsin My Commission Expires _____

_____
Printed name

**Notes:**
1. Lots/buildings within this subdivision/development are subject to impact fees that are due and payable at the time building permit(s) are issued.
2. Subject to the Certified Survey Map No. 1183 recorded on 6/25/1973 as Document No. 369267.
3. Utilities Easement: No poles or buried cables are to be placed on any lot line or corner.
4. The disturbance of a survey stake by anyone is in violation of Section 236.32 of Wisconsin Statutes.
5. Wetlands, if present, have not been delineated.
6. This survey is subject to any and all easements and agreements both recorded and unrecorded.
7. Refer to building site information contained in the Dane County Soil Survey.
8. This survey shows select above-ground improvements. No guarantee is made for below-ground structures.

# CERTIFIED SURVEY MAP

**Birrenkott**
**Surveying, Inc.**

P.O. Box 237
1677 N. Bristol Street
Sun Prairie, Wisconsin 53590
Phone (608) 837-7463
Fax (608) 837-1081

**Town of Burke Approval Certificate**
This Certified Survey Map is hereby acknowledged, accepted and approved for recording by the Town Board of the Town of Burke, Dane County.

_____
Brenda Ayers, Administrator/Clerk/Treasurer
Town of Burke

Dated _____

**City of Madison Plan Commission Certificate**:
Approved for recording per the Secretary of the City of Madison Plan Commission.

_____ _____
Natalie Erdman Dated
Secretary of the Plan Commission

**Madison Common Council Certificate:**
Resolved that this certified survey map located in the City of Madison was hereby approved by Enactment Number _____, File ID Number _____, adopted on the _____ day of _____, 2019, and that said enactment further provided for the acceptance of those lands dedicated and rights conveyed by said Certified Survey Map to the City of Madison for public use.

Dated this _____day of _____, 2019

_____
Maribeth L. Witzel-Behl, City Clerk
City of Madison, Dane County Wisconsin

Approved for recording per Dane County Zoning and Land Regulation Committee

action of _____, 2019 by _____
Daniel Everson, Authorized Agent

**Register of Deeds Certificate:**
Received for recording this _____day of _____, 2019

at_____ o'clock ____ m and recorded in Volume _____ of Certified Survey Maps of County on Pages _____.

_____
Kristi Chlebowski, Register of Deeds

Document No. _____

Certified Survey Map No. _____, Volume _____, Page _____

**Surveyed For:**
Peter & Chelsea Sachs
3285 Nelson Road
Sun Prairie, WI 53590

Surveyed: T.A.S.
Drawn: B.S.S.
Checked: D.V.B.
Approved: D.V.B.
Field book: 272/49-50
Tape/File: J:\Carlson\2018\



Office Map No.: **180694**