STORM WATER MANAGEMENT PLAN

For

Ulster Manor

Situate
Memorial Drive
Town of Ulster
Prepared by

MEDENBACH and EGGERS

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April 1, 2004
Revised: January 27, 2005
Revised: January 17, 2006
Revised: August 9, 2007

TABLE OF CONTENTS

Owner/Operator

Barry Medenbach, P.E.
New York Lic. No. 60142

I. Executive Summery:

Ulster manor is a proposed subdivision situated on a 48.0 acre parcel located in the town of Ulster. Currently the land is undeveloped and wooded. In addition there are also approximately 4.93 acres of New York State Freshwater Wetlands and approximately 0.18 acres of Federal Wetlands on the property.

The proposed project will involve constructing 128 town homes and a community recreation for the residents. In addition, approximately 2,200 linear feet of town road will be constructed and approximately 3,000 of private driveways and roads in order to provide access to various parts of the project.

Stormwater management for the project will include temporary erosion controls during construction as well as permanent post construction controls, such as swales, storm sewers, water quality ponds, etc. to mitigate the impacts of the proposed development. Proposed post construction stromwater controls are explained in detail within the Section III of this report and indicated on the accompanying site plans to this report.

The intent of this report is to prepare the calculations and sizing of the sites drainage system including Water Quality Basins as part of a Storm Water Pollution Prevention Plan (SWPPP) meeting standards of design of Storm water Management Practices (SMP) of the State of New York in accordance with National Pollutant Discharge Elimination System (NPDES).

When all proposed practices are constructed they will reduce all post-development peak flows from the site to less than peak development rates. Therefore there will be no negative impacts on downstream waters or adjacent lands caused by increased peak flow rates. The reductions are indicated in Section III.b of this report.

II. Pre-Development Drainage Conditions:

Currently, pre-development drainage patterns consist of eight watersheds, five which discharge off site at different locations and three which discharge into natural recharge areas with no outlet onsite. All of the watersheds are delineated in Figure 1 in Appendix A and in larger scale on the predevelopment drainage area worksheet.

For calculation purposes smaller sub watersheds have been delineated within some of the larger watersheds. Soil types for each watershed have been delineated using USDA Ulster County Soil Survey Maps and data collected from on-site test holes. Impervious and vegetative cover was delineated using aerial photographs and surveys. A brief description of each of the pre-development watersheds is described in detail below:

a. Pre-development Watershed 1 (Nodes 1-1 – 1-3):

This watershed is located in the southern portion of the site totals approximately 26.0 acres, as indicated in Figure 1 in Appendix A. Nodes 1-1, 1-2 and 1-3 make up the area of this watershed in the drainage calculations. Runoff from this watershed collects in the New York State DEC Freshwater Wetlands; represented by nodes WL-1 – WL-3. Ultimately the wetlands discharge concentrated flow over the southern property line through a existing stream channel on to adjacent lands which contain a large New York State DEC Freshwater Wetland. Except for the channel connecting the onsite State Wetlands with the offsite State Wetlands there are no drainage structures or obstructions within the water shed.

Currently watershed 1 is predominantly undeveloped with the exception of an existing parking lot located on an adjacent parcel, which makes up approximately 0.2 acres of impervious cover, less than 1% of the watershed area. The primary land cover in the watershed is hardwood forest.

The watershed contains soil types from all 2 hydrological groups, A and C. The predominate soil type in the watershed is hydrological group A soil, which accounts for 62.5% of the soils. Followed by group C soils which make up the remaining 36.6%.

b. Pre-development Watershed 2 (Node 2-1):

This watershed is located in the northeast corner of the site and totals approximately 6.6 acres, as indicated in Figure 1 in Appendix A, and represented by node 2-1 drainage calculations. Runoff from this watershed collects in a portion of Feral Freshwater Wetlands and ultimately discharges as concentrated flow over the northern property line into adjacent Federal Freshwater Wetlands which extend offsite.

Currently watershed 2 is undeveloped and predominantly covered by hardwood forest. The watershed contains soil types entirely from hydrological group C which male up 100% of the watershed.

c. Pre-development Watershed 3 (Nodes 3-1):

This watershed is located in the northern portion of the site totals approximately 6.4 acres, as indicated in Figure 1 in Appendix A, and represented by node 3-1 in the drainage calculations. Runoff from this watershed collects in a natural depression located behind the adjacent Fox Run townhouse development. The depression also has a 6" HDPE culvert which acts as an overflow when the water in the depression ponds above 242.99'. Runoff which discharges into this overflow pipe flows into a roadside swale along Ledge Drive. The natural depression and existing outlet are represented by Pond P-1 in the predevelopment drainage model.

Currently watershed 3 is predominantly undeveloped with the exception of some townhouse parcels located in the northern portion of the watershed, which makes up approximately 0.13 acres of impervious cover, about 2% of the watershed area. The primary land cover in the watershed is hardwood forest.

The watershed contains soil types from all 2 hydrological groups, A and C. The predominate soil type in the watershed is hydrological group A soil, which accounts for 88.2% of the soils. Followed by group C soils which make up the remaining 9.7%.

d. Pre-development Watershed 4 (Nodes 4-1):

This watershed is located in the northern portion of the site totals approximately 2.2 acres, as indicated in Figure 1 in Appendix A, and represented by node 4-1 in the drainage calculations. Runoff from this watershed drains north and discharges into a catch basin along Quail drive in the adjacent Fox Run townhouse development.

Currently watershed 4 is undeveloped and the primary land cover in the watershed is hardwood forest. The watershed is made up entirely of hydrological group A soil, which accounts for 100% of the soils.

e. Pre-development Watersheds 5, 7 and 8 (Nodes 5-1, 7-1, and 8-1):

Watersheds 5, 7 and 8 represent small watersheds which drain into isolated depressions with no outlet as indicated in Figure 1 in Appendix A. These watersheds consist primarily of undeveloped land with some small portions of impervious area.

f. Pre-development Watershed 6 (Nodes 6-1):

This watershed is located in the southwestern portion of the site totals approximately 3.6 acres, as indicated in Figure 1 in Appendix A, and represented by node 6-1 in the drainage calculations. Runoff from this watershed discharges into an 18” CMP which flows south under memorial drive.

Currently watershed 6 is a mix of undeveloped and developed land and includes 0.6 acres of impervious cover, which makes up approximately 16% of the watershed area. The remainder of the watershed area consists of hydrological group A soil.

g. Pre-development Runoff Rates (For off-site discharge points):

Watershed 1 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	2.38
10 Year	20.37
25 Year	24.02
100 Year	33.08

Watershed 2 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	8.01
10 Year	23.71
25 Year	27.15
100 Year	37.79

Watershed 3 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.00
10 Year	0.12
25 Year	0.19
100 Year	0.40

Watershed 4 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.00
10 Year	0.02
25 Year	0.04
100 Year	0.32

Watershed 6 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.01
10 Year	1.27
25 Year	2.02
100 Year	4.94

III. Post-Development Drainage Improvements and Mitigation:

To mitigate all of the potential stormwater impacts of the project a drainage study has been preformed and a stormwater management plan has been prepared in accordance with the New York State Stormwater Management Design Manual (NYSSMDM), SPDES general permit for stormwater discharges GP-02-01 and EPA Phase II requirements. The stormwater management practice locations map in Appendix A shows a general schematic of the proposed drainage improvements within each of the pre-development watersheds. Post-development drainage calculations are included in Appendix A. All nodes with the prefix 9-x thru 16-x are part of the post development calculations. A detailed work sheet is included in Appendix A showing the location of all post development nodes.

When complete the proposed drainage system will reduce peak runoff rates to less than pre-development levels. The proposed drainage improvements will also reduce pollutant levels in the runoff though several proposed treatment practices. The following sections give a detailed description of the proposed drainage system and on-site mitigations.

a. Peak Runoff Rate Reduction:

To mitigate the impacts of increased runoff rates after development the project will use a system of detention ponds/swales and infiltration practices to reduce post-development runoff rates to less then pre-development rates. As required by the NYSSMDM the proposed drainage system will provide the required channel protection volume, overbank flood protection, and extreme storm protection.

To meet channel protection requirements, or extended 24 hour detention of the 1-year design storm, a system of wet ponds and infiltration practices will be used, which can be seen on the stormwater management practice location map in Appendix A.

To satisfy channel protection requirements three pocket ponds (Type P-5), two infiltration basins (Type I-2), one wet swale (Type O-2) and nine bio-retention zones (Type F-5) all are practices listed in the NYSSMDM. The ponds and swales were selected for use due to the presence of hydrological group C soils in some locations and the lack of adequate separation from bedrock, less than 3 feet, required for infiltration practices. Ponds located where hydrological group A soils exist a 12" compacted clay liner will be installed in the ponds. At the locations of the infiltration basins and bio-retention zones hydrological group A soils are present and there is sufficient separation between the practice bottoms and bedrock.

Channel protection volume will be achieved by low flow orifices, as outlets, installed in the ponds which will release the 1 year storm over a 24 hour period and restore post-development peak flow rates to less than pre-development rates. The infiltration basins and bio-retention zones will recharge the required channel protection volume during the one year storm. Table 1 below gives the required channel protection volume, required 24 hour average release rate, actual release rate and orifice size for each practice. Table 2 shows the required channel protection volume for each of the bio-retention zones, the available storage above the bio-retention zone and the peak discharge for the 1 year storm for each of the bio-retention zones.

Table 1:

WQB	CPv (Cubic Ft)	Req. Average Release Rate Over 24hrs. (cfs)	Calculated Peak Release Rate (cfs)	Orifice Size (Min 3")	Duration of Release (Hours)
1	12,744	0.15	0.31	3"	30
2	5,944	0.07	0.22	3"	22 (Discharges Into WQB #1)
3 (Infiltration Basin)	7,192	0.08	0.00	N/A	N/A (Recharged)
4	13,504	0.16	0.21	3"	37
5 (Infiltration Basin)	18,818	0.21	0.00	N/A	N/A (Recharged)

Table 2:

Bio-Retention Zone	CPv (Cubic Ft)	Available Infiltration Storage (Cubic Ft)	Calculated 1 Year Peak Release Rate (cfs)
1	716	1,310	0.00
2	94	993	0.00
3	130	638	0.00
4	1,112	1,100	0.00
5	403	436	0.00
6	347	436	0.00
7	1,247	633	0.00
8	3,088	1,315	0.00
9	2,644	1,577	0.00

Detailed calculations for all basins and practices are included in Appendix A. Prior to entering the ponds, infiltration basins and bio-retention zones runoff will be pre-treated with forebays, grass swales, grass filter strips, mulch and gravel diaphragms to ensure the longevity of each practice. All pretreatment has been sized in accordance with the NYSSMDM.

To meet overbank flood protection and extreme storm protection requirements the proposed drainage improvements will provide extended detention and release post-development runoff for the 10 and 100 year storms at less than pre-development rates. The ponds on site will accomplish this through detaining the runoff and releasing it through outlet structures and spillways designed to release the stormwater gradually over a period of time. The infiltration practices will use the same methods. In addition, some runoff will also be recharged into the subsoil. Some of the infiltration practices have overflows which discharge into the ponds when their storage is exceeded during extreme storms.

When all proposed practices are constructed they will reduce post-development peak flows from the site to less than peak development rates. There will be a small increase for storms over the 10 year storm at watershed 4. This is caused be the runoff from the proposed Quail Drive extension. However, the increase will be very small 0.5 cfs or less for all storms and the existing drainage structures are more than adequate to handle this small increase. Therefore there will be no negative impacts on downstream waters or adjacent lands caused by increased peak flow rates. Furthermore, many of the methods selected (infiltration and bio-retention) simulate the pre-development conditions of the watershed by recharging the runoff through infiltration.

b. Pre and Post-development Runoff Rate Comparison:

In the tables below the changes in pre and post-development runoff rates for each of the watersheds is listed. Runoff rates are calculated at each of the discharge points mentioned in Section II. Detailed calculations are included in Appendix A.

Watershed 1 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	2.38	1.94	- 18.48%
10 Year	20.37	18.96	- 6.92%
25 Year	24.02	23.62	- 1.67%
100 Year	33.08	32.70	- 1.15%

Watershed 2 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	8.01	6.51	- 18.72%
10 Year	23.71	22.03	- 7.09%
25 Year	27.15	25.43	- 6.34%
100 Year	37.79	35.70	- 5.50%

Watershed 3 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	0.00	0.00	0.00%
10 Year	0.12	0.10	- 16.67%
25 Year	0.19	0.19	0.00%
100 Year	0.40	0.40	0.00%

Watershed 4 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	Change In cfs
1 Year	0.00	0.00	0.00
10 Year	0.02	0.04	0.02
25 Year	0.04	0.11	0.07
100 Year	0.32	0.85	0.53

Watershed 6 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	0.01	0.00	- 100.00%
10 Year	1.27	0.93	- 26.77%
25 Year	2.02	1.65	- 18.31%
100 Year	4.94	4.89	-1.01%

IV. Runoff Calculation Methodology:

Drainage analyses performed for the 1, 10, 25 and 100 year design storms used the Runoff Curve Method as developed by the Soil Conservation Service (SCS), with peak discharge rates, hydrographs, and routing analyses generated using HydroCAD based upon the SCS TR-20 method. Curve numbers and times of concentration were determined using methodology in the SCS Technical Release 55. These calculations are detailed in Appendix A. Curve numbers were selected from soil type and ground cover which were determined from in field inspections and aerial photographs.

V. Water Quality and Runoff Pollutant Reduction:

To mitigate the impacts of increased pollutants in stormwater from the proposed development several methods will be used to treat stormwater from the project and remove pollutants before they are discharged into downstream waters. In accordance with the NYSSMDM the required water quality volumes have been calculated for all proposed on-site development. To treat the required water quality volume four practices, stormwater ponds, infiltration, bio-retention zones and open swales will be used. Calculations for sizing all the proposed practices are included in Appendix A.

a. Water Quality Volumes and Treatment Methods:

Three stormwater ponds will be used to treat runoff from portions of the site as seen on the stormwater management practice location map in Appendix A. These will consist of pocket ponds (Type P-5) as previously mentioned. Runoff entering the ponds will be treated through settling and biological uptake of pollutants. Prior to entering the ponds runoff will be pre-treated with forebays and grass swales located at the inflow points of each pond. The majority of the runoff entering the ponds will be collected by storm sewers and discharged into the ponds as concentrated flow. All pretreatment has been sized in accordance with the NYSSMDM.

Calculations for determining the required water quality volumes for each of the ponds are included in Appendix B. In the following table a summery of required and provided water quality volumes is indicated for each of the ponds. The provided water quality volume is the calculated volume of the pond below the overflow riser.

WQB (Ponds)	Required WQV (cubic feet)	Provided WQV (cubic feet)
1	3,560	7,565
2	3,999	6,886
4	9,763	16,556

Two infiltration basins (Type I-2) will be used to treat runoff from portions of the site. The required water quality volume will be treated in the basins by storing it and infiltrating it into the subsoil. Prior to entering the infiltration basins runoff will be pre-treated with forebays, grass swales, and grass filter strips. All pretreatment has been sized in accordance with the NYSSMDM.

Calculations for determining the required water quality volumes for the infiltration basins are included in Appendix B. In the following tables a summery of required and provided water quality volumes is indicated for each of the infiltration basins. The provided water quality volume is the calculated infiltration storage in each basin.

WQB (Infiltration Basins)	Required WQV (cubic feet)	Provided WQV (cubic feet)
3	4,917	5,122
5	7,658	16,748

At the entrance to the site a wet swale (Type O-2) will be used to treat runoff form a portion of the new town road. The swale will be located along memorial drive and outlet into an existing 18” CMP which flows south beneath memorial drive. A catch basin will be used as an outlet structure to reduce peak flows and provide water quality volumes.

Calculations for determining the required water quality volume for the swale is included in Appendix B. In the following table a summery of required and provided water quality volumes is indicated the swale. The provided water quality volume is the calculated volume of the swale below the overflow riser.

Wet Swale	Required WQV (cubic feet)	Provided WQV (cubic feet)
1	3,508	3,664

Nine bio-retention zones, located throughout the site, will be used to treat runoff from smaller isolated watersheds typically 0.5 acres or smaller. Bio-retention zones are landscaped shallow depressions which treat runoff by capturing it in the depression and filtering it through a layer of planting soil and the pollutants are removed through physical filtering and biological uptake. The impervious cover in these watersheds will typically consist of rooftops and small paved parking areas or driveways. Runoff will enter the bio-retention zones as sheet flow or shallow concentrated flow and be pre-treated with grassed filter strips, gravel diaphragms, and mulch. The table below indicates the required and provided water quality volumes and surface areas for each of the bio-retention zones. In addition the ponding depth before runoff enters the emergency overflow is also provided. Water quality calculations are provided in Appendix B. Each of the bio-retention zones stores at least 75% of the required water quality volume for the watershed prior to filtering as required by the NYSSMDM.

Bio-Retention Zone	Required WQV (cubic feet)	Required Storage (75% of WQV) (cubic feet)	Provided WQV Storage (cubic feet)	Required Area of Filter Bed (square feet)	Provided Area of Filter Bed (square feet)	Ponding Depth (inches)
1	1,174	880	1,310	1,043	2,400	6”
2	953	715	993	847	1,875	6”
3	583	437	638	518	1,100	6”
4	887	665	1,100	788	2,100	6”
5	389	292	436	346	745	6”
6	334	251	436	297	745	6”
7	683	512	633	607	1,250	6”
8	1,686	1,265	1,315	1,499	2,625	6”
9	1,584	1,188	1,577	1,408	3,725	6”

VI. Stormwater Controls During Construction:

The following measures and best management practices will be implemented to abate and control potential pollutants in stormwater discharges during construction:

1. Site disturbance during construction shall be limited to only the necessary grading of roads, parking areas, ditches and building pads as shown on the plan.
2. Gravel stabilized construction entrance/exit pad to minimize soil disturbance and movement.
3. Silt fences to be located down-gradient of area of stormwater sheet flow. Sediment ponds and traps located at outflows of concentrated flows.
4. Temporary swales to divert stormwater flows from disturbed areas.
5. Check dams as erosion checks within swales and ditches.
6. Temporary stabilization of disturbed portions of the site with temporary seed and mulch within 24 hours of disturbance. Temporary seed shall consist of Ryegrass, applied at the rate of 30 pounds per acre. Prior to

seeding, test for and fertilize as required. Mulch with hay or straw at the rate of 1.5 – 2.5 tons per acre.

7. After grading, temporary berms and swales shall be installed to divert runoff from newly graded areas to control erosion until permanent ground cover has been established.
8. Preserve all large and healthy trees (i.e. greater than 12 inches in diameter) where their removal is not necessary to construction of the project.
9. Placement of erosion control mat on slopes in excess of 2:1(i.e. two feet horizontal to one foot vertical) to control potential slope erosion. Project plans contain technical material and performance specifications including details of installation and maintenance to be utilized in the construction and maintenance of erosion control facilities.

VII. Site Assessments and Inspections:

Inspection of erosion control facilities shall be required to assure maximum adherence to the intent and letter of this plan. Inspections shall be conducted under supervision of a qualified professional at least ever 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. Construction inspection logs are included in Appendix C. The following information shall be recorded during the inspection:

1. Indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
2. Indicate on a site map all areas that have undergone active temporary or permanent stabilization;
3. Indicate on all site areas that have not undergone active site work during the previous 14-day period;
4. Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume;
5. Inspect all erosion and sediment control practices and record all the maintenance requirements. Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

VIII. Contractors:

The site contractor and/or Subcontractor shall be responsible for implementing of the plan. Each contractor performing work on the site shall indicate his understanding of these responsibilities by affixing his signature to the certification statement provided in this document.

The certification states the contractor responsible for elements of the plan understands local codes pertaining to stormwater quality and will comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

IX. Stabilization:

The operator shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization by the 14th day after construction activity temporarily or permanently ceased is precluded by snow or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;

b. Where construction activity on a portion of the site is temporarily ceased, and earth-disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures need not be initiated on that portion of the site.

X. Maintenance:

Sediment shall be removed from sediment traps or sediment ponds whenever their capacity has been reduced by fifty (50) percent from the design capacity. Weekly inspections of all erosion control practices shall be conducted and any deficiencies shall be noted and corrected.

XI. Reporting and Retention of Records:

The operator shall prepare a written summary of its status with respect to compliance with this general permit at a minimum frequency of every three months during which coverage under this permit exists.

The following documents shall be retained for a period of three years from the date the site is finally stabilized:

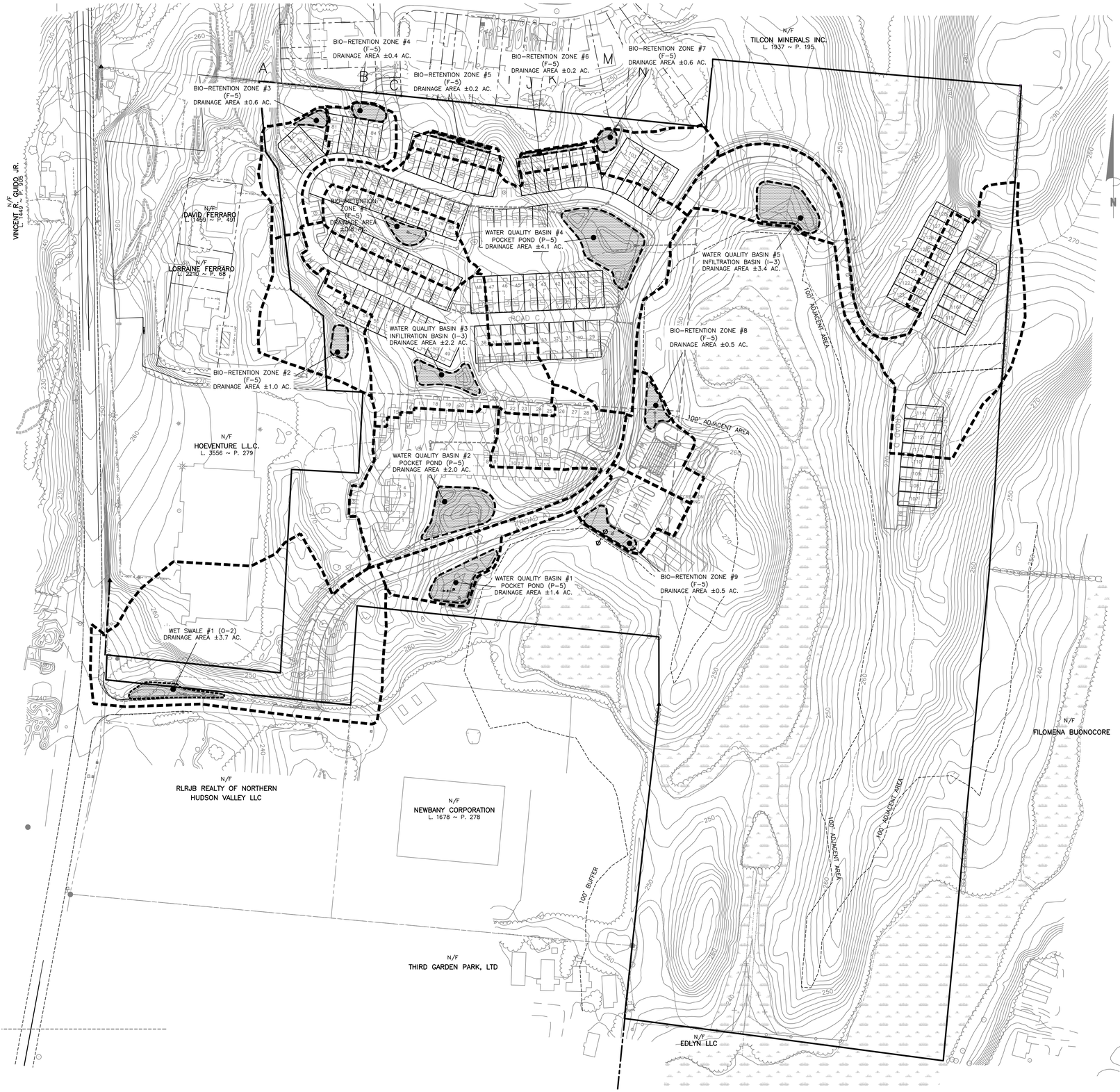
1. Notice of Intent
2. Reports and inspections generated during implementation of the plan
3. Contractors certifications
4. Notice of Termination

XII. Certifications:

Prior to filing the Notice of Termination, the operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls not needed for long-term erosion control have been removed.
The operator shall certify that the requirements of Site Assessment and Inspection, Stabilization and Maintenance of this permit have been satisfied within 48 hours of actually meeting such requirements

Appendix A

Drainage Area Maps and Hydro CAD Calculations



MAP REVISION DATES	
DATE	REVISION

STORMWATER MANAGEMENT PRACTICE LOCATIONS FOR ULSTER MANOR A PROPOSED COMMUNITY

SITUATE – 9W
TOWN OF ULSTER
ULSTER COUNTY, NEW YORK
AUGUST 9, 2007

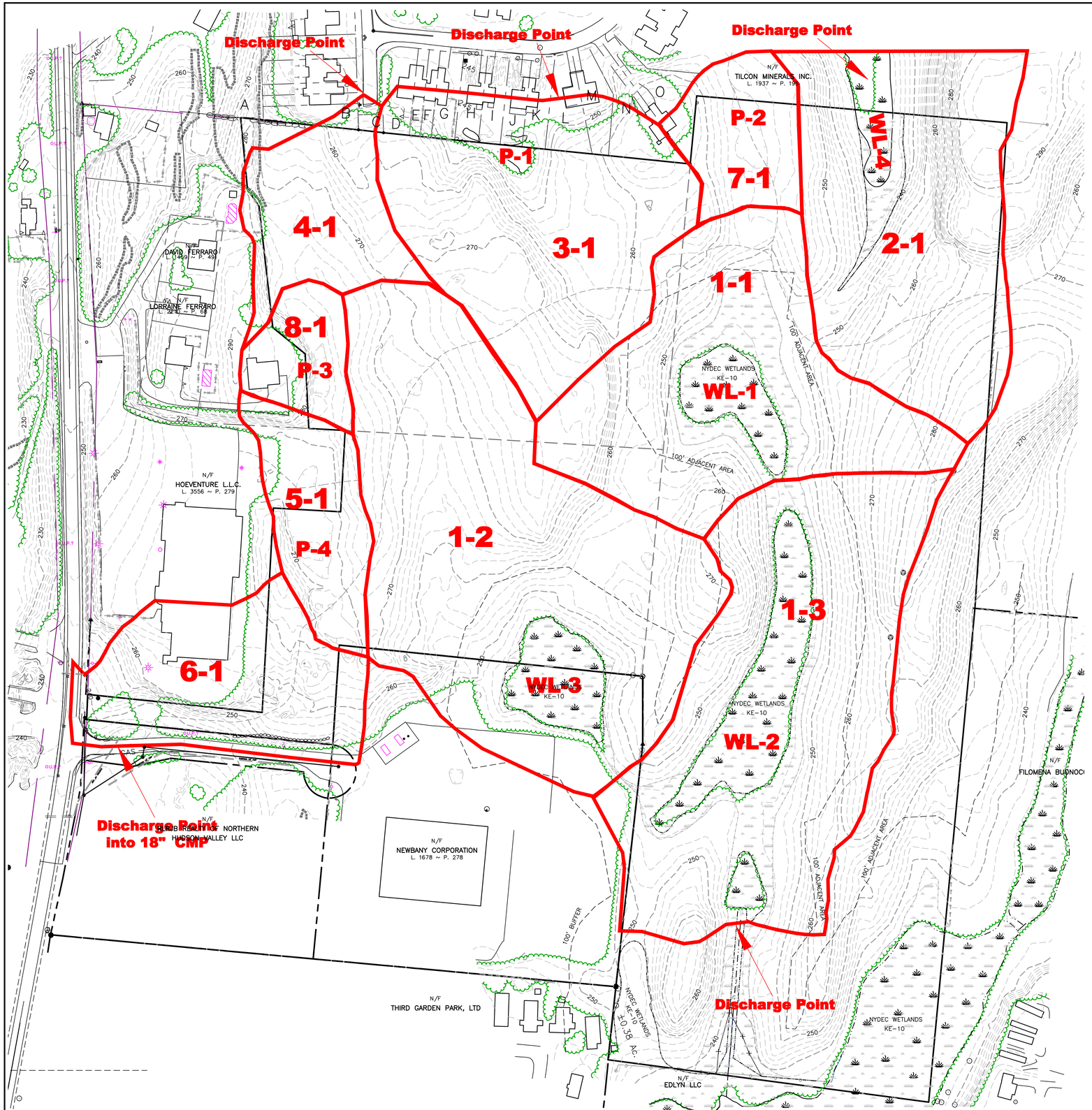
100 0 100 200 300

Scale: 1" = 100'

MEDENBACH & EGGERS
CIVIL ENGINEERING & LAND SURVEYING, P.C.
STONE RIDGE, NEW YORK (845) 687-0047

BARRY MEDENBACH, P.E.
NEW YORK LIC. NO. 60142

WQ-1



MAP REVISION DATES	
DATE	REVISION

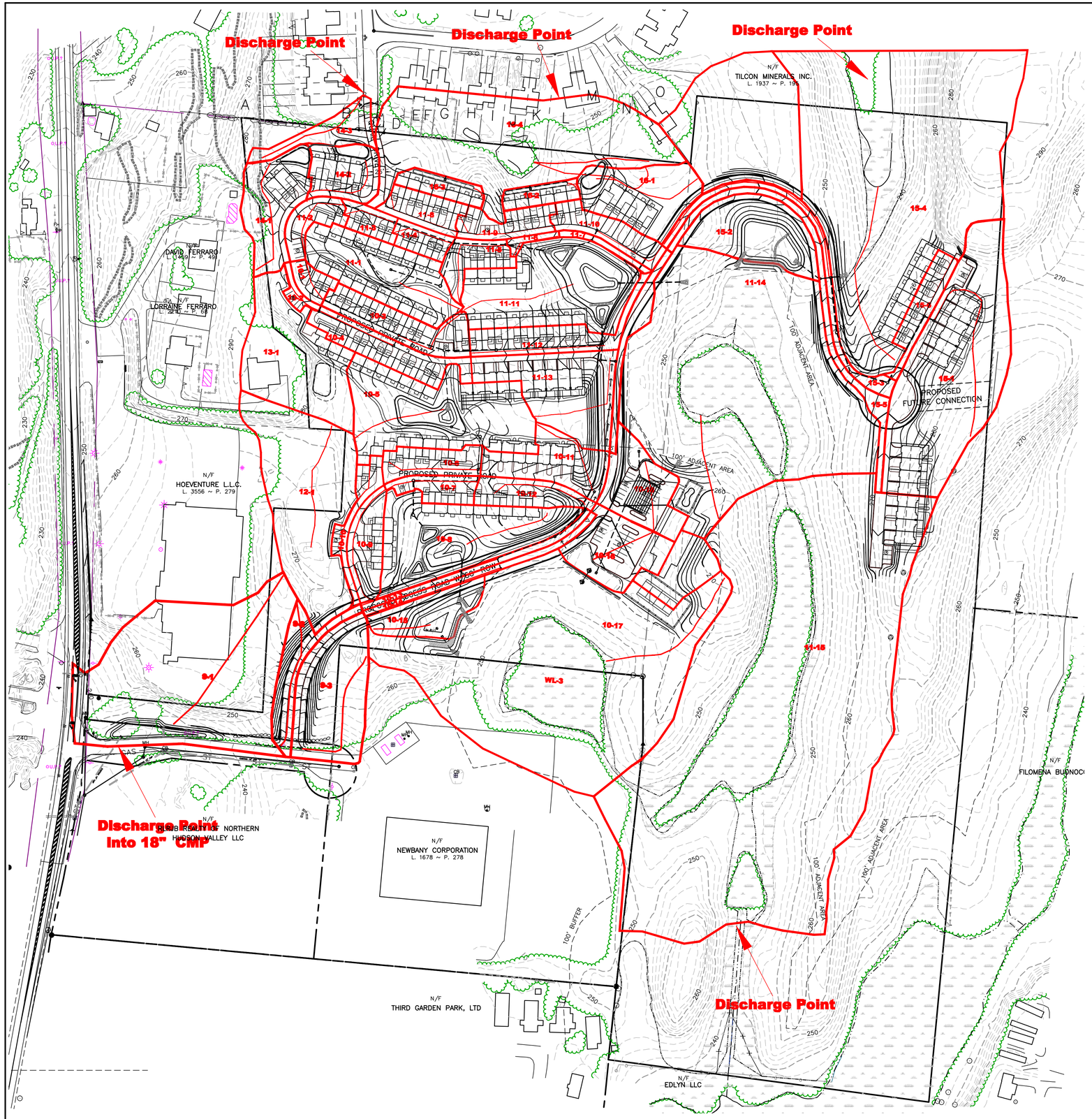
PRE-DEVELOPMENT DRAINAGE AREAS OF ULSTER MANOR A PROPOSED COMMUNITY

SITUATE - 9W
TOWN OF ULSTER
ULSTER COUNTY, NEW YORK
AUGUST 9, 2007

100 0 100 200 300

Scale: 1" = 100'

MEDENBACH & EGGERS
CIVIL ENGINEERING & LAND SURVEYING, P.C.
STONE RIDGE, NEW YORK (845) 687-0047



MAP REVISION DATES	
DATE	REVISION

POST-DEVELOPMENT DRAINAGE AREAS OF ULSTER MANOR

A PROPOSED COMMUNITY

SITUATE - 9W
TOWN OF ULSTER
ULSTER COUNTY, NEW YORK

AUGUST 9, 2007

100 0 100 200 300

Scale: 1" = 100'

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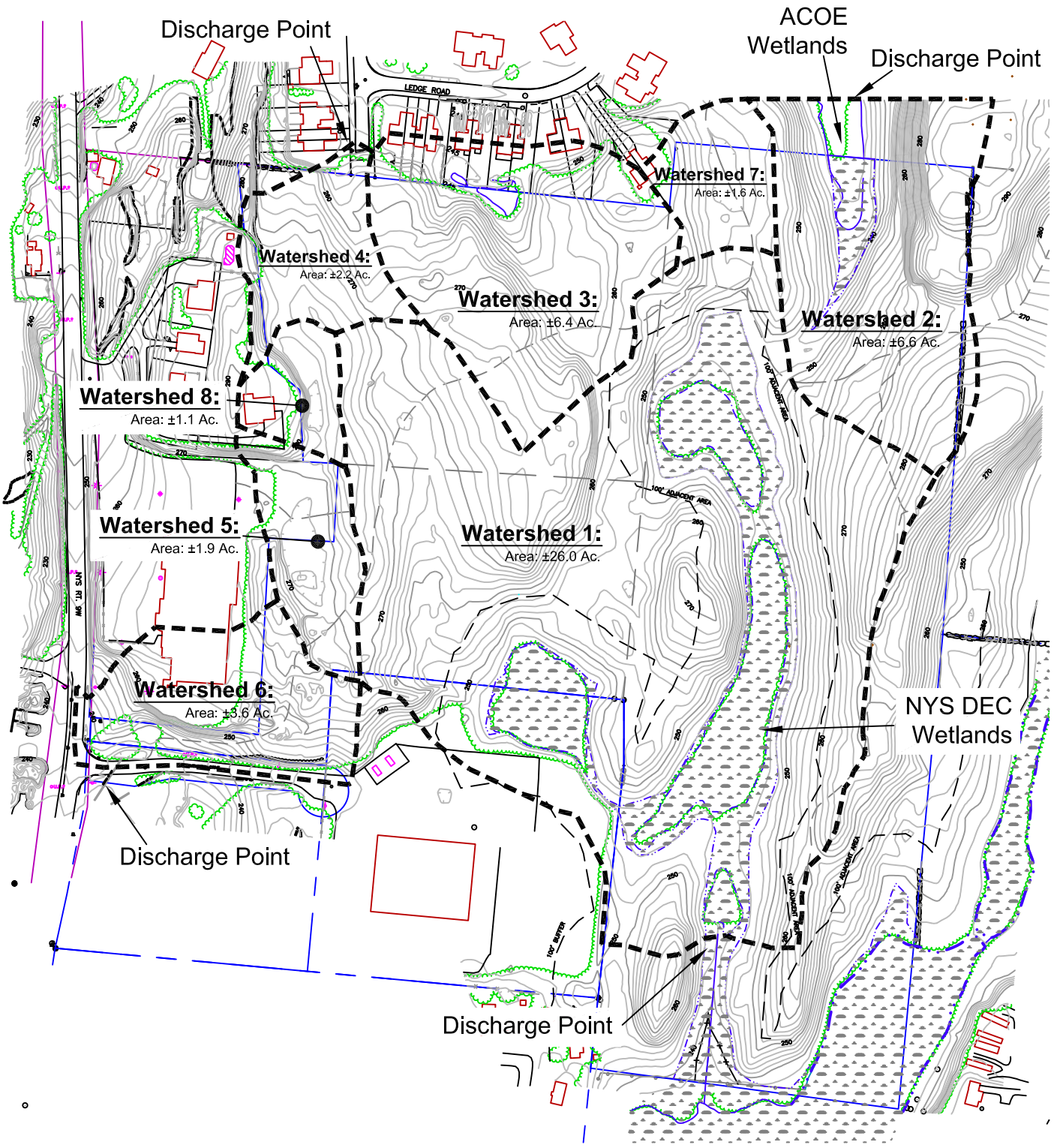
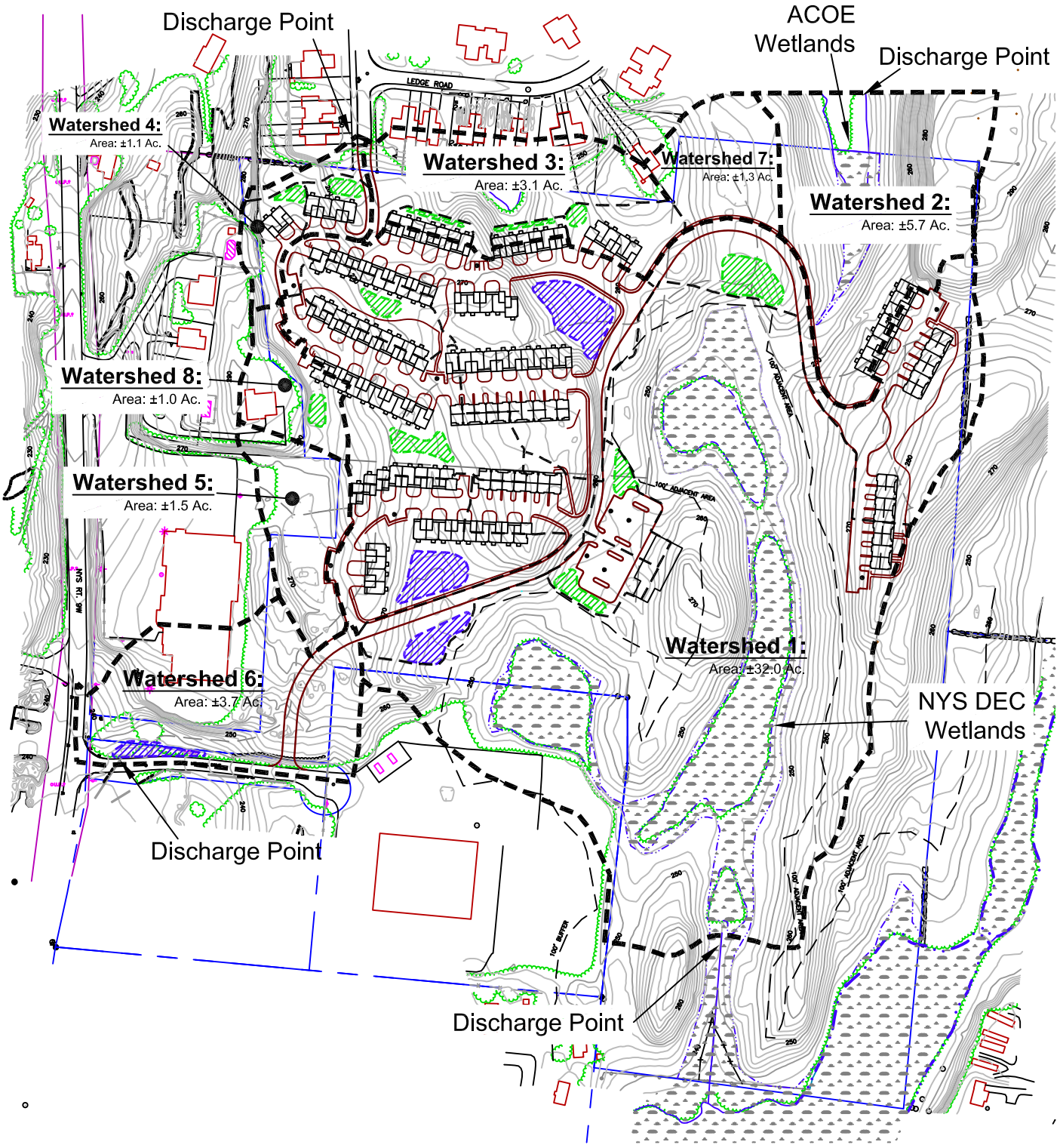


Figure 1

Pre-Development Watersheds

Scale: N.T.S



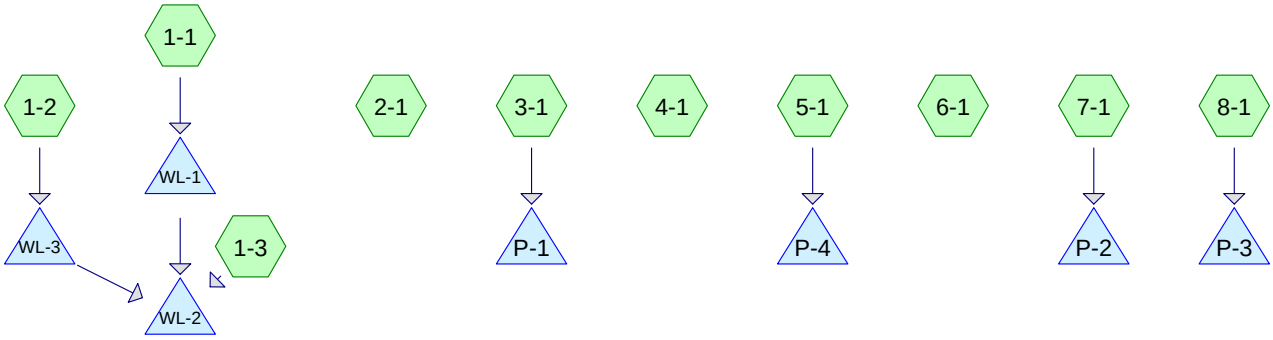
Legend

- Drainage Area Boundary
- Infiltration Pond/Bio-Retention
- Stormwater Pond/Swale

Figure 2

Post-Development Watersheds

Scale: N.T.S



Subcat Reach Pond Link

Drainage Diagram for E03 142 Predevelopment
Prepared by Medenbach & Eggers 9/25/2007

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcats)
1,364,045	30	Woods, Good, HSG A (1-1,1-2,1-3,3-1,4-1,5-1,6-1,7-1,8-1)
728,728	70	Woods, Good, HSG C (1-1,1-3,2-1,3-1)
23,319	98	Paved parking & roofs (1-2,3-1,5-1,7-1)
31,017	98	Paved roads w/curbs & sewers (4-1,6-1,8-1)
2,147,109		

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-1: 1-1 Runoff Area=284,652 sf Runoff Depth=0.35"
Flow Length=300' Tc=16.5 min CN=55 Runoff=1.41 cfs 8,201 cf

Subcatchment 1-2: 1-2 Runoff Area=457,790 sf Runoff Depth=0.00"
Flow Length=570' Tc=19.2 min CN=31 Runoff=0.00 cfs 0 cf

Subcatchment 1-3: 1-3 Runoff Area=390,426 sf Runoff Depth=0.31"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=54 Runoff=2.42 cfs 10,178 cf

Subcatchment 2-1: 2-1 Runoff Area=286,276 sf Runoff Depth=1.01"
Flow Length=550' Tc=15.2 min CN=70 Runoff=8.01 cfs 24,050 cf

Subcatchment 3-1: 3-1 Runoff Area=277,439 sf Runoff Depth=0.00"
Flow Length=578' Tc=19.0 min CN=35 Runoff=0.00 cfs 0 cf

Subcatchment 4-1: 4-1 Runoff Area=97,374 sf Runoff Depth=0.00"
Flow Length=438' Tc=19.6 min CN=31 Runoff=0.00 cfs 0 cf

Subcatchment 5-1: 5-1 Runoff Area=82,725 sf Runoff Depth=0.00"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment 6-1: 6-1 Runoff Area=155,341 sf Runoff Depth=0.03"
Flow Length=590' Tc=14.4 min CN=41 Runoff=0.01 cfs 334 cf

Subcatchment 7-1: 7-1 Runoff Area=68,408 sf Runoff Depth=0.00"
Flow Length=149' Tc=32.0 min CN=36 Runoff=0.00 cfs 0 cf

Subcatchment 8-1: 8-1 Runoff Area=46,678 sf Runoff Depth=0.00"
Flow Length=144' Tc=14.5 min CN=38 Runoff=0.00 cfs 13 cf

Pond P-1: P-1 Peak Elev=242.90' Storage=5,443 cf Inflow=0.00 cfs 0 cf
6.0" x 177.8' Culvert Outflow=0.00 cfs 0 cf

Pond P-2: (new Pond) Peak Elev=250.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond P-3: P-3 Peak Elev=270.01' Storage=13 cf Inflow=0.00 cfs 13 cf
Outflow=0.00 cfs 0 cf

Pond P-4: P-4 Peak Elev=264.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond WL-1: WL-1 Peak Elev=243.05' Storage=1,511 cf Inflow=1.41 cfs 8,201 cf
Outflow=0.42 cfs 8,201 cf

Pond WL-2: WL-2 Peak Elev=242.00' Storage=141 cf Inflow=2.45 cfs 18,379 cf
Outflow=2.38 cfs 18,379 cf

Pond WL-3: WL-3 Peak Elev=244.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 2,147,109 sf Runoff Volume = 42,775 cf Average Runoff Depth = 0.24"
97.47% Pervious Area = 2,092,773 sf 2.53% Impervious Area = 54,336 sf

Subcatchment 1-1: 1-1

Runoff = 1.41 cfs @ 12.15 hrs, Volume= 8,201 cf, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
105,499	30	Woods, Good, HSG A
179,153	70	Woods, Good, HSG C
284,652	55	Weighted Average
284,652		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 1-2: 1-2

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
448,128	30	Woods, Good, HSG A
9,662	98	Paved parking & roofs
457,790	31	Weighted Average
448,128		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0533	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	200	0.0533	1.15		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.3	270	0.0740	1.36		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
19.2	570	Total			

Subcatchment 1-3: 1-3

Runoff = 2.42 cfs @ 12.04 hrs, Volume= 10,178 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
236,299	70	Woods, Good, HSG C
390,426	54	Weighted Average
390,426		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 2-1: 2-1

Runoff = 8.01 cfs @ 12.09 hrs, Volume= 24,050 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
286,276	70	Woods, Good, HSG C
286,276		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0933	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	200	0.0933	1.53		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.6	250	0.1000	1.58		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.2	550	Total			

Subcatchment 3-1: 3-1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
27,000	70	Woods, Good, HSG C
244,828	30	Woods, Good, HSG A
277,439	35	Weighted Average
271,828		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0769	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	30	0.0769	1.39		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.6	80	0.1750	2.09		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
2.7	113	0.0200	0.71		**Shallow Concentrated Flow, 5** Woodland Kv= 5.0 fps
2.0	165	0.0730	1.35		**Shallow Concentrated Flow, 6** Woodland Kv= 5.0 fps
19.0	578	Total			

Subcatchment 4-1: 4-1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
96,374	30	Woods, Good, HSG A
1,000	98	Paved roads w/curbs & sewers
97,374	31	Weighted Average
96,374		Pervious Area
1,000		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	88	0.0450	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	12	0.0600	0.09		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	88	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.6	250	0.0270	1.15		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
19.6	438	Total			

Subcatchment 5-1: 5-1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
80,697	30	Woods, Good, HSG A
82,725	32	Weighted Average
80,697		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 6-1: 6-1

Runoff = 0.01 cfs @ 24.02 hrs, Volume= 334 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
24,858	98	Paved roads w/curbs & sewers
130,483	30	Woods, Good, HSG A
155,341	41	Weighted Average
130,483		Pervious Area
24,858		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0867	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	200	0.0867	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.2	30	0.2000	2.24		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.2	260	0.0300	3.52		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
14.4	590	Total			

Subcatchment 7-1: 7-1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,018	98	Paved parking & roofs
62,390	30	Woods, Good, HSG A
68,408	36	Weighted Average
62,390		Pervious Area
6,018		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	63	0.0317	0.05		**Sheet Flow, 1** Woods: Dense underbrush n= 0.800 P2= 4.00"
12.8	86	0.1627	0.11		**Sheet Flow, 2** Woods: Dense underbrush n= 0.800 P2= 4.00"
32.0	149	Total			

Subcatchment 8-1: 8-1

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 13 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,159	98	Paved roads w/curbs & sewers
41,519	30	Woods, Good, HSG A
46,678	38	Weighted Average
41,519		Pervious Area
5,159		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0655	0.14		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.5	44	0.6363	0.29		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
14.5	144	Total			

Pond P-1: P-1

Inflow Area = 277,439 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 242.90' @ 0.00 hrs Surf.Area= 5,443 sf Storage= 5,443 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.90' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)

Pond P-2: (new Pond)

Inflow Area = 68,408 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 250.00' @ 0.00 hrs Surf.Area= 0 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	55,408 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	0	0	0
252.00	7,704	7,704	7,704
254.00	40,000	47,704	55,408

Pond P-3: P-3

Inflow Area = 46,678 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 24.02 hrs, Volume= 13 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 270.01' @ 24.82 hrs Surf.Area= 13 sf Storage= 13 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	10,814 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	0	0	0
272.00	2,407	2,407	2,407
274.00	6,000	8,407	10,814

Pond P-4: P-4

Inflow Area = 82,725 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 264.00' @ 0.00 hrs Surf.Area= 0 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WL-1: WL-1

Inflow Area = 284,652 sf, Inflow Depth = 0.35" for 1 Year event
Inflow = 1.41 cfs @ 12.15 hrs, Volume= 8,201 cf
Outflow = 0.42 cfs @ 12.77 hrs, Volume= 8,201 cf, Atten= 70%, Lag= 37.0 min
Primary = 0.42 cfs @ 12.77 hrs, Volume= 8,201 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 243.05' @ 12.77 hrs Surf.Area= 28,157 sf Storage= 1,511 cf

Plug-Flow detention time= 72.3 min calculated for 8,201 cf (100% of inflow)
Center-of-Mass det. time= 72.3 min (1,020.3 - 948.0)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.41 cfs @ 12.77 hrs HW=243.05' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.41 cfs @ 0.58 fps)

Pond WL-2: WL-2

Inflow Area = 1,132,868 sf, Inflow Depth = 0.19" for 1 Year event
Inflow = 2.45 cfs @ 12.04 hrs, Volume= 18,379 cf
Outflow = 2.38 cfs @ 12.06 hrs, Volume= 18,379 cf, Atten= 3%, Lag= 1.0 min
Primary = 2.38 cfs @ 12.06 hrs, Volume= 18,379 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 242.00' @ 12.06 hrs Surf.Area= 7,111 sf Storage= 141 cf

Plug-Flow detention time= 1.0 min calculated for 18,374 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (981.3 - 980.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.26 cfs @ 12.06 hrs HW=242.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 21.26 cfs @ 1.92 fps)

Pond WL-3: WL-3

Inflow Area = 457,790 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.00' @ 0.00 hrs Surf.Area= 34,764 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=244.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-1: 1-1 Runoff Area=284,652 sf Runoff Depth=1.52"
Flow Length=300' Tc=16.5 min CN=55 Runoff=11.07 cfs 36,003 cf

Subcatchment 1-2: 1-2 Runoff Area=457,790 sf Runoff Depth=0.10"
Flow Length=570' Tc=19.2 min CN=31 Runoff=0.11 cfs 3,842 cf

Subcatchment 1-3: 1-3 Runoff Area=390,426 sf Runoff Depth=1.44"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=54 Runoff=19.89 cfs 46,863 cf

Subcatchment 2-1: 2-1 Runoff Area=286,276 sf Runoff Depth=2.81"
Flow Length=550' Tc=15.2 min CN=70 Runoff=23.71 cfs 66,922 cf

Subcatchment 3-1: 3-1 Runoff Area=277,439 sf Runoff Depth=0.25"
Flow Length=578' Tc=19.0 min CN=35 Runoff=0.28 cfs 5,791 cf

Subcatchment 4-1: 4-1 Runoff Area=97,374 sf Runoff Depth=0.10"
Flow Length=438' Tc=19.6 min CN=31 Runoff=0.02 cfs 817 cf

Subcatchment 5-1: 5-1 Runoff Area=82,725 sf Runoff Depth=0.13"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.03 cfs 918 cf

Subcatchment 6-1: 6-1 Runoff Area=155,341 sf Runoff Depth=0.56"
Flow Length=590' Tc=14.4 min CN=41 Runoff=1.27 cfs 7,205 cf

Subcatchment 7-1: 7-1 Runoff Area=68,408 sf Runoff Depth=0.30"
Flow Length=149' Tc=32.0 min CN=36 Runoff=0.09 cfs 1,684 cf

Subcatchment 8-1: 8-1 Runoff Area=46,678 sf Runoff Depth=0.39"
Flow Length=144' Tc=14.5 min CN=38 Runoff=0.16 cfs 1,529 cf

Pond P-1: P-1 Peak Elev=243.27' Storage=7,674 cf Inflow=0.28 cfs 5,791 cf
6.0" x 177.8' Culvert Outflow=0.12 cfs 4,843 cf

Pond P-2: (new Pond) Peak Elev=250.44' Storage=1,684 cf Inflow=0.09 cfs 1,684 cf
Outflow=0.00 cfs 0 cf

Pond P-3: P-3 Peak Elev=271.27' Storage=1,529 cf Inflow=0.16 cfs 1,529 cf
Outflow=0.00 cfs 0 cf

Pond P-4: P-4 Peak Elev=266.96' Storage=918 cf Inflow=0.03 cfs 918 cf
Outflow=0.00 cfs 0 cf

Pond WL-1: WL-1 Peak Elev=243.25' Storage=8,145 cf Inflow=11.07 cfs 36,003 cf
Outflow=5.09 cfs 36,003 cf

Pond WL-2: WL-2 Peak Elev=242.03' Storage=1,208 cf Inflow=20.77 cfs 86,709 cf
Outflow=20.37 cfs 86,709 cf

Pond WL-3: WL-3 Peak Elev=244.01' Storage=280 cf Inflow=0.11 cfs 3,842 cf
Outflow=0.10 cfs 3,842 cf

Total Runoff Area = 2,147,109 sf Runoff Volume = 171,575 cf Average Runoff Depth = 0.96"
97.47% Pervious Area = 2,092,773 sf 2.53% Impervious Area = 54,336 sf

Subcatchment 1-1: 1-1

Runoff = 11.07 cfs @ 12.11 hrs, Volume= 36,003 cf, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
105,499	30	Woods, Good, HSG A
179,153	70	Woods, Good, HSG C
284,652	55	Weighted Average
284,652		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 1-2: 1-2

Runoff = 0.11 cfs @ 15.42 hrs, Volume= 3,842 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
448,128	30	Woods, Good, HSG A
9,662	98	Paved parking & roofs
457,790	31	Weighted Average
448,128		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0533	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	200	0.0533	1.15		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.3	270	0.0740	1.36		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
19.2	570	Total			

Subcatchment 1-3: 1-3

Runoff = 19.89 cfs @ 12.01 hrs, Volume= 46,863 cf, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
236,299	70	Woods, Good, HSG C
390,426	54	Weighted Average
390,426		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 2-1: 2-1

Runoff = 23.71 cfs @ 12.08 hrs, Volume= 66,922 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
286,276	70	Woods, Good, HSG C
286,276		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0933	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	200	0.0933	1.53		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.6	250	0.1000	1.58		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.2	550	Total			

Subcatchment 3-1: 3-1

Runoff = 0.28 cfs @ 12.56 hrs, Volume= 5,791 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
27,000	70	Woods, Good, HSG C
244,828	30	Woods, Good, HSG A
277,439	35	Weighted Average
271,828		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0769	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	30	0.0769	1.39		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.6	80	0.1750	2.09		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
2.7	113	0.0200	0.71		**Shallow Concentrated Flow, 5** Woodland Kv= 5.0 fps
2.0	165	0.0730	1.35		**Shallow Concentrated Flow, 6** Woodland Kv= 5.0 fps
19.0	578	Total			

Subcatchment 4-1: 4-1

Runoff = 0.02 cfs @ 15.44 hrs, Volume= 817 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
96,374	30	Woods, Good, HSG A
1,000	98	Paved roads w/curbs & sewers
97,374	31	Weighted Average
96,374		Pervious Area
1,000		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	88	0.0450	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	12	0.0600	0.09		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	88	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.6	250	0.0270	1.15		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
19.6	438	Total			

Subcatchment 5-1: 5-1

Runoff = 0.03 cfs @ 15.05 hrs, Volume= 918 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
80,697	30	Woods, Good, HSG A
82,725	32	Weighted Average
80,697		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 6-1: 6-1

Runoff = 1.27 cfs @ 12.12 hrs, Volume= 7,205 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
24,858	98	Paved roads w/curbs & sewers
130,483	30	Woods, Good, HSG A
155,341	41	Weighted Average
130,483		Pervious Area
24,858		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0867	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	200	0.0867	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.2	30	0.2000	2.24		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.2	260	0.0300	3.52		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
14.4	590	Total			

Subcatchment 7-1: 7-1

Runoff = 0.09 cfs @ 12.69 hrs, Volume= 1,684 cf, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,018	98	Paved parking & roofs
62,390	30	Woods, Good, HSG A
68,408	36	Weighted Average
62,390		Pervious Area
6,018		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	63	0.0317	0.05		**Sheet Flow, 1** Woods: Dense underbrush n= 0.800 P2= 4.00"
12.8	86	0.1627	0.11		**Sheet Flow, 2** Woods: Dense underbrush n= 0.800 P2= 4.00"
32.0	149	Total			

Subcatchment 8-1: 8-1

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 1,529 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,159	98	Paved roads w/curbs & sewers
41,519	30	Woods, Good, HSG A
46,678	38	Weighted Average
41,519		Pervious Area
5,159		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0655	0.14		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.5	44	0.6363	0.29		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
14.5	144	Total			

Pond P-1: P-1

Inflow Area = 277,439 sf, Inflow Depth = 0.25" for 10 Year event
Inflow = 0.28 cfs @ 12.56 hrs, Volume= 5,791 cf
Outflow = 0.12 cfs @ 18.41 hrs, Volume= 4,843 cf, Atten= 58%, Lag= 351.4 min
Primary = 0.12 cfs @ 18.41 hrs, Volume= 4,843 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.27' @ 18.41 hrs Surf.Area= 7,674 sf Storage= 7,674 cf (2,231 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 245.7 min (1,269.7 - 1,024.0)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.12 cfs @ 18.41 hrs HW=243.27' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.12 cfs @ 1.49 fps)

Pond P-2: (new Pond)

Inflow Area = 68,408 sf, Inflow Depth = 0.30" for 10 Year event
Inflow = 0.09 cfs @ 12.69 hrs, Volume= 1,684 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 250.44' @ 25.82 hrs Surf.Area= 1,684 sf Storage= 1,684 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	55,408 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	0	0	0
252.00	7,704	7,704	7,704
254.00	40,000	47,704	55,408

Pond P-3: P-3

Inflow Area = 46,678 sf, Inflow Depth = 0.39" for 10 Year event
Inflow = 0.16 cfs @ 12.16 hrs, Volume= 1,529 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 271.27' @ 24.82 hrs Surf.Area= 1,529 sf Storage= 1,529 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	10,814 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	0	0	0
272.00	2,407	2,407	2,407
274.00	6,000	8,407	10,814

Pond P-4: P-4

Inflow Area = 82,725 sf, Inflow Depth = 0.13" for 10 Year event
Inflow = 0.03 cfs @ 15.05 hrs, Volume= 918 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.96' @ 25.09 hrs Surf.Area= 790 sf Storage= 918 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WL-1: WL-1

Inflow Area = 284,652 sf, Inflow Depth = 1.52" for 10 Year event
Inflow = 11.07 cfs @ 12.11 hrs, Volume= 36,003 cf
Outflow = 5.09 cfs @ 12.31 hrs, Volume= 36,003 cf, Atten= 54%, Lag= 12.1 min
Primary = 5.09 cfs @ 12.31 hrs, Volume= 36,003 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 243.25' @ 12.31 hrs Surf.Area= 30,056 sf Storage= 8,145 cf

Plug-Flow detention time= 45.5 min calculated for 35,993 cf (100% of inflow)
Center-of-Mass det. time= 45.6 min (929.4 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.09 cfs @ 12.31 hrs HW=243.25' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.09 cfs @ 1.35 fps)

Pond WL-2: WL-2

Inflow Area = 1,132,868 sf, Inflow Depth = 0.92" for 10 Year event
Inflow = 20.77 cfs @ 12.02 hrs, Volume= 86,709 cf
Outflow = 20.37 cfs @ 12.03 hrs, Volume= 86,709 cf, Atten= 2%, Lag= 0.9 min
Primary = 20.37 cfs @ 12.03 hrs, Volume= 86,709 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 242.03' @ 12.03 hrs Surf.Area= 8,825 sf Storage= 1,208 cf

Plug-Flow detention time= 1.0 min calculated for 86,709 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (913.5 - 912.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.21 cfs @ 12.03 hrs HW=242.03' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 23.21 cfs @ 1.97 fps)

Pond WL-3: WL-3

Inflow Area = 457,790 sf, Inflow Depth = 0.10" for 10 Year event
Inflow = 0.11 cfs @ 15.42 hrs, Volume= 3,842 cf
Outflow = 0.10 cfs @ 17.69 hrs, Volume= 3,842 cf, Atten= 4%, Lag= 136.1 min
Primary = 0.10 cfs @ 17.69 hrs, Volume= 3,842 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.01' @ 17.69 hrs Surf.Area= 34,801 sf Storage= 280 cf

Plug-Flow detention time= 44.4 min calculated for 3,841 cf (100% of inflow)
Center-of-Mass det. time= 44.5 min (1,158.1 - 1,113.6)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.04 cfs @ 17.69 hrs HW=244.01' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.22 fps)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-1: 1-1 Runoff Area=284,652 sf Runoff Depth=1.81"
Flow Length=300' Tc=16.5 min CN=55 Runoff=13.58 cfs 43,013 cf

Subcatchment 1-2: 1-2 Runoff Area=457,790 sf Runoff Depth=0.17"
Flow Length=570' Tc=19.2 min CN=31 Runoff=0.21 cfs 6,585 cf

Subcatchment 1-3: 1-3 Runoff Area=390,426 sf Runoff Depth=1.73"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=54 Runoff=24.33 cfs 56,213 cf

Subcatchment 2-1: 2-1 Runoff Area=286,276 sf Runoff Depth=3.21"
Flow Length=550' Tc=15.2 min CN=70 Runoff=27.15 cfs 76,509 cf

Subcatchment 3-1: 3-1 Runoff Area=277,439 sf Runoff Depth=0.36"
Flow Length=578' Tc=19.0 min CN=35 Runoff=0.59 cfs 8,401 cf

Subcatchment 4-1: 4-1 Runoff Area=97,374 sf Runoff Depth=0.17"
Flow Length=438' Tc=19.6 min CN=31 Runoff=0.04 cfs 1,401 cf

Subcatchment 5-1: 5-1 Runoff Area=82,725 sf Runoff Depth=0.22"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.05 cfs 1,485 cf

Subcatchment 6-1: 6-1 Runoff Area=155,341 sf Runoff Depth=0.73"
Flow Length=590' Tc=14.4 min CN=41 Runoff=2.02 cfs 9,428 cf

Subcatchment 7-1: 7-1 Runoff Area=68,408 sf Runoff Depth=0.42"
Flow Length=149' Tc=32.0 min CN=36 Runoff=0.17 cfs 2,385 cf

Subcatchment 8-1: 8-1 Runoff Area=46,678 sf Runoff Depth=0.54"
Flow Length=144' Tc=14.5 min CN=38 Runoff=0.32 cfs 2,084 cf

Pond P-1: P-1 Peak Elev=243.35' Storage=8,193 cf Inflow=0.59 cfs 8,401 cf
6.0" x 177.8' Culvert Outflow=0.19 cfs 7,438 cf

Pond P-2: (new Pond) Peak Elev=250.62' Storage=2,385 cf Inflow=0.17 cfs 2,385 cf
Outflow=0.00 cfs 0 cf

Pond P-3: P-3 Peak Elev=271.73' Storage=2,084 cf Inflow=0.32 cfs 2,084 cf
Outflow=0.00 cfs 0 cf

Pond P-4: P-4 Peak Elev=267.65' Storage=1,485 cf Inflow=0.05 cfs 1,485 cf
Outflow=0.00 cfs 0 cf

Pond WL-1: WL-1 Peak Elev=243.30' Storage=9,768 cf Inflow=13.58 cfs 43,013 cf
Outflow=6.69 cfs 43,012 cf

Pond WL-2: WL-2 Peak Elev=242.05' Storage=1,635 cf Inflow=25.71 cfs 105,811 cf
Outflow=24.02 cfs 105,811 cf

Pond WL-3: WL-3 Peak Elev=244.01' Storage=505 cf Inflow=0.21 cfs 6,585 cf
Outflow=0.19 cfs 6,585 cf

Total Runoff Area = 2,147,109 sf Runoff Volume = 207,504 cf Average Runoff Depth = 1.16"
97.47% Pervious Area = 2,092,773 sf 2.53% Impervious Area = 54,336 sf

Subcatchment 1-1: 1-1

Runoff = 13.58 cfs @ 12.10 hrs, Volume= 43,013 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
105,499	30	Woods, Good, HSG A
179,153	70	Woods, Good, HSG C
284,652	55	Weighted Average
284,652		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 1-2: 1-2

Runoff = 0.21 cfs @ 13.50 hrs, Volume= 6,585 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
448,128	30	Woods, Good, HSG A
9,662	98	Paved parking & roofs
457,790	31	Weighted Average
448,128		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0533	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	200	0.0533	1.15		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.3	270	0.0740	1.36		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
19.2	570	Total			

Subcatchment 1-3: 1-3

Runoff = 24.33 cfs @ 12.01 hrs, Volume= 56,213 cf, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
236,299	70	Woods, Good, HSG C
390,426	54	Weighted Average
390,426		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 2-1: 2-1

Runoff = 27.15 cfs @ 12.08 hrs, Volume= 76,509 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
286,276	70	Woods, Good, HSG C
286,276		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0933	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	200	0.0933	1.53		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.6	250	0.1000	1.58		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.2	550	Total			

Subcatchment 3-1: 3-1

Runoff = 0.59 cfs @ 12.27 hrs, Volume= 8,401 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
27,000	70	Woods, Good, HSG C
244,828	30	Woods, Good, HSG A
277,439	35	Weighted Average
271,828		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0769	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	30	0.0769	1.39		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.6	80	0.1750	2.09		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
2.7	113	0.0200	0.71		**Shallow Concentrated Flow, 5** Woodland Kv= 5.0 fps
2.0	165	0.0730	1.35		**Shallow Concentrated Flow, 6** Woodland Kv= 5.0 fps
19.0	578	Total			

Subcatchment 4-1: 4-1

Runoff = 0.04 cfs @ 13.52 hrs, Volume= 1,401 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
96,374	30	Woods, Good, HSG A
1,000	98	Paved roads w/curbs & sewers
97,374	31	Weighted Average
96,374		Pervious Area
1,000		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	88	0.0450	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	12	0.0600	0.09		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	88	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.6	250	0.0270	1.15		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
19.6	438	Total			

Subcatchment 5-1: 5-1

Runoff = 0.05 cfs @ 13.01 hrs, Volume= 1,485 cf, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
80,697	30	Woods, Good, HSG A
82,725	32	Weighted Average
80,697		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 6-1: 6-1

Runoff = 2.02 cfs @ 12.11 hrs, Volume= 9,428 cf, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
24,858	98	Paved roads w/curbs & sewers
130,483	30	Woods, Good, HSG A
155,341	41	Weighted Average
130,483		Pervious Area
24,858		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0867	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	200	0.0867	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.2	30	0.2000	2.24		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.2	260	0.0300	3.52		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
14.4	590	Total			

Subcatchment 7-1: 7-1

Runoff = 0.17 cfs @ 12.48 hrs, Volume= 2,385 cf, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,018	98	Paved parking & roofs
62,390	30	Woods, Good, HSG A
68,408	36	Weighted Average
62,390		Pervious Area
6,018		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	63	0.0317	0.05		**Sheet Flow, 1** Woods: Dense underbrush n= 0.800 P2= 4.00"
12.8	86	0.1627	0.11		**Sheet Flow, 2** Woods: Dense underbrush n= 0.800 P2= 4.00"
32.0	149	Total			

Subcatchment 8-1: 8-1

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 2,084 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,159	98	Paved roads w/curbs & sewers
41,519	30	Woods, Good, HSG A
46,678	38	Weighted Average
41,519		Pervious Area
5,159		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0655	0.14		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.5	44	0.6363	0.29		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
14.5	144	Total			

Pond P-1: P-1

Inflow Area = 277,439 sf, Inflow Depth = 0.36" for 25 Year event
Inflow = 0.59 cfs @ 12.27 hrs, Volume= 8,401 cf
Outflow = 0.19 cfs @ 16.12 hrs, Volume= 7,438 cf, Atten= 69%, Lag= 231.1 min
Primary = 0.19 cfs @ 16.12 hrs, Volume= 7,438 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.35' @ 16.12 hrs Surf.Area= 8,193 sf Storage= 8,193 cf (2,749 cf above start)

Plug-Flow detention time= 812.2 min calculated for 1,994 cf (24% of inflow)
Center-of-Mass det. time= 207.5 min (1,204.9 - 997.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.19 cfs @ 16.12 hrs HW=243.35' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.19 cfs @ 1.69 fps)

Pond P-2: (new Pond)

Inflow Area = 68,408 sf, Inflow Depth = 0.42" for 25 Year event
Inflow = 0.17 cfs @ 12.48 hrs, Volume= 2,385 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 250.62' @ 25.82 hrs Surf.Area= 2,385 sf Storage= 2,385 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	55,408 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	0	0	0
252.00	7,704	7,704	7,704
254.00	40,000	47,704	55,408

Pond P-3: P-3

Inflow Area = 46,678 sf, Inflow Depth = 0.54" for 25 Year event
Inflow = 0.32 cfs @ 12.13 hrs, Volume= 2,084 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 271.73' @ 24.82 hrs Surf.Area= 2,084 sf Storage= 2,084 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	10,814 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	0	0	0
272.00	2,407	2,407	2,407
274.00	6,000	8,407	10,814

Pond P-4: P-4

Inflow Area = 82,725 sf, Inflow Depth = 0.22" for 25 Year event
Inflow = 0.05 cfs @ 13.01 hrs, Volume= 1,485 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 267.65' @ 25.09 hrs Surf.Area= 1,264 sf Storage= 1,485 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WL-1: WL-1

Inflow Area = 284,652 sf, Inflow Depth = 1.81" for 25 Year event
Inflow = 13.58 cfs @ 12.10 hrs, Volume= 43,013 cf
Outflow = 6.69 cfs @ 12.29 hrs, Volume= 43,012 cf, Atten= 51%, Lag= 11.1 min
Primary = 6.69 cfs @ 12.29 hrs, Volume= 43,012 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 243.30' @ 12.29 hrs Surf.Area= 30,521 sf Storage= 9,768 cf

Plug-Flow detention time= 42.7 min calculated for 43,012 cf (100% of inflow)
Center-of-Mass det. time= 42.7 min (920.4 - 877.7)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.69 cfs @ 12.29 hrs HW=243.30' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 6.69 cfs @ 1.48 fps)

Pond WL-2: WL-2

Inflow Area = 1,132,868 sf, Inflow Depth = 1.12" for 25 Year event
Inflow = 25.71 cfs @ 12.01 hrs, Volume= 105,811 cf
Outflow = 24.02 cfs @ 12.05 hrs, Volume= 105,811 cf, Atten= 7%, Lag= 1.8 min
Primary = 24.02 cfs @ 12.05 hrs, Volume= 105,811 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 242.05' @ 12.05 hrs Surf.Area= 9,509 sf Storage= 1,635 cf

Plug-Flow detention time= 1.0 min calculated for 105,811 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (908.2 - 907.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.01 cfs @ 12.05 hrs HW=242.05' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 24.01 cfs @ 2.00 fps)

Pond WL-3: WL-3

Inflow Area = 457,790 sf, Inflow Depth = 0.17" for 25 Year event
Inflow = 0.21 cfs @ 13.50 hrs, Volume= 6,585 cf
Outflow = 0.19 cfs @ 15.30 hrs, Volume= 6,585 cf, Atten= 10%, Lag= 108.0 min
Primary = 0.19 cfs @ 15.30 hrs, Volume= 6,585 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.01' @ 15.30 hrs Surf.Area= 34,831 sf Storage= 505 cf

Plug-Flow detention time= 44.5 min calculated for 6,585 cf (100% of inflow)
Center-of-Mass det. time= 44.5 min (1,112.3 - 1,067.8)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.11 cfs @ 15.30 hrs HW=244.01' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.30 fps)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-1: 1-1 Runoff Area=284,652 sf Runoff Depth=2.78"
Flow Length=300' Tc=16.5 min CN=55 Runoff=21.76 cfs 66,041 cf

Subcatchment 1-2: 1-2 Runoff Area=457,790 sf Runoff Depth=0.49"
Flow Length=570' Tc=19.2 min CN=31 Runoff=1.52 cfs 18,613 cf

Subcatchment 1-3: 1-3 Runoff Area=390,426 sf Runoff Depth=2.68"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=54 Runoff=38.85 cfs 87,063 cf

Subcatchment 2-1: 2-1 Runoff Area=286,276 sf Runoff Depth=4.46"
Flow Length=550' Tc=15.2 min CN=70 Runoff=37.79 cfs 106,501 cf

Subcatchment 3-1: 3-1 Runoff Area=277,439 sf Runoff Depth=0.80"
Flow Length=578' Tc=19.0 min CN=35 Runoff=2.96 cfs 18,579 cf

Subcatchment 4-1: 4-1 Runoff Area=97,374 sf Runoff Depth=0.49"
Flow Length=438' Tc=19.6 min CN=31 Runoff=0.32 cfs 3,959 cf

Subcatchment 5-1: 5-1 Runoff Area=82,725 sf Runoff Depth=0.56"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.40 cfs 3,878 cf

Subcatchment 6-1: 6-1 Runoff Area=155,341 sf Runoff Depth=1.34"
Flow Length=590' Tc=14.4 min CN=41 Runoff=4.94 cfs 17,405 cf

Subcatchment 7-1: 7-1 Runoff Area=68,408 sf Runoff Depth=0.89"
Flow Length=149' Tc=32.0 min CN=36 Runoff=0.62 cfs 5,067 cf

Subcatchment 8-1: 8-1 Runoff Area=46,678 sf Runoff Depth=1.07"
Flow Length=144' Tc=14.5 min CN=38 Runoff=1.02 cfs 4,146 cf

Pond P-1: P-1 Peak Elev=243.94' Storage=11,752 cf Inflow=2.96 cfs 18,579 cf
6.0" x 177.8' Culvert Outflow=0.40 cfs 17,571 cf

Pond P-2: (new Pond) Peak Elev=251.32' Storage=5,067 cf Inflow=0.62 cfs 5,067 cf
Outflow=0.00 cfs 0 cf

Pond P-3: P-3 Peak Elev=272.41' Storage=4,146 cf Inflow=1.02 cfs 4,146 cf
Outflow=0.00 cfs 0 cf

Pond P-4: P-4 Peak Elev=268.29' Storage=3,878 cf Inflow=0.40 cfs 3,878 cf
Outflow=0.00 cfs 0 cf

Pond WL-1: WL-1 Peak Elev=243.46' Storage=14,771 cf Inflow=21.76 cfs 66,041 cf
Outflow=12.50 cfs 66,041 cf

Pond WL-2: WL-2 Peak Elev=242.18' Storage=6,321 cf Inflow=42.45 cfs 171,717 cf
Outflow=33.08 cfs 171,717 cf

Pond WL-3: WL-3 Peak Elev=244.05' Storage=1,969 cf Inflow=1.52 cfs 18,613 cf
Outflow=0.85 cfs 18,613 cf

Total Runoff Area = 2,147,109 sf Runoff Volume = 331,252 cf Average Runoff Depth = 1.85"
97.47% Pervious Area = 2,092,773 sf 2.53% Impervious Area = 54,336 sf

Subcatchment 1-1: 1-1

Runoff = 21.76 cfs @ 12.10 hrs, Volume= 66,041 cf, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
105,499	30	Woods, Good, HSG A
179,153	70	Woods, Good, HSG C
284,652	55	Weighted Average
284,652		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 1-2: 1-2

Runoff = 1.52 cfs @ 12.25 hrs, Volume= 18,613 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
448,128	30	Woods, Good, HSG A
9,662	98	Paved parking & roofs
457,790	31	Weighted Average
448,128		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0533	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	200	0.0533	1.15		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.3	270	0.0740	1.36		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
19.2	570	Total			

Subcatchment 1-3: 1-3

Runoff = 38.85 cfs @ 12.01 hrs, Volume= 87,063 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
236,299	70	Woods, Good, HSG C
390,426	54	Weighted Average
390,426		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 2-1: 2-1

Runoff = 37.79 cfs @ 12.07 hrs, Volume= 106,501 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
286,276	70	Woods, Good, HSG C
286,276		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0933	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	200	0.0933	1.53		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.6	250	0.1000	1.58		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.2	550	Total			

Subcatchment 3-1: 3-1

Runoff = 2.96 cfs @ 12.18 hrs, Volume= 18,579 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
27,000	70	Woods, Good, HSG C
244,828	30	Woods, Good, HSG A
277,439	35	Weighted Average
271,828		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0769	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	30	0.0769	1.39		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.6	80	0.1750	2.09		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
2.7	113	0.0200	0.71		**Shallow Concentrated Flow, 5** Woodland Kv= 5.0 fps
2.0	165	0.0730	1.35		**Shallow Concentrated Flow, 6** Woodland Kv= 5.0 fps
19.0	578	Total			

Subcatchment 4-1: 4-1

Runoff = 0.32 cfs @ 12.26 hrs, Volume= 3,959 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
96,374	30	Woods, Good, HSG A
1,000	98	Paved roads w/curbs & sewers
97,374	31	Weighted Average
96,374		Pervious Area
1,000		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	88	0.0450	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	12	0.0600	0.09		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	88	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
3.6	250	0.0270	1.15		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
19.6	438	Total			

Subcatchment 5-1: 5-1

Runoff = 0.40 cfs @ 12.22 hrs, Volume= 3,878 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
80,697	30	Woods, Good, HSG A
82,725	32	Weighted Average
80,697		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 6-1: 6-1

Runoff = 4.94 cfs @ 12.09 hrs, Volume= 17,405 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
24,858	98	Paved roads w/curbs & sewers
130,483	30	Woods, Good, HSG A
155,341	41	Weighted Average
130,483		Pervious Area
24,858		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0867	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.3	200	0.0867	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.2	30	0.2000	2.24		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.2	260	0.0300	3.52		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
14.4	590	Total			

Subcatchment 7-1: 7-1

Runoff = 0.62 cfs @ 12.38 hrs, Volume= 5,067 cf, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,018	98	Paved parking & roofs
62,390	30	Woods, Good, HSG A
68,408	36	Weighted Average
62,390		Pervious Area
6,018		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	63	0.0317	0.05		**Sheet Flow, 1** Woods: Dense underbrush n= 0.800 P2= 4.00"
12.8	86	0.1627	0.11		**Sheet Flow, 2** Woods: Dense underbrush n= 0.800 P2= 4.00"
32.0	149	Total			

Subcatchment 8-1: 8-1

Runoff = 1.02 cfs @ 12.10 hrs, Volume= 4,146 cf, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,159	98	Paved roads w/curbs & sewers
41,519	30	Woods, Good, HSG A
46,678	38	Weighted Average
41,519		Pervious Area
5,159		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0655	0.14		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.5	44	0.6363	0.29		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
14.5	144	Total			

Pond P-1: P-1

Inflow Area = 277,439 sf, Inflow Depth = 0.80" for 100 Year event
Inflow = 2.96 cfs @ 12.18 hrs, Volume= 18,579 cf
Outflow = 0.40 cfs @ 15.45 hrs, Volume= 17,571 cf, Atten= 87%, Lag= 196.3 min
Primary = 0.40 cfs @ 15.45 hrs, Volume= 17,571 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.94' @ 15.45 hrs Surf.Area= 11,752 sf Storage= 11,752 cf (6,308 cf above start)

Plug-Flow detention time= 467.4 min calculated for 12,124 cf (65% of inflow)
Center-of-Mass det. time= 200.6 min (1,149.6 - 949.0)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.40 cfs @ 15.45 hrs HW=243.94' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.40 cfs @ 2.03 fps)

Pond P-2: (new Pond)

Inflow Area = 68,408 sf, Inflow Depth = 0.89" for 100 Year event
Inflow = 0.62 cfs @ 12.38 hrs, Volume= 5,067 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 251.32' @ 25.82 hrs Surf.Area= 5,067 sf Storage= 5,067 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	55,408 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	0	0	0
252.00	7,704	7,704	7,704
254.00	40,000	47,704	55,408

Pond P-3: P-3

Inflow Area = 46,678 sf, Inflow Depth = 1.07" for 100 Year event
Inflow = 1.02 cfs @ 12.10 hrs, Volume= 4,146 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 272.41' @ 24.82 hrs Surf.Area= 3,150 sf Storage= 4,146 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	10,814 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	0	0	0
272.00	2,407	2,407	2,407
274.00	6,000	8,407	10,814

Pond P-4: P-4

Inflow Area = 82,725 sf, Inflow Depth = 0.56" for 100 Year event
Inflow = 0.40 cfs @ 12.22 hrs, Volume= 3,878 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 268.29' @ 25.09 hrs Surf.Area= 3,172 sf Storage= 3,878 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WL-1: WL-1

Inflow Area = 284,652 sf, Inflow Depth = 2.78" for 100 Year event
Inflow = 21.76 cfs @ 12.10 hrs, Volume= 66,041 cf
Outflow = 12.50 cfs @ 12.25 hrs, Volume= 66,041 cf, Atten= 43%, Lag= 9.1 min
Primary = 12.50 cfs @ 12.25 hrs, Volume= 66,041 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 243.46' @ 12.25 hrs Surf.Area= 31,954 sf Storage= 14,771 cf

Plug-Flow detention time= 36.6 min calculated for 66,041 cf (100% of inflow)
Center-of-Mass det. time= 36.5 min (900.6 - 864.1)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=12.49 cfs @ 12.25 hrs HW=243.46' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 12.49 cfs @ 1.82 fps)

Pond WL-2: WL-2

Inflow Area = 1,132,868 sf, Inflow Depth = 1.82" for 100 Year event
Inflow = 42.45 cfs @ 12.01 hrs, Volume= 171,717 cf
Outflow = 33.08 cfs @ 12.08 hrs, Volume= 171,717 cf, Atten= 22%, Lag= 4.0 min
Primary = 33.08 cfs @ 12.08 hrs, Volume= 171,717 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 242.18' @ 12.08 hrs Surf.Area= 17,037 sf Storage= 6,321 cf

Plug-Flow detention time= 1.3 min calculated for 171,717 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (895.2 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.07 cfs @ 12.08 hrs HW=242.18' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 33.07 cfs @ 2.21 fps)

Pond WL-3: WL-3

Inflow Area = 457,790 sf, Inflow Depth = 0.49" for 100 Year event
Inflow = 1.52 cfs @ 12.25 hrs, Volume= 18,613 cf
Outflow = 0.85 cfs @ 12.95 hrs, Volume= 18,613 cf, Atten= 44%, Lag= 41.9 min
Primary = 0.85 cfs @ 12.95 hrs, Volume= 18,613 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.05' @ 12.95 hrs Surf.Area= 35,024 sf Storage= 1,969 cf

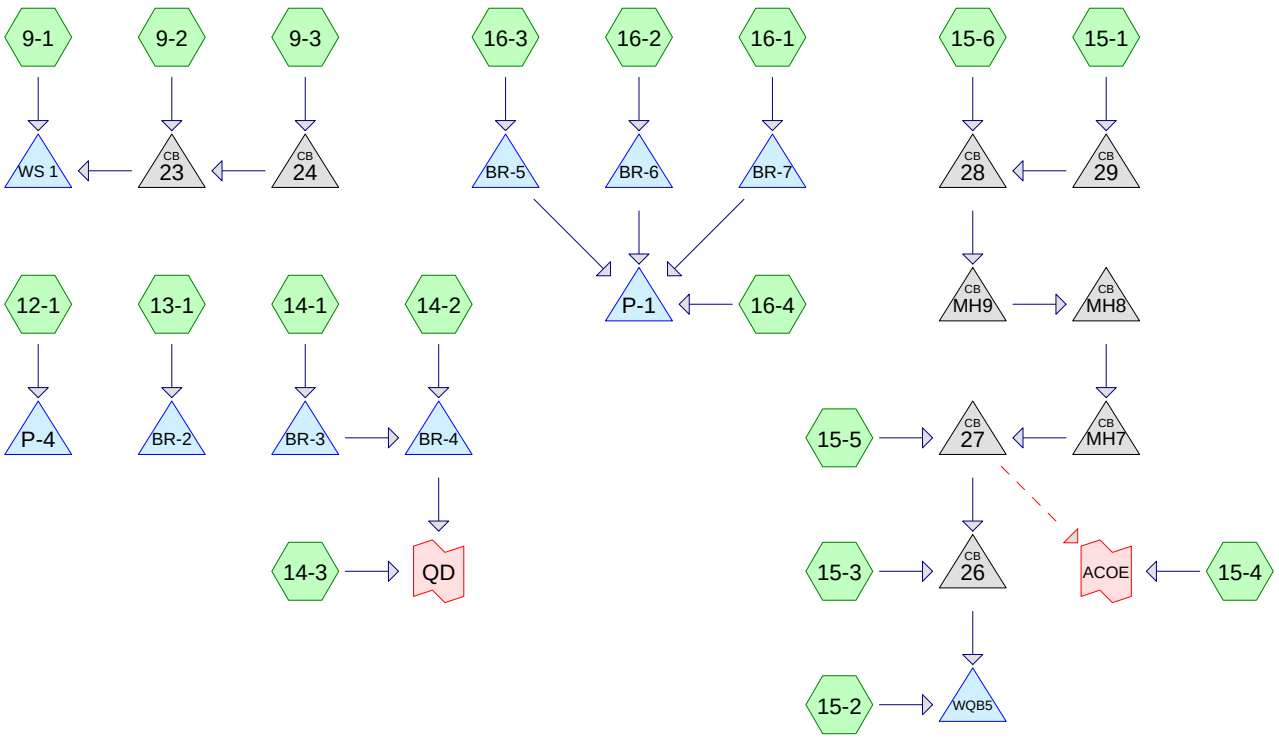
Plug-Flow detention time= 43.5 min calculated for 18,613 cf (100% of inflow)
Center-of-Mass det. time= 43.4 min (1,033.3 - 989.9)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.82 cfs @ 12.95 hrs HW=244.05' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.82 cfs @ 0.59 fps)



Subcat Reach Pond Link

Drainage Diagram for E03 142 Post Development
Prepared by Medenbach & Eggers 9/25/2007

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcats)
378,492	30	Woods, Good, HSG A (9-1,9-2,9-3,12-1,13-1,14-1,14-2,14-3,15-2,16-2,16-3,16-4)
10,277	32	Woods/grass comb., Good, HSG A (16-1)
277,924	70	Woods, Good, HSG C (15-1,15-4,16-1,16-4)
2,216	72	Woods/grass comb., Good, HSG C (15-6)
92,554	98	Paved parking & roofs (9-1,9-2,9-3,12-1,14-1,14-2,14-3,15-3,15-5,15-6,16-1,16-4)
40,597	98	Paved roads w/curbs & sewers (13-1,15-1,15-4,16-2,16-3)
802,060		

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9-1: 9-1 Runoff Area=111,372 sf Runoff Depth=0.07"
Flow Length=372' Tc=13.0 min CN=44 Runoff=0.02 cfs 618 cf

Subcatchment 9-2: 9-2 Runoff Area=14,103 sf Runoff Depth=0.20"
Flow Length=287' Tc=9.7 min CN=50 Runoff=0.02 cfs 230 cf

Subcatchment 9-3: 9-3 Runoff Area=36,429 sf Runoff Depth=0.03"
Flow Length=276' Slope=0.0860 '/' Tc=12.7 min CN=41 Runoff=0.00 cfs 78 cf

Subcatchment 12-1: 12-1 Runoff Area=63,719 sf Runoff Depth=0.00"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment 13-1: 13-1 Runoff Area=43,800 sf Runoff Depth=0.03"
Flow Length=144' Tc=15.4 min CN=41 Runoff=0.00 cfs 94 cf

Subcatchment 14-1: 14-1 Runoff Area=23,495 sf Runoff Depth=0.07"
Flow Length=240' Tc=13.8 min CN=44 Runoff=0.00 cfs 130 cf

Subcatchment 14-2: 14-2 Runoff Area=14,812 sf Runoff Depth=0.90"
Flow Length=163' Tc=15.3 min CN=68 Runoff=0.36 cfs 1,112 cf

Subcatchment 14-3: 14-3 Runoff Area=11,430 sf Runoff Depth=0.00"
Flow Length=265' Tc=18.3 min CN=38 Runoff=0.00 cfs 3 cf

Subcatchment 15-1: 15-1 Runoff Area=84,807 sf Runoff Depth=1.43"
Flow Length=409' Tc=16.4 min CN=77 Runoff=3.38 cfs 10,110 cf

Subcatchment 15-2: 15-2 Runoff Area=29,183 sf Runoff Depth=0.00"
Flow Length=203' Slope=0.1000 '/' Tc=11.2 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 15-3: 15-3 Runoff Area=11,120 sf Runoff Depth=3.27"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=1.35 cfs 3,027 cf

Subcatchment 15-4: 15-4 Runoff Area=198,640 sf Runoff Depth=1.06"
Flow Length=384' Tc=12.9 min CN=71 Runoff=6.40 cfs 17,609 cf

Subcatchment 15-5: 15-5 Runoff Area=13,283 sf Runoff Depth=3.27"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=1.61 cfs 3,616 cf

Subcatchment 15-6: 15-6 Runoff Area=10,258 sf Runoff Depth=2.64"
Flow Length=126' Slope=0.0150 '/' Tc=1.4 min CN=92 Runoff=1.14 cfs 2,254 cf

Subcatchment 16-1: 16-1 Runoff Area=26,130 sf Runoff Depth=0.57"
Flow Length=136' Tc=11.0 min CN=61 Runoff=0.40 cfs 1,247 cf

Subcatchment 16-2: 16-2 Runoff Area=6,322 sf Runoff Depth=0.66"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.14 cfs 347 cf

Subcatchment 16-3: 16-3 Runoff Area=7,323 sf Runoff Depth=0.66"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.16 cfs 403 cf

Subcatchment 16-4: 16-4 Runoff Area=95,834 sf Runoff Depth=0.00"
Flow Length=223' Tc=13.6 min CN=38 Runoff=0.00 cfs 27 cf

Pond 23: CB#23 Peak Elev=242.52' Inflow=0.02 cfs 308 cf
15.0" x 45.0' Culvert Outflow=0.02 cfs 308 cf

Pond 24: CB#24 Peak Elev=242.87' Inflow=0.00 cfs 78 cf
15.0" x 40.0' Culvert Outflow=0.00 cfs 78 cf

Pond 26: CB#26 Peak Elev=250.85' Inflow=5.20 cfs 18,818 cf
15.0" x 45.0' Culvert Outflow=5.20 cfs 18,818 cf

Pond 27: CB#27 Peak Elev=251.20' Inflow=4.30 cfs 15,979 cf
Primary=3.87 cfs 15,791 cf Secondary=0.42 cfs 189 cf Outflow=4.30 cfs 15,979 cf

Pond 28: CB#28 Peak Elev=265.59' Inflow=3.53 cfs 12,364 cf
24.0" x 150.0' Culvert Outflow=3.53 cfs 12,364 cf

Pond 29: CB#29 Peak Elev=265.96' Inflow=3.38 cfs 10,110 cf
18.0" x 20.0' Culvert Outflow=3.38 cfs 10,110 cf

Pond BR-2: Bio Retention Zone 2 Peak Elev=273.50' Storage=2 cf Inflow=0.00 cfs 94 cf
Outflow=0.00 cfs 94 cf

Pond BR-3: Bio Retention Zone 3 Peak Elev=266.00' Storage=0 cf Inflow=0.00 cfs 130 cf
Discarded=0.00 cfs 130 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 130 cf

Pond BR-4: Bio Retention Zone 4 Peak Elev=258.05' Storage=111 cf Inflow=0.36 cfs 1,112 cf
Discarded=0.20 cfs 1,112 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 1,112 cf

Pond BR-5: Bio Retention Zone 5 Peak Elev=261.10' Storage=79 cf Inflow=0.16 cfs 403 cf
Discarded=0.04 cfs 403 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 403 cf

Pond BR-6: Bio Retention Zone 6 Peak Elev=255.58' Storage=63 cf Inflow=0.14 cfs 347 cf
Discarded=0.04 cfs 347 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 347 cf

Pond BR-7: Bio Retention Zone 7 Peak Elev=256.19' Storage=238 cf Inflow=0.40 cfs 1,247 cf
Discarded=0.09 cfs 1,247 cf Primary=0.00 cfs 0 cf Outflow=0.09 cfs 1,247 cf

Pond MH7: MH#7 Peak Elev=254.79' Inflow=3.53 cfs 12,364 cf
24.0" x 105.0' Culvert Outflow=3.53 cfs 12,364 cf

Pond MH8: MH#8 Peak Elev=260.79' Inflow=3.53 cfs 12,364 cf
24.0" x 80.0' Culvert Outflow=3.53 cfs 12,364 cf

Pond MH9: MH#9 Peak Elev=264.09' Inflow=3.53 cfs 12,364 cf
24.0" x 70.0' Culvert Outflow=3.53 cfs 12,364 cf

Pond P-1: P-1 Peak Elev=242.90' Storage=5,470 cf Inflow=0.00 cfs 27 cf
6.0" x 177.8' Culvert Outflow=0.00 cfs 0 cf

Pond P-4: P-4 Peak Elev=264.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond WQB5: WQB #5 Peak Elev=248.30' Storage=7,318 cf Inflow=5.20 cfs 18,818 cf
Discarded=0.67 cfs 18,818 cf Primary=0.00 cfs 0 cf Outflow=0.67 cfs 18,818 cf

Pond WS 1: WS 1 Peak Elev=232.30' Storage=924 cf Inflow=0.03 cfs 926 cf
Outflow=0.00 cfs 10 cf

Link ACOE: ACOE Wetlands Inflow=6.51 cfs 17,797 cf
Primary=6.51 cfs 17,797 cf

Link QD: Quale Dr. CB Inflow=0.00 cfs 3 cf
Primary=0.00 cfs 3 cf

Total Runoff Area = 802,060 sf Runoff Volume = 40,906 cf Average Runoff Depth = 0.61"
83.40% Pervious Area = 668,909 sf 16.60% Impervious Area = 133,151 sf

Subcatchment 9-1: 9-1

Runoff = 0.02 cfs @ 15.17 hrs, Volume= 618 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
22,665	98	Paved parking & roofs
88,707	30	Woods, Good, HSG A
111,372	44	Weighted Average
88,707		Pervious Area
22,665		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.3	212	0.0470	1.08		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.3	60	0.3300	2.87		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.0	372	Total			

Subcatchment 9-2: 9-2

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 230 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
4,200	98	Paved parking & roofs
9,903	30	Woods, Good, HSG A
14,103	50	Weighted Average
9,903		Pervious Area
4,200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	63	0.0317	0.14		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.9	37	0.3200	0.32		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
0.5	187	0.0850	5.92		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.7	287	Total			

Subcatchment 9-3: 9-3

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 78 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,760	98	Paved parking & roofs
30,669	30	Woods, Good, HSG A
36,429	41	Weighted Average
30,669		Pervious Area
5,760		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0860	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	176	0.0860	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.7	276	Total			

Subcatchment 12-1: 12-1

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
61,691	30	Woods, Good, HSG A
63,719	32	Weighted Average
61,691		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 13-1: 13-1

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 94 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,339	98	Paved roads w/curbs & sewers
36,461	30	Woods, Good, HSG A
43,800	41	Weighted Average
36,461		Pervious Area
7,339		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	122	0.0655	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.4	22	0.6363	0.26		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	144	Total			

Subcatchment 14-1: 14-1

Runoff = 0.00 cfs @ 15.16 hrs, Volume= 130 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
4,670	98	Paved parking & roofs
18,825	30	Woods, Good, HSG A
23,495	44	Weighted Average
18,825		Pervious Area
4,670		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	40	0.2900	0.21		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	60	0.0520	0.11		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	55	0.0520	1.14		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.1	85	0.0700	1.32		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
13.8	240	Total			

Subcatchment 14-2: 14-2

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,112 cf, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
8,275	98	Paved parking & roofs
6,537	30	Woods, Good, HSG A
14,812	68	Weighted Average
6,537		Pervious Area
8,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	34	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
2.5	20	0.0470	0.13		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
3.4	29	0.0470	0.14		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
3.4	15	0.0125	0.07		**Sheet Flow, 4** Grass: Dense n= 0.240 P2= 4.00"
0.6	65	0.1250	1.77		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.3	163	Total			

Subcatchment 14-3: 14-3

Runoff = 0.00 cfs @ 24.03 hrs, Volume= 3 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
1,350	98	Paved parking & roofs
10,080	30	Woods, Good, HSG A
11,430	38	Weighted Average
10,080		Pervious Area
1,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0300	0.10		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	165	0.0750	1.37		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
18.3	265	Total			

Subcatchment 15-1: 15-1

Runoff = 3.38 cfs @ 12.09 hrs, Volume= 10,110 cf, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
22,495	98	Paved roads w/curbs & sewers
62,312	70	Woods, Good, HSG C
84,807	77	Weighted Average
62,312		Pervious Area
22,495		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0510	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	135	0.0510	1.13		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.7	104	0.1100	2.32		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
0.5	70	0.0140	2.40		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
16.4	409	Total			

Subcatchment 15-2: 15-2

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
29,183	30	Woods, Good, HSG A
29,183		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	103	0.1000	1.58		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.2	203	Total			

Subcatchment 15-3: 15-3

Runoff = 1.35 cfs @ 11.93 hrs, Volume= 3,027 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
11,120	98	Paved parking & roofs
11,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-4: 15-4

Runoff = 6.40 cfs @ 12.06 hrs, Volume= 17,609 cf, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
194,539	70	Woods, Good, HSG C
4,101	98	Paved roads w/curbs & sewers
198,640	71	Weighted Average
194,539		Pervious Area
4,101		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	87	0.1400	1.87		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
2.7	197	0.0600	1.22		**Shallow Concentrated Flow, 3**
					Woodland Kv= 5.0 fps
12.9	384	Total			

Subcatchment 15-5: 15-5

Runoff = 1.61 cfs @ 11.93 hrs, Volume= 3,616 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
13,283	98	Paved parking & roofs
13,283		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-6: 15-6

Runoff = 1.14 cfs @ 11.90 hrs, Volume= 2,254 cf, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
8,042	98	Paved parking & roofs
2,216	72	Woods/grass comb., Good, HSG C
10,258	92	Weighted Average
2,216		Pervious Area
8,042		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	26	0.0150	2.49		**Shallow Concentrated Flow, 26** Paved Kv= 20.3 fps
1.4	126	Total			

Subcatchment 16-1: 16-1

Runoff = 0.40 cfs @ 12.05 hrs, Volume= 1,247 cf, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,550	98	Paved parking & roofs
10,277	32	Woods/grass comb., Good, HSG A
10,303	70	Woods, Good, HSG C
26,130	61	Weighted Average
20,580		Pervious Area
5,550		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0880	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	36	0.0888	1.49		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.0	136	Total			

Subcatchment 16-2: 16-2

Runoff = 0.14 cfs @ 12.00 hrs, Volume= 347 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
3,076	98	Paved roads w/curbs & sewers
3,246	30	Woods, Good, HSG A
6,322	63	Weighted Average
3,246		Pervious Area
3,076		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-3: 16-3

Runoff = 0.16 cfs @ 12.00 hrs, Volume= 403 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
3,586	98	Paved roads w/curbs & sewers
3,737	30	Woods, Good, HSG A
7,323	63	Weighted Average
3,737		Pervious Area
3,586		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-4: 16-4

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 27 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
10,770	70	Woods, Good, HSG C
79,453	30	Woods, Good, HSG A
95,834	38	Weighted Average

90,223	Pervious Area
5,611	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	58	0.0680	1.30		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.5	65	0.1800	2.12		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.6	223	Total			

Pond 23: CB#23

Inflow Area = 50,532 sf, Inflow Depth = 0.07" for 1 Year event
Inflow = 0.02 cfs @ 12.10 hrs, Volume= 308 cf
Outflow = 0.02 cfs @ 12.10 hrs, Volume= 308 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.10 hrs, Volume= 308 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 242.52' @ 12.10 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.02 cfs @ 12.10 hrs HW=242.52' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.02 cfs @ 0.87 fps)

Pond 24: CB#24

Inflow Area = 36,429 sf, Inflow Depth = 0.03" for 1 Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 78 cf
Outflow = 0.00 cfs @ 24.00 hrs, Volume= 78 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 24.00 hrs, Volume= 78 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 242.87' @ 24.00 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.85'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.45' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.00 cfs @ 24.00 hrs HW=242.87' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.00 cfs @ 0.74 fps)

Pond 26: CB#26

Inflow Area = 119,468 sf, Inflow Depth = 1.89" for 1 Year event
Inflow = 5.20 cfs @ 11.94 hrs, Volume= 18,818 cf
Outflow = 5.20 cfs @ 11.94 hrs, Volume= 18,818 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.20 cfs @ 11.94 hrs, Volume= 18,818 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 250.85' @ 11.94 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=5.12 cfs @ 11.94 hrs HW=250.83' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.12 cfs @ 4.17 fps)

Pond 27: CB#27

Inflow Area = 108,348 sf, Inflow Depth = 1.77" for 1 Year event
Inflow = 4.30 cfs @ 11.95 hrs, Volume= 15,979 cf
Outflow = 4.30 cfs @ 11.95 hrs, Volume= 15,979 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.87 cfs @ 11.95 hrs, Volume= 15,791 cf
Secondary = 0.42 cfs @ 11.95 hrs, Volume= 189 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 251.20' @ 11.95 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.65'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.45' S= 0.0100 '/' Cc= 0.900 n= 0.010
#2	Secondary	250.90'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.50' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=3.87 cfs @ 11.95 hrs HW=251.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.87 cfs @ 4.92 fps)

Secondary OutFlow Max=0.41 cfs @ 11.95 hrs HW=251.20' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.41 cfs @ 1.86 fps)

Pond 28: CB#28

Inflow Area = 95,065 sf, Inflow Depth = 1.56" for 1 Year event
Inflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf
Outflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 265.59' @ 12.09 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.80'	**24.0" x 150.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.30' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.49 cfs @ 12.09 hrs HW=265.59' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.49 cfs @ 3.03 fps)

Pond 29: CB#29

Inflow Area = 84,807 sf, Inflow Depth = 1.43" for 1 Year event
Inflow = 3.38 cfs @ 12.09 hrs, Volume= 10,110 cf
Outflow = 3.38 cfs @ 12.09 hrs, Volume= 10,110 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.38 cfs @ 12.09 hrs, Volume= 10,110 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 265.96' @ 12.09 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.80' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.36 cfs @ 12.09 hrs HW=265.95' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.36 cfs @ 4.04 fps)

Pond BR-2: Bio Retention Zone 2

Inflow Area = 43,800 sf, Inflow Depth = 0.03" for 1 Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 94 cf
Outflow = 0.00 cfs @ 24.01 hrs, Volume= 94 cf, Atten= 0%, Lag= 0.5 min
Discarded = 0.00 cfs @ 24.01 hrs, Volume= 94 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 273.50' @ 24.01 hrs Surf.Area= 1,870 sf Storage= 2 cf

Plug-Flow detention time= 9.5 min calculated for 94 cf (100% of inflow)
Center-of-Mass det. time= 9.5 min (1,199.4 - 1,190.0)

Volume	Invert	Avail.Storage	Storage Description
#1	273.50'	9,093 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
273.50	1,870	0	0
274.00	2,100	993	993
276.00	6,000	8,100	9,093

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.09 cfs @ 24.01 hrs HW=273.50' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.09 cfs)

Pond BR-3: Bio Retention Zone 3

Inflow Area = 23,495 sf, Inflow Depth = 0.07" for 1 Year event
Inflow = 0.00 cfs @ 15.16 hrs, Volume= 130 cf
Outflow = 0.00 cfs @ 15.20 hrs, Volume= 130 cf, Atten= 0%, Lag= 2.2 min
Discarded = 0.00 cfs @ 15.20 hrs, Volume= 130 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.00' @ 15.20 hrs Surf.Area= 1,106 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 130 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (1,097.8 - 1,096.1)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	1,457 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	1,106	0	0
266.50	1,445	638	638
267.00	1,831	819	1,457

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.10 cfs @ 15.20 hrs HW=266.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=266.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond BR-4: Bio Retention Zone 4

Inflow Area = 38,307 sf, Inflow Depth = 0.35" for 1 Year event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,112 cf
Outflow = 0.20 cfs @ 12.25 hrs, Volume= 1,112 cf, Atten= 45%, Lag= 9.3 min
Discarded = 0.20 cfs @ 12.25 hrs, Volume= 1,112 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 258.05' @ 12.25 hrs Surf.Area= 2,121 sf Storage= 111 cf

Plug-Flow detention time= 3.4 min calculated for 1,111 cf (100% of inflow)
Center-of-Mass det. time= 3.4 min (884.9 - 881.5)

Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	2,675 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
258.00	2,100	0	0
258.50	2,300	1,100	1,100
259.00	4,000	1,575	2,675

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	258.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.20 cfs @ 12.25 hrs HW=258.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=258.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BR-5: Bio Retention Zone 5

Inflow Area = 7,323 sf, Inflow Depth = 0.66" for 1 Year event
Inflow = 0.16 cfs @ 12.00 hrs, Volume= 403 cf
Outflow = 0.04 cfs @ 12.23 hrs, Volume= 403 cf, Atten= 78%, Lag= 13.3 min
Discarded = 0.04 cfs @ 12.23 hrs, Volume= 403 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.10' @ 12.23 hrs Surf.Area= 797 sf Storage= 79 cf

Plug-Flow detention time= 12.9 min calculated for 402 cf (100% of inflow)
Center-of-Mass det. time= 12.9 min (906.8 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
261.00	745	0	0
261.50	1,000	436	436
262.00	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	261.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.04 cfs @ 12.23 hrs HW=261.10' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=261.00' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond BR-6: Bio Retention Zone 6

Inflow Area = 6,322 sf, Inflow Depth = 0.66" for 1 Year event
Inflow = 0.14 cfs @ 12.00 hrs, Volume= 347 cf
Outflow = 0.04 cfs @ 12.20 hrs, Volume= 347 cf, Atten= 74%, Lag= 11.5 min
Discarded = 0.04 cfs @ 12.20 hrs, Volume= 347 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 255.58' @ 12.20 hrs Surf.Area= 787 sf Storage= 63 cf

Plug-Flow detention time= 10.3 min calculated for 347 cf (100% of inflow)
Center-of-Mass det. time= 10.3 min (904.2 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.50	745	0	0
256.00	1,000	436	436
256.50	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	256.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.04 cfs @ 12.20 hrs HW=255.58' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=255.50' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond BR-7: Bio Retention Zone 7

Inflow Area = 26,130 sf, Inflow Depth = 0.57" for 1 Year event
Inflow = 0.40 cfs @ 12.05 hrs, Volume= 1,247 cf
Outflow = 0.09 cfs @ 12.43 hrs, Volume= 1,247 cf, Atten= 78%, Lag= 22.4 min
Discarded = 0.09 cfs @ 12.43 hrs, Volume= 1,247 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.19' @ 12.43 hrs Surf.Area= 1,306 sf Storage= 238 cf

Plug-Flow detention time= 15.5 min calculated for 1,247 cf (100% of inflow)
Center-of-Mass det. time= 15.5 min (922.2 - 906.6)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	1,413 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	1,250	0	0
256.50	1,400	663	663
257.00	1,600	750	1,413

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	256.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.09 cfs @ 12.43 hrs HW=256.19' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=256.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond MH7: MH#7

Inflow Area = 95,065 sf, Inflow Depth = 1.56" for 1 Year event
Inflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf
Outflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 254.79' @ 12.09 hrs
Flood Elev= 257.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	254.00'	**24.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.00' S= 0.0381 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.49 cfs @ 12.09 hrs HW=254.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.49 cfs @ 3.03 fps)

Pond MH8: MH#8

Inflow Area = 95,065 sf, Inflow Depth = 1.56" for 1 Year event
Inflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf
Outflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 260.79' @ 12.09 hrs
Flood Elev= 263.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	260.00'	**24.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0750 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.49 cfs @ 12.09 hrs HW=260.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.49 cfs @ 3.03 fps)

Pond MH9: MH#9

Inflow Area = 95,065 sf, Inflow Depth = 1.56" for 1 Year event
Inflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf
Outflow = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.09 hrs, Volume= 12,364 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 264.09' @ 12.09 hrs
Flood Elev= 268.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.30'	**24.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.00' S= 0.0471 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.49 cfs @ 12.09 hrs HW=264.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.49 cfs @ 3.03 fps)

Pond P-1: P-1

Inflow Area = 135,609 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 27 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 242.90' @ 24.85 hrs Surf.Area= 5,470 sf Storage= 5,470 cf (27 cf above start)

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

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=242.90' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)

Pond P-4: P-4

Inflow Area = 63,719 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 264.00' @ 1.00 hrs Surf.Area= 0 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WQB5: WQB #5

Inflow Area = 148,651 sf, Inflow Depth = 1.52" for 1 Year event
Inflow = 5.20 cfs @ 11.94 hrs, Volume= 18,818 cf
Outflow = 0.67 cfs @ 12.72 hrs, Volume= 18,818 cf, Atten= 87%, Lag= 46.6 min
Discarded = 0.67 cfs @ 12.72 hrs, Volume= 18,818 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 248.30' @ 12.72 hrs Surf.Area= 7,215 sf Storage= 7,318 cf

Plug-Flow detention time= 93.8 min calculated for 18,798 cf (100% of inflow)
Center-of-Mass det. time= 93.7 min (903.5 - 809.7)

Volume	Invert	Avail.Storage	Storage Description
#1	247.00'	21,143 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
247.00	3,500	0	0
248.00	6,888	5,194	5,194
250.00	9,061	15,949	21,143

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	249.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.67 cfs @ 12.72 hrs HW=248.30' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.67 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=247.00' (Free Discharge)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WS 1: WS 1

Inflow Area = 161,904 sf, Inflow Depth = 0.07" for 1 Year event
Inflow = 0.03 cfs @ 15.20 hrs, Volume= 926 cf
Outflow = 0.00 cfs @ 24.31 hrs, Volume= 10 cf, Atten= 91%, Lag= 546.2 min
Primary = 0.00 cfs @ 24.31 hrs, Volume= 10 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 232.30' @ 24.31 hrs Surf.Area= 2,507 sf Storage= 924 cf

Plug-Flow detention time= 780.8 min calculated for 10 cf (1% of inflow)
Center-of-Mass det. time= 428.5 min (1,505.1 - 1,076.6)

Volume	Invert	Avail.Storage	Storage Description
#1	232.00'	15,120 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
232.00	2,270	0	0
234.00	3,837	6,107	6,107
236.00	5,176	9,013	15,120

Device	Routing	Invert	Outlet Devices
#1	Primary	230.80'	**18.0" x 130.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 229.50' S= 0.0100 '/' Cc= 0.900 n= 0.021 Corrugated metal
#2	Device 1	232.30'	**2.00' W x 1.00' H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 24.31 hrs HW=232.30' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 5.70 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.16 fps)

Link ACOE: ACOE Wetlands

Inflow Area = 198,640 sf, Inflow Depth = 1.08" for 1 Year event
Inflow = 6.51 cfs @ 12.06 hrs, Volume= 17,797 cf
Primary = 6.51 cfs @ 12.06 hrs, Volume= 17,797 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Link QD: Quale Dr. CB

Inflow Area = 49,737 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 24.03 hrs, Volume= 3 cf
Primary = 0.00 cfs @ 24.03 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9-1: 9-1 Runoff Area=111,372 sf Runoff Depth=0.74"
Flow Length=372' Tc=13.0 min CN=44 Runoff=1.67 cfs 6,845 cf

Subcatchment 9-2: 9-2 Runoff Area=14,103 sf Runoff Depth=1.14"
Flow Length=287' Tc=9.7 min CN=50 Runoff=0.49 cfs 1,343 cf

Subcatchment 9-3: 9-3 Runoff Area=36,429 sf Runoff Depth=0.56"
Flow Length=276' Slope=0.0860 '/' Tc=12.7 min CN=41 Runoff=0.32 cfs 1,690 cf

Subcatchment 12-1: 12-1 Runoff Area=63,719 sf Runoff Depth=0.13"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.02 cfs 707 cf

Subcatchment 13-1: 13-1 Runoff Area=43,800 sf Runoff Depth=0.56"
Flow Length=144' Tc=15.4 min CN=41 Runoff=0.34 cfs 2,031 cf

Subcatchment 14-1: 14-1 Runoff Area=23,495 sf Runoff Depth=0.74"
Flow Length=240' Tc=13.8 min CN=44 Runoff=0.34 cfs 1,444 cf

Subcatchment 14-2: 14-2 Runoff Area=14,812 sf Runoff Depth=2.62"
Flow Length=163' Tc=15.3 min CN=68 Runoff=1.12 cfs 3,235 cf

Subcatchment 14-3: 14-3 Runoff Area=11,430 sf Runoff Depth=0.39"
Flow Length=265' Tc=18.3 min CN=38 Runoff=0.04 cfs 374 cf

Subcatchment 15-1: 15-1 Runoff Area=84,807 sf Runoff Depth=3.48"
Flow Length=409' Tc=16.4 min CN=77 Runoff=8.32 cfs 24,587 cf

Subcatchment 15-2: 15-2 Runoff Area=29,183 sf Runoff Depth=0.07"
Flow Length=203' Slope=0.1000 '/' Tc=11.2 min CN=30 Runoff=0.01 cfs 175 cf

Subcatchment 15-3: 15-3 Runoff Area=11,120 sf Runoff Depth>5.76"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=2.32 cfs 5,338 cf

Subcatchment 15-4: 15-4 Runoff Area=198,640 sf Runoff Depth=2.90"
Flow Length=384' Tc=12.9 min CN=71 Runoff=18.22 cfs 47,984 cf

Subcatchment 15-5: 15-5 Runoff Area=13,283 sf Runoff Depth>5.76"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=2.78 cfs 6,376 cf

Subcatchment 15-6: 15-6 Runoff Area=10,258 sf Runoff Depth=5.07"
Flow Length=126' Slope=0.0150 '/' Tc=1.4 min CN=92 Runoff=2.09 cfs 4,334 cf

Subcatchment 16-1: 16-1 Runoff Area=26,130 sf Runoff Depth=2.01"
Flow Length=136' Tc=11.0 min CN=61 Runoff=1.72 cfs 4,367 cf

Subcatchment 16-2: 16-2 Runoff Area=6,322 sf Runoff Depth=2.18"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.53 cfs 1,147 cf

Subcatchment 16-3: 16-3 Runoff Area=7,323 sf Runoff Depth=2.18"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.61 cfs 1,328 cf

Subcatchment 16-4: 16-4 Runoff Area=95,834 sf Runoff Depth=0.39"
Flow Length=223' Tc=13.6 min CN=38 Runoff=0.35 cfs 3,140 cf

Pond 23: CB#23 Peak Elev=242.86' Inflow=0.76 cfs 3,033 cf
15.0" x 45.0' Culvert Outflow=0.76 cfs 3,033 cf

Pond 24: CB#24 Peak Elev=243.11' Inflow=0.32 cfs 1,690 cf
15.0" x 40.0' Culvert Outflow=0.32 cfs 1,690 cf

Pond 26: CB#26 Peak Elev=251.66' Inflow=7.45 cfs 35,753 cf
15.0" x 45.0' Culvert Outflow=7.45 cfs 35,753 cf

Pond 27: CB#27 Peak Elev=252.03' Inflow=9.40 cfs 35,297 cf
Primary=5.18 cfs 30,415 cf Secondary=4.22 cfs 4,883 cf Outflow=9.40 cfs 35,297 cf

Pond 28: CB#28 Peak Elev=266.12' Inflow=8.58 cfs 28,921 cf
24.0" x 150.0' Culvert Outflow=8.58 cfs 28,921 cf

Pond 29: CB#29 Peak Elev=266.79' Inflow=8.32 cfs 24,587 cf
18.0" x 20.0' Culvert Outflow=8.32 cfs 24,587 cf

Pond BR-2: Bio Retention Zone 2 Peak Elev=273.66' Storage=312 cf Inflow=0.34 cfs 2,031 cf
Outflow=0.09 cfs 2,031 cf

Pond BR-3: Bio Retention Zone 3 Peak Elev=266.16' Storage=184 cf Inflow=0.34 cfs 1,444 cf
Discarded=0.11 cfs 1,444 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 1,444 cf

Pond BR-4: Bio Retention Zone 4 Peak Elev=258.45' Storage=993 cf Inflow=1.12 cfs 3,235 cf
Discarded=0.21 cfs 3,235 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 3,235 cf

Pond BR-5: Bio Retention Zone 5 Peak Elev=261.51' Storage=451 cf Inflow=0.61 cfs 1,328 cf
Discarded=0.05 cfs 1,236 cf Primary=0.10 cfs 92 cf Outflow=0.15 cfs 1,328 cf

Pond BR-6: Bio Retention Zone 6 Peak Elev=256.00' Storage=437 cf Inflow=0.53 cfs 1,147 cf
Discarded=0.05 cfs 1,146 cf Primary=0.00 cfs 1 cf Outflow=0.05 cfs 1,147 cf

Pond BR-7: Bio Retention Zone 7 Peak Elev=256.71' Storage=971 cf Inflow=1.72 cfs 4,367 cf
Discarded=0.10 cfs 3,074 cf Primary=1.15 cfs 1,293 cf Outflow=1.25 cfs 4,367 cf

Pond MH7: MH#7 Peak Elev=255.32' Inflow=8.58 cfs 28,921 cf
24.0" x 105.0' Culvert Outflow=8.58 cfs 28,921 cf

Pond MH8: MH#8 Peak Elev=261.32' Inflow=8.58 cfs 28,921 cf
24.0" x 80.0' Culvert Outflow=8.58 cfs 28,921 cf

Pond MH9: MH#9 Peak Elev=264.62' Inflow=8.58 cfs 28,921 cf
24.0" x 70.0' Culvert Outflow=8.58 cfs 28,921 cf

Pond P-1: P-1 Peak Elev=243.24' Storage=7,513 cf Inflow=1.52 cfs 4,526 cf
6.0" x 177.8' Culvert Outflow=0.10 cfs 3,767 cf

Pond P-4: P-4 Peak Elev=266.70' Storage=707 cf Inflow=0.02 cfs 707 cf
Outflow=0.00 cfs 0 cf

Pond WQB5: WQB #5 Peak Elev=249.32' Storage=15,241 cf Inflow=7.45 cfs 35,928 cf
Discarded=0.77 cfs 35,928 cf Primary=0.00 cfs 0 cf Outflow=0.77 cfs 35,928 cf

Pond WS 1: WS 1 Peak Elev=232.58' Storage=1,758 cf Inflow=2.38 cfs 9,877 cf
Outflow=0.93 cfs 8,961 cf

Link ACOE: ACOE Wetlands Inflow=22.03 cfs 52,867 cf
Primary=22.03 cfs 52,867 cf

Link QD: Quale Dr. CB Inflow=0.04 cfs 374 cf
Primary=0.04 cfs 374 cf

Total Runoff Area = 802,060 sf Runoff Volume = 116,445 cf Average Runoff Depth = 1.74"
83.40% Pervious Area = 668,909 sf 16.60% Impervious Area = 133,151 sf

Subcatchment 9-1: 9-1

Runoff = 1.67 cfs @ 12.09 hrs, Volume= 6,845 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
22,665	98	Paved parking & roofs
88,707	30	Woods, Good, HSG A
111,372	44	Weighted Average
88,707		Pervious Area
22,665		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.3	212	0.0470	1.08		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.3	60	0.3300	2.87		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.0	372	Total			

Subcatchment 9-2: 9-2

Runoff = 0.49 cfs @ 12.04 hrs, Volume= 1,343 cf, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
4,200	98	Paved parking & roofs
9,903	30	Woods, Good, HSG A
14,103	50	Weighted Average
9,903		Pervious Area
4,200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	63	0.0317	0.14		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.9	37	0.3200	0.32		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
0.5	187	0.0850	5.92		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.7	287	Total			

Subcatchment 9-3: 9-3

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,690 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,760	98	Paved parking & roofs
30,669	30	Woods, Good, HSG A
36,429	41	Weighted Average
30,669		Pervious Area
5,760		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0860	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	176	0.0860	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.7	276	Total			

Subcatchment 12-1: 12-1

Runoff = 0.02 cfs @ 15.03 hrs, Volume= 707 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
61,691	30	Woods, Good, HSG A
63,719	32	Weighted Average
61,691		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 13-1: 13-1

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 2,031 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,339	98	Paved roads w/curbs & sewers
36,461	30	Woods, Good, HSG A
43,800	41	Weighted Average
36,461		Pervious Area
7,339		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	122	0.0655	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.4	22	0.6363	0.26		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	144	Total			

Subcatchment 14-1: 14-1

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 1,444 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
4,670	98	Paved parking & roofs
18,825	30	Woods, Good, HSG A
23,495	44	Weighted Average
18,825		Pervious Area
4,670		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	40	0.2900	0.21		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	60	0.0520	0.11		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	55	0.0520	1.14		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.1	85	0.0700	1.32		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
13.8	240	Total			

Subcatchment 14-2: 14-2

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 3,235 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
8,275	98	Paved parking & roofs
6,537	30	Woods, Good, HSG A
14,812	68	Weighted Average
6,537		Pervious Area
8,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	34	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
2.5	20	0.0470	0.13		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
3.4	29	0.0470	0.14		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
3.4	15	0.0125	0.07		**Sheet Flow, 4** Grass: Dense n= 0.240 P2= 4.00"
0.6	65	0.1250	1.77		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.3	163	Total			

Subcatchment 14-3: 14-3

Runoff = 0.04 cfs @ 12.22 hrs, Volume= 374 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
1,350	98	Paved parking & roofs
10,080	30	Woods, Good, HSG A
11,430	38	Weighted Average
10,080		Pervious Area
1,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0300	0.10		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	165	0.0750	1.37		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
18.3	265	Total			

Subcatchment 15-1: 15-1

Runoff = 8.32 cfs @ 12.09 hrs, Volume= 24,587 cf, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
22,495	98	Paved roads w/curbs & sewers
62,312	70	Woods, Good, HSG C
84,807	77	Weighted Average
62,312		Pervious Area
22,495		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0510	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	135	0.0510	1.13		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.7	104	0.1100	2.32		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
0.5	70	0.0140	2.40		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
16.4	409	Total			

Subcatchment 15-2: 15-2

Runoff = 0.01 cfs @ 17.80 hrs, Volume= 175 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
29,183	30	Woods, Good, HSG A
29,183		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	103	0.1000	1.58		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.2	203	Total			

Subcatchment 15-3: 15-3

Runoff = 2.32 cfs @ 11.93 hrs, Volume= 5,338 cf, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
11,120	98	Paved parking & roofs
11,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-4: 15-4

Runoff = 18.22 cfs @ 12.05 hrs, Volume= 47,984 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
194,539	70	Woods, Good, HSG C
4,101	98	Paved roads w/curbs & sewers
198,640	71	Weighted Average
194,539		Pervious Area
4,101		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	87	0.1400	1.87		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
2.7	197	0.0600	1.22		**Shallow Concentrated Flow, 3**
					Woodland Kv= 5.0 fps
12.9	384	Total			

Subcatchment 15-5: 15-5

Runoff = 2.78 cfs @ 11.93 hrs, Volume= 6,376 cf, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
13,283	98	Paved parking & roofs
13,283		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-6: 15-6

Runoff = 2.09 cfs @ 11.90 hrs, Volume= 4,334 cf, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
8,042	98	Paved parking & roofs
2,216	72	Woods/grass comb., Good, HSG C
10,258	92	Weighted Average
2,216		Pervious Area
8,042		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	26	0.0150	2.49		**Shallow Concentrated Flow, 26** Paved Kv= 20.3 fps
1.4	126	Total			

Subcatchment 16-1: 16-1

Runoff = 1.72 cfs @ 12.04 hrs, Volume= 4,367 cf, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,550	98	Paved parking & roofs
10,277	32	Woods/grass comb., Good, HSG A
10,303	70	Woods, Good, HSG C
26,130	61	Weighted Average
20,580		Pervious Area
5,550		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0880	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	36	0.0888	1.49		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.0	136	Total			

Subcatchment 16-2: 16-2

Runoff = 0.53 cfs @ 11.99 hrs, Volume= 1,147 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
3,076	98	Paved roads w/curbs & sewers
3,246	30	Woods, Good, HSG A
6,322	63	Weighted Average
3,246		Pervious Area
3,076		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-3: 16-3

Runoff = 0.61 cfs @ 11.99 hrs, Volume= 1,328 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
3,586	98	Paved roads w/curbs & sewers
3,737	30	Woods, Good, HSG A
7,323	63	Weighted Average
3,737		Pervious Area
3,586		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-4: 16-4

Runoff = 0.35 cfs @ 12.15 hrs, Volume= 3,140 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
10,770	70	Woods, Good, HSG C
79,453	30	Woods, Good, HSG A
95,834	38	Weighted Average

90,223		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	58	0.0680	1.30		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.5	65	0.1800	2.12		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.6	223	Total			

Pond 23: CB#23

Inflow Area = 50,532 sf, Inflow Depth = 0.72" for 10 Year event
Inflow = 0.76 cfs @ 12.06 hrs, Volume= 3,033 cf
Outflow = 0.76 cfs @ 12.06 hrs, Volume= 3,033 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.06 hrs, Volume= 3,033 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 242.86' @ 12.06 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.74 cfs @ 12.06 hrs HW=242.85' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.74 cfs @ 2.16 fps)

Pond 24: CB#24

Inflow Area = 36,429 sf, Inflow Depth = 0.56" for 10 Year event
Inflow = 0.32 cfs @ 12.10 hrs, Volume= 1,690 cf
Outflow = 0.32 cfs @ 12.10 hrs, Volume= 1,690 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.10 hrs, Volume= 1,690 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 243.11' @ 12.10 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.85'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.45' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.32 cfs @ 12.10 hrs HW=243.11' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.32 cfs @ 1.73 fps)

Pond 26: CB#26

Inflow Area = 119,468 sf, Inflow Depth > 3.59" for 10 Year event
Inflow = 7.45 cfs @ 11.94 hrs, Volume= 35,753 cf
Outflow = 7.45 cfs @ 11.94 hrs, Volume= 35,753 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.45 cfs @ 11.94 hrs, Volume= 35,753 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 251.66' @ 11.94 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=7.34 cfs @ 11.94 hrs HW=251.62' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.34 cfs @ 5.98 fps)

Pond 27: CB#27

Inflow Area = 108,348 sf, Inflow Depth > 3.91" for 10 Year event
Inflow = 9.40 cfs @ 11.96 hrs, Volume= 35,297 cf
Outflow = 9.40 cfs @ 11.96 hrs, Volume= 35,297 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.18 cfs @ 11.96 hrs, Volume= 30,415 cf
Secondary = 4.22 cfs @ 11.96 hrs, Volume= 4,883 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 252.03' @ 11.96 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.65'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.45' S= 0.0100 '/' Cc= 0.900 n= 0.010
#2	Secondary	250.90'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.50' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=5.15 cfs @ 11.96 hrs HW=252.00' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.15 cfs @ 6.56 fps)

Secondary OutFlow Max=4.10 cfs @ 11.96 hrs HW=252.00' (Free Discharge)
└**2=Culvert** (Inlet Controls 4.10 cfs @ 3.58 fps)

Pond 28: CB#28

Inflow Area = 95,065 sf, Inflow Depth = 3.65" for 10 Year event
Inflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf
Outflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 266.12' @ 12.09 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.80'	**24.0" x 150.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.30' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.46 cfs @ 12.09 hrs HW=266.11' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.46 cfs @ 3.89 fps)

Pond 29: CB#29

Inflow Area = 84,807 sf, Inflow Depth = 3.48" for 10 Year event
Inflow = 8.32 cfs @ 12.09 hrs, Volume= 24,587 cf
Outflow = 8.32 cfs @ 12.09 hrs, Volume= 24,587 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.32 cfs @ 12.09 hrs, Volume= 24,587 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.79' @ 12.09 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.80' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.21 cfs @ 12.09 hrs HW=266.76' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.21 cfs @ 4.97 fps)

Pond BR-2: Bio Retention Zone 2

Inflow Area = 43,800 sf, Inflow Depth = 0.56" for 10 Year event
Inflow = 0.34 cfs @ 12.14 hrs, Volume= 2,031 cf
Outflow = 0.09 cfs @ 12.96 hrs, Volume= 2,031 cf, Atten= 73%, Lag= 48.7 min
Discarded = 0.09 cfs @ 12.96 hrs, Volume= 2,031 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 273.66' @ 12.96 hrs Surf.Area= 1,942 sf Storage= 312 cf

Plug-Flow detention time= 26.2 min calculated for 2,031 cf (100% of inflow)
Center-of-Mass det. time= 26.1 min (977.9 - 951.8)

Volume	Invert	Avail.Storage	Storage Description
#1	273.50'	9,093 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
273.50	1,870	0	0
274.00	2,100	993	993
276.00	6,000	8,100	9,093

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.09 cfs @ 12.96 hrs HW=273.66' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.09 cfs)

Pond BR-3: Bio Retention Zone 3

Inflow Area = 23,495 sf, Inflow Depth = 0.74" for 10 Year event
Inflow = 0.34 cfs @ 12.10 hrs, Volume= 1,444 cf
Outflow = 0.11 cfs @ 12.45 hrs, Volume= 1,444 cf, Atten= 67%, Lag= 20.9 min
Discarded = 0.11 cfs @ 12.45 hrs, Volume= 1,444 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.16' @ 12.45 hrs Surf.Area= 1,214 sf Storage= 184 cf

Plug-Flow detention time= 8.6 min calculated for 1,444 cf (100% of inflow)
Center-of-Mass det. time= 8.6 min (937.8 - 929.2)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	1,457 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	1,106	0	0
266.50	1,445	638	638
267.00	1,831	819	1,457

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.11 cfs @ 12.45 hrs HW=266.16' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=266.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond BR-4: Bio Retention Zone 4

Inflow Area = 38,307 sf, Inflow Depth = 1.01" for 10 Year event
Inflow = 1.12 cfs @ 12.08 hrs, Volume= 3,235 cf
Outflow = 0.21 cfs @ 12.51 hrs, Volume= 3,235 cf, Atten= 81%, Lag= 25.9 min
Discarded = 0.21 cfs @ 12.51 hrs, Volume= 3,235 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 258.45' @ 12.51 hrs Surf.Area= 2,281 sf Storage= 993 cf

Plug-Flow detention time= 31.8 min calculated for 3,235 cf (100% of inflow)
Center-of-Mass det. time= 31.8 min (880.1 - 848.3)

Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	2,675 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
258.00	2,100	0	0
258.50	2,300	1,100	1,100
259.00	4,000	1,575	2,675

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	258.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.21 cfs @ 12.51 hrs HW=258.45' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=258.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond BR-5: Bio Retention Zone 5

Inflow Area = 7,323 sf, Inflow Depth = 2.18" for 10 Year event
Inflow = 0.61 cfs @ 11.99 hrs, Volume= 1,328 cf
Outflow = 0.15 cfs @ 12.18 hrs, Volume= 1,328 cf, Atten= 76%, Lag= 11.4 min
Discarded = 0.05 cfs @ 12.18 hrs, Volume= 1,236 cf
Primary = 0.10 cfs @ 12.18 hrs, Volume= 92 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.51' @ 12.18 hrs Surf.Area= 1,015 sf Storage= 451 cf

Plug-Flow detention time= 79.8 min calculated for 1,328 cf (100% of inflow)
Center-of-Mass det. time= 79.8 min (932.7 - 852.9)

Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
261.00	745	0	0
261.50	1,000	436	436
262.00	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	261.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.18 hrs HW=261.51' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.09 cfs @ 12.18 hrs HW=261.51' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.09 cfs @ 0.39 fps)

Pond BR-6: Bio Retention Zone 6

Inflow Area = 6,322 sf, Inflow Depth = 2.18" for 10 Year event
Inflow = 0.53 cfs @ 11.99 hrs, Volume= 1,147 cf
Outflow = 0.05 cfs @ 12.60 hrs, Volume= 1,147 cf, Atten= 91%, Lag= 36.3 min
Discarded = 0.05 cfs @ 12.60 hrs, Volume= 1,146 cf
Primary = 0.00 cfs @ 12.60 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.00' @ 12.60 hrs Surf.Area= 1,000 sf Storage= 437 cf

Plug-Flow detention time= 82.7 min calculated for 1,147 cf (100% of inflow)
Center-of-Mass det. time= 82.7 min (935.6 - 852.9)

Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.50	745	0	0
256.00	1,000	436	436
256.50	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	256.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.60 hrs HW=256.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 12.60 hrs HW=256.00' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.00 cfs @ 0.07 fps)

Pond BR-7: Bio Retention Zone 7

Inflow Area = 26,130 sf, Inflow Depth = 2.01" for 10 Year event
Inflow = 1.72 cfs @ 12.04 hrs, Volume= 4,367 cf
Outflow = 1.25 cfs @ 12.12 hrs, Volume= 4,367 cf, Atten= 27%, Lag= 5.3 min
Discarded = 0.10 cfs @ 12.12 hrs, Volume= 3,074 cf
Primary = 1.15 cfs @ 12.12 hrs, Volume= 1,293 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.71' @ 12.12 hrs Surf.Area= 1,485 sf Storage= 971 cf

Plug-Flow detention time= 46.8 min calculated for 4,362 cf (100% of inflow)
Center-of-Mass det. time= 46.7 min (908.2 - 861.5)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	1,413 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	1,250	0	0
256.50	1,400	663	663
257.00	1,600	750	1,413

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	256.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.10 cfs @ 12.12 hrs HW=256.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=1.08 cfs @ 12.12 hrs HW=256.70' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.08 cfs @ 1.06 fps)

Pond MH7: MH#7

Inflow Area = 95,065 sf, Inflow Depth = 3.65" for 10 Year event
Inflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf
Outflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 255.32' @ 12.09 hrs
Flood Elev= 257.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	254.00'	**24.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.00' S= 0.0381 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.46 cfs @ 12.09 hrs HW=255.31' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.46 cfs @ 3.89 fps)

Pond MH8: MH#8

Inflow Area = 95,065 sf, Inflow Depth = 3.65" for 10 Year event
Inflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf
Outflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.32' @ 12.09 hrs
Flood Elev= 263.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	260.00'	**24.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0750 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.46 cfs @ 12.09 hrs HW=261.31' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.46 cfs @ 3.89 fps)

Pond MH9: MH#9

Inflow Area = 95,065 sf, Inflow Depth = 3.65" for 10 Year event
Inflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf
Outflow = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.58 cfs @ 12.09 hrs, Volume= 28,921 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 264.62' @ 12.09 hrs
Flood Elev= 268.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.30'	**24.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.00' S= 0.0471 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.46 cfs @ 12.09 hrs HW=264.61' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.46 cfs @ 3.89 fps)

Pond P-1: P-1

Inflow Area = 135,609 sf, Inflow Depth = 0.40" for 10 Year event
Inflow = 1.52 cfs @ 12.14 hrs, Volume= 4,526 cf
Outflow = 0.10 cfs @ 13.97 hrs, Volume= 3,767 cf, Atten= 94%, Lag= 109.9 min
Primary = 0.10 cfs @ 13.97 hrs, Volume= 3,767 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.24' @ 13.97 hrs Surf.Area= 7,513 sf Storage= 7,513 cf (2,070 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 315.2 min (1,221.1 - 905.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.10 cfs @ 13.97 hrs HW=243.24' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.10 cfs @ 1.42 fps)

Pond P-4: P-4

Inflow Area = 63,719 sf, Inflow Depth = 0.13" for 10 Year event
Inflow = 0.02 cfs @ 15.03 hrs, Volume= 707 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.70' @ 25.15 hrs Surf.Area= 613 sf Storage= 707 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WQB5: WQB #5

Inflow Area = 148,651 sf, Inflow Depth > 2.90" for 10 Year event
Inflow = 7.45 cfs @ 11.94 hrs, Volume= 35,928 cf
Outflow = 0.77 cfs @ 13.46 hrs, Volume= 35,928 cf, Atten= 90%, Lag= 91.6 min
Discarded = 0.77 cfs @ 13.46 hrs, Volume= 35,928 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 249.32' @ 13.46 hrs Surf.Area= 8,323 sf Storage= 15,241 cf

Plug-Flow detention time= 192.3 min calculated for 35,928 cf (100% of inflow)
Center-of-Mass det. time= 192.3 min (1,000.0 - 807.8)

Volume	Invert	Avail.Storage	Storage Description
#1	247.00'	21,143 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
247.00	3,500	0	0
248.00	6,888	5,194	5,194
250.00	9,061	15,949	21,143

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	249.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.77 cfs @ 13.46 hrs HW=249.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.77 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=247.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WS 1: WS 1

Inflow Area = 161,904 sf, Inflow Depth = 0.73" for 10 Year event
Inflow = 2.38 cfs @ 12.08 hrs, Volume= 9,877 cf
Outflow = 0.93 cfs @ 12.33 hrs, Volume= 8,961 cf, Atten= 61%, Lag= 14.9 min
Primary = 0.93 cfs @ 12.33 hrs, Volume= 8,961 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 232.58' @ 12.33 hrs Surf.Area= 2,721 sf Storage= 1,758 cf

Plug-Flow detention time= 91.4 min calculated for 8,961 cf (91% of inflow)
Center-of-Mass det. time= 45.3 min (972.8 - 927.5)

Volume	Invert	Avail.Storage	Storage Description
#1	232.00'	15,120 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
232.00	2,270	0	0
234.00	3,837	6,107	6,107
236.00	5,176	9,013	15,120

Device	Routing	Invert	Outlet Devices
#1	Primary	230.80'	**18.0" x 130.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 229.50' S= 0.0100 '/' Cc= 0.900 n= 0.021 Corrugated metal
#2	Device 1	232.30'	**2.00' W x 1.00' H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.93 cfs @ 12.33 hrs HW=232.58' (Free Discharge)
└**1=Culvert** (Passes 0.93 cfs of 6.75 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 1.68 fps)

Link ACOE: ACOE Wetlands

Inflow Area = 198,640 sf, Inflow Depth = 3.19" for 10 Year event
Inflow = 22.03 cfs @ 12.05 hrs, Volume= 52,867 cf
Primary = 22.03 cfs @ 12.05 hrs, Volume= 52,867 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Link QD: Quale Dr. CB

Inflow Area = 49,737 sf, Inflow Depth = 0.09" for 10 Year event
Inflow = 0.04 cfs @ 12.22 hrs, Volume= 374 cf
Primary = 0.04 cfs @ 12.22 hrs, Volume= 374 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9-1: 9-1 Runoff Area=111,372 sf Runoff Depth=0.94"
Flow Length=372' Tc=13.0 min CN=44 Runoff=2.37 cfs 8,701 cf

Subcatchment 9-2: 9-2 Runoff Area=14,103 sf Runoff Depth=1.40"
Flow Length=287' Tc=9.7 min CN=50 Runoff=0.62 cfs 1,641 cf

Subcatchment 9-3: 9-3 Runoff Area=36,429 sf Runoff Depth=0.73"
Flow Length=276' Slope=0.0860 '/' Tc=12.7 min CN=41 Runoff=0.51 cfs 2,211 cf

Subcatchment 12-1: 12-1 Runoff Area=63,719 sf Runoff Depth=0.22"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.04 cfs 1,144 cf

Subcatchment 13-1: 13-1 Runoff Area=43,800 sf Runoff Depth=0.73"
Flow Length=144' Tc=15.4 min CN=41 Runoff=0.53 cfs 2,658 cf

Subcatchment 14-1: 14-1 Runoff Area=23,495 sf Runoff Depth=0.94"
Flow Length=240' Tc=13.8 min CN=44 Runoff=0.48 cfs 1,835 cf

Subcatchment 14-2: 14-2 Runoff Area=14,812 sf Runoff Depth=3.01"
Flow Length=163' Tc=15.3 min CN=68 Runoff=1.30 cfs 3,716 cf

Subcatchment 14-3: 14-3 Runoff Area=11,430 sf Runoff Depth=0.54"
Flow Length=265' Tc=18.3 min CN=38 Runoff=0.07 cfs 510 cf

Subcatchment 15-1: 15-1 Runoff Area=84,807 sf Runoff Depth=3.92"
Flow Length=409' Tc=16.4 min CN=77 Runoff=9.36 cfs 27,698 cf

Subcatchment 15-2: 15-2 Runoff Area=29,183 sf Runoff Depth=0.13"
Flow Length=203' Slope=0.1000 '/' Tc=11.2 min CN=30 Runoff=0.01 cfs 325 cf

Subcatchment 15-3: 15-3 Runoff Area=11,120 sf Runoff Depth>6.26"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=2.52 cfs 5,800 cf

Subcatchment 15-4: 15-4 Runoff Area=198,640 sf Runoff Depth=3.31"
Flow Length=384' Tc=12.9 min CN=71 Runoff=20.79 cfs 54,735 cf

Subcatchment 15-5: 15-5 Runoff Area=13,283 sf Runoff Depth>6.26"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=3.01 cfs 6,928 cf

Subcatchment 15-6: 15-6 Runoff Area=10,258 sf Runoff Depth=5.56"
Flow Length=126' Slope=0.0150 '/' Tc=1.4 min CN=92 Runoff=2.28 cfs 4,754 cf

Subcatchment 16-1: 16-1 Runoff Area=26,130 sf Runoff Depth=2.35"
Flow Length=136' Tc=11.0 min CN=61 Runoff=2.03 cfs 5,111 cf

Subcatchment 16-2: 16-2 Runoff Area=6,322 sf Runoff Depth=2.53"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.62 cfs 1,334 cf

Subcatchment 16-3: 16-3 Runoff Area=7,323 sf Runoff Depth=2.53"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.71 cfs 1,545 cf

Subcatchment 16-4: 16-4 Runoff Area=95,834 sf Runoff Depth=0.54"
Flow Length=223' Tc=13.6 min CN=38 Runoff=0.67 cfs 4,279 cf

Pond 23: CB#23 Peak Elev=242.94' Inflow=1.07 cfs 3,852 cf
15.0" x 45.0' Culvert Outflow=1.07 cfs 3,852 cf

Pond 24: CB#24 Peak Elev=243.18' Inflow=0.51 cfs 2,211 cf
15.0" x 40.0' Culvert Outflow=0.51 cfs 2,211 cf

Pond 26: CB#26 Peak Elev=251.87' Inflow=7.91 cfs 39,060 cf
15.0" x 45.0' Culvert Outflow=7.91 cfs 39,060 cf

Pond 27: CB#27 Peak Elev=252.24' Inflow=10.47 cfs 39,381 cf
Primary=5.47 cfs 33,259 cf Secondary=5.00 cfs 6,122 cf Outflow=10.47 cfs 39,381 cf

Pond 28: CB#28 Peak Elev=266.22' Inflow=9.64 cfs 32,453 cf
24.0" x 150.0' Culvert Outflow=9.64 cfs 32,453 cf

Pond 29: CB#29 Peak Elev=267.05' Inflow=9.36 cfs 27,698 cf
18.0" x 20.0' Culvert Outflow=9.36 cfs 27,698 cf

Pond BR-2: Bio Retention Zone 2 Peak Elev=273.80' Storage=601 cf Inflow=0.53 cfs 2,658 cf
Outflow=0.09 cfs 2,658 cf

Pond BR-3: Bio Retention Zone 3 Peak Elev=266.28' Storage=332 cf Inflow=0.48 cfs 1,835 cf
Discarded=0.12 cfs 1,835 cf Primary=0.00 cfs 0 cf Outflow=0.12 cfs 1,835 cf

Pond BR-4: Bio Retention Zone 4 Peak Elev=258.53' Storage=1,178 cf Inflow=1.30 cfs 3,716 cf
Discarded=0.22 cfs 3,642 cf Primary=0.07 cfs 74 cf Outflow=0.29 cfs 3,716 cf

Pond BR-5: Bio Retention Zone 5 Peak Elev=261.54' Storage=476 cf Inflow=0.71 cfs 1,545 cf
Discarded=0.05 cfs 1,329 cf Primary=0.39 cfs 217 cf Outflow=0.44 cfs 1,545 cf

Pond BR-6: Bio Retention Zone 6 Peak Elev=256.02' Storage=457 cf Inflow=0.62 cfs 1,334 cf
Discarded=0.05 cfs 1,232 cf Primary=0.15 cfs 102 cf Outflow=0.20 cfs 1,334 cf

Pond BR-7: Bio Retention Zone 7 Peak Elev=256.76' Storage=1,036 cf Inflow=2.03 cfs 5,111 cf
Discarded=0.10 cfs 3,330 cf Primary=1.56 cfs 1,781 cf Outflow=1.66 cfs 5,111 cf

Pond MH7: MH#7 Peak Elev=255.42' Inflow=9.64 cfs 32,453 cf
24.0" x 105.0' Culvert Outflow=9.64 cfs 32,453 cf

Pond MH8: MH#8 Peak Elev=261.42' Inflow=9.64 cfs 32,453 cf
24.0" x 80.0' Culvert Outflow=9.64 cfs 32,453 cf

Pond MH9: MH#9 Peak Elev=264.72' Inflow=9.64 cfs 32,453 cf
24.0" x 70.0' Culvert Outflow=9.64 cfs 32,453 cf

Pond P-1: P-1 Peak Elev=243.37' Storage=8,262 cf Inflow=2.65 cfs 6,379 cf
6.0" x 177.8' Culvert Outflow=0.19 cfs 5,616 cf

Pond P-4: P-4 Peak Elev=267.23' Storage=1,144 cf Inflow=0.04 cfs 1,144 cf
Outflow=0.00 cfs 0 cf

Pond WQB5: WQB #5 Peak Elev=249.51' Storage=16,866 cf Inflow=7.91 cfs 39,384 cf
Discarded=0.79 cfs 39,340 cf Primary=0.02 cfs 44 cf Outflow=0.81 cfs 39,384 cf

Pond WS 1: WS 1 Peak Elev=232.70' Storage=2,149 cf Inflow=3.39 cfs 12,553 cf
Outflow=1.65 cfs 11,637 cf

Link ACOE: ACOE Wetlands Inflow=25.43 cfs 60,857 cf
Primary=25.43 cfs 60,857 cf

Link QD: Quale Dr. CB Inflow=0.11 cfs 584 cf
Primary=0.11 cfs 584 cf

Total Runoff Area = 802,060 sf Runoff Volume = 134,928 cf Average Runoff Depth = 2.02"
83.40% Pervious Area = 668,909 sf 16.60% Impervious Area = 133,151 sf

Subcatchment 9-1: 9-1

Runoff = 2.37 cfs @ 12.09 hrs, Volume= 8,701 cf, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
22,665	98	Paved parking & roofs
88,707	30	Woods, Good, HSG A
111,372	44	Weighted Average
88,707		Pervious Area
22,665		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.3	212	0.0470	1.08		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.3	60	0.3300	2.87		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.0	372	Total			

Subcatchment 9-2: 9-2

Runoff = 0.62 cfs @ 12.03 hrs, Volume= 1,641 cf, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
4,200	98	Paved parking & roofs
9,903	30	Woods, Good, HSG A
14,103	50	Weighted Average
9,903		Pervious Area
4,200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	63	0.0317	0.14		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.9	37	0.3200	0.32		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
0.5	187	0.0850	5.92		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.7	287	Total			

Subcatchment 9-3: 9-3

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 2,211 cf, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,760	98	Paved parking & roofs
30,669	30	Woods, Good, HSG A
36,429	41	Weighted Average
30,669		Pervious Area
5,760		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0860	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	176	0.0860	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.7	276	Total			

Subcatchment 12-1: 12-1

Runoff = 0.04 cfs @ 13.00 hrs, Volume= 1,144 cf, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
61,691	30	Woods, Good, HSG A
63,719	32	Weighted Average
61,691		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 13-1: 13-1

Runoff = 0.53 cfs @ 12.13 hrs, Volume= 2,658 cf, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,339	98	Paved roads w/curbs & sewers
36,461	30	Woods, Good, HSG A
43,800	41	Weighted Average
36,461		Pervious Area
7,339		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	122	0.0655	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.4	22	0.6363	0.26		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	144	Total			

Subcatchment 14-1: 14-1

Runoff = 0.48 cfs @ 12.10 hrs, Volume= 1,835 cf, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
4,670	98	Paved parking & roofs
18,825	30	Woods, Good, HSG A
23,495	44	Weighted Average
18,825		Pervious Area
4,670		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	40	0.2900	0.21		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	60	0.0520	0.11		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	55	0.0520	1.14		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.1	85	0.0700	1.32		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
13.8	240	Total			

Subcatchment 14-2: 14-2

Runoff = 1.30 cfs @ 12.08 hrs, Volume= 3,716 cf, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
8,275	98	Paved parking & roofs
6,537	30	Woods, Good, HSG A
14,812	68	Weighted Average
6,537		Pervious Area
8,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	34	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
2.5	20	0.0470	0.13		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
3.4	29	0.0470	0.14		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
3.4	15	0.0125	0.07		**Sheet Flow, 4** Grass: Dense n= 0.240 P2= 4.00"
0.6	65	0.1250	1.77		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.3	163	Total			

Subcatchment 14-3: 14-3

Runoff = 0.07 cfs @ 12.20 hrs, Volume= 510 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
1,350	98	Paved parking & roofs
10,080	30	Woods, Good, HSG A
11,430	38	Weighted Average
10,080		Pervious Area
1,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0300	0.10		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	165	0.0750	1.37		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
18.3	265	Total			

Subcatchment 15-1: 15-1

Runoff = 9.36 cfs @ 12.09 hrs, Volume= 27,698 cf, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
22,495	98	Paved roads w/curbs & sewers
62,312	70	Woods, Good, HSG C
84,807	77	Weighted Average
62,312		Pervious Area
22,495		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0510	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	135	0.0510	1.13		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.7	104	0.1100	2.32		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
0.5	70	0.0140	2.40		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
16.4	409	Total			

Subcatchment 15-2: 15-2

Runoff = 0.01 cfs @ 15.02 hrs, Volume= 325 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
29,183	30	Woods, Good, HSG A
29,183		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	103	0.1000	1.58		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.2	203	Total			

Subcatchment 15-3: 15-3

Runoff = 2.52 cfs @ 11.93 hrs, Volume= 5,800 cf, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
11,120	98	Paved parking & roofs
11,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-4: 15-4

Runoff = 20.79 cfs @ 12.05 hrs, Volume= 54,735 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
194,539	70	Woods, Good, HSG C
4,101	98	Paved roads w/curbs & sewers
198,640	71	Weighted Average
194,539		Pervious Area
4,101		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	87	0.1400	1.87		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
2.7	197	0.0600	1.22		**Shallow Concentrated Flow, 3**
					Woodland Kv= 5.0 fps
12.9	384	Total			

Subcatchment 15-5: 15-5

Runoff = 3.01 cfs @ 11.93 hrs, Volume= 6,928 cf, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
13,283	98	Paved parking & roofs
13,283		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-6: 15-6

Runoff = 2.28 cfs @ 11.90 hrs, Volume= 4,754 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
8,042	98	Paved parking & roofs
2,216	72	Woods/grass comb., Good, HSG C
10,258	92	Weighted Average
2,216		Pervious Area
8,042		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	26	0.0150	2.49		**Shallow Concentrated Flow, 26** Paved Kv= 20.3 fps
1.4	126	Total			

Subcatchment 16-1: 16-1

Runoff = 2.03 cfs @ 12.04 hrs, Volume= 5,111 cf, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,550	98	Paved parking & roofs
10,277	32	Woods/grass comb., Good, HSG A
10,303	70	Woods, Good, HSG C
26,130	61	Weighted Average
20,580		Pervious Area
5,550		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0880	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	36	0.0888	1.49		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.0	136	Total			

Subcatchment 16-2: 16-2

Runoff = 0.62 cfs @ 11.99 hrs, Volume= 1,334 cf, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
3,076	98	Paved roads w/curbs & sewers
3,246	30	Woods, Good, HSG A
6,322	63	Weighted Average
3,246		Pervious Area
3,076		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-3: 16-3

Runoff = 0.71 cfs @ 11.99 hrs, Volume= 1,545 cf, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
3,586	98	Paved roads w/curbs & sewers
3,737	30	Woods, Good, HSG A
7,323	63	Weighted Average
3,737		Pervious Area
3,586		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-4: 16-4

Runoff = 0.67 cfs @ 12.12 hrs, Volume= 4,279 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
10,770	70	Woods, Good, HSG C
79,453	30	Woods, Good, HSG A
95,834	38	Weighted Average

90,223		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	58	0.0680	1.30		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.5	65	0.1800	2.12		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.6	223	Total			

Pond 23: CB#23

Inflow Area = 50,532 sf, Inflow Depth = 0.91" for 25 Year event
Inflow = 1.07 cfs @ 12.06 hrs, Volume= 3,852 cf
Outflow = 1.07 cfs @ 12.06 hrs, Volume= 3,852 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.06 hrs, Volume= 3,852 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 242.94' @ 12.06 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.05 cfs @ 12.06 hrs HW=242.94' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.05 cfs @ 2.37 fps)

Pond 24: CB#24

Inflow Area = 36,429 sf, Inflow Depth = 0.73" for 25 Year event
Inflow = 0.51 cfs @ 12.09 hrs, Volume= 2,211 cf
Outflow = 0.51 cfs @ 12.09 hrs, Volume= 2,211 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.09 hrs, Volume= 2,211 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 243.18' @ 12.09 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.85'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.45' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.50 cfs @ 12.09 hrs HW=243.18' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.50 cfs @ 1.95 fps)

Pond 26: CB#26

Inflow Area = 119,468 sf, Inflow Depth > 3.92" for 25 Year event
Inflow = 7.91 cfs @ 11.94 hrs, Volume= 39,060 cf
Outflow = 7.91 cfs @ 11.94 hrs, Volume= 39,060 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.91 cfs @ 11.94 hrs, Volume= 39,060 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 251.87' @ 11.94 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=7.80 cfs @ 11.94 hrs HW=251.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.80 cfs @ 6.35 fps)

Pond 27: CB#27

Inflow Area = 108,348 sf, Inflow Depth > 4.36" for 25 Year event
Inflow = 10.47 cfs @ 11.96 hrs, Volume= 39,381 cf
Outflow = 10.47 cfs @ 11.96 hrs, Volume= 39,381 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.47 cfs @ 11.96 hrs, Volume= 33,259 cf
Secondary = 5.00 cfs @ 11.96 hrs, Volume= 6,122 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 252.24' @ 11.96 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.65'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.45' S= 0.0100 '/' Cc= 0.900 n= 0.010
#2	Secondary	250.90'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.50' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=5.42 cfs @ 11.96 hrs HW=252.21' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.42 cfs @ 6.91 fps)

Secondary OutFlow Max=4.88 cfs @ 11.96 hrs HW=252.21' (Free Discharge)
└**2=Culvert** (Inlet Controls 4.88 cfs @ 3.98 fps)

Pond 28: CB#28

Inflow Area = 95,065 sf, Inflow Depth = 4.10" for 25 Year event
Inflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf
Outflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 266.22' @ 12.08 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.80'	**24.0" x 150.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.30' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.50 cfs @ 12.08 hrs HW=266.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.50 cfs @ 4.03 fps)

Pond 29: CB#29

Inflow Area = 84,807 sf, Inflow Depth = 3.92" for 25 Year event
Inflow = 9.36 cfs @ 12.09 hrs, Volume= 27,698 cf
Outflow = 9.36 cfs @ 12.09 hrs, Volume= 27,698 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.36 cfs @ 12.09 hrs, Volume= 27,698 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 267.05' @ 12.09 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.80' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.17 cfs @ 12.09 hrs HW=267.02' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.17 cfs @ 5.19 fps)

Pond BR-2: Bio Retention Zone 2

Inflow Area = 43,800 sf, Inflow Depth = 0.73" for 25 Year event
Inflow = 0.53 cfs @ 12.13 hrs, Volume= 2,658 cf
Outflow = 0.09 cfs @ 13.38 hrs, Volume= 2,658 cf, Atten= 83%, Lag= 75.3 min
Discarded = 0.09 cfs @ 13.38 hrs, Volume= 2,658 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 273.80' @ 13.38 hrs Surf.Area= 2,009 sf Storage= 601 cf

Plug-Flow detention time= 55.4 min calculated for 2,656 cf (100% of inflow)
Center-of-Mass det. time= 55.3 min (992.8 - 937.5)

Volume	Invert	Avail.Storage	Storage Description
#1	273.50'	9,093 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
273.50	1,870	0	0
274.00	2,100	993	993
276.00	6,000	8,100	9,093

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.09 cfs @ 13.38 hrs HW=273.80' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond BR-3: Bio Retention Zone 3

Inflow Area = 23,495 sf, Inflow Depth = 0.94" for 25 Year event
Inflow = 0.48 cfs @ 12.10 hrs, Volume= 1,835 cf
Outflow = 0.12 cfs @ 12.55 hrs, Volume= 1,835 cf, Atten= 75%, Lag= 27.2 min
Discarded = 0.12 cfs @ 12.55 hrs, Volume= 1,835 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.28' @ 12.55 hrs Surf.Area= 1,294 sf Storage= 332 cf

Plug-Flow detention time= 16.8 min calculated for 1,835 cf (100% of inflow)
Center-of-Mass det. time= 16.8 min (934.7 - 917.9)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	1,457 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	1,106	0	0
266.50	1,445	638	638
267.00	1,831	819	1,457

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.12 cfs @ 12.55 hrs HW=266.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=266.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BR-4: Bio Retention Zone 4

Inflow Area = 38,307 sf, Inflow Depth = 1.16" for 25 Year event
Inflow = 1.30 cfs @ 12.08 hrs, Volume= 3,716 cf
Outflow = 0.29 cfs @ 12.44 hrs, Volume= 3,716 cf, Atten= 77%, Lag= 21.6 min
Discarded = 0.22 cfs @ 12.44 hrs, Volume= 3,642 cf
Primary = 0.07 cfs @ 12.44 hrs, Volume= 74 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 258.53' @ 12.44 hrs Surf.Area= 2,412 sf Storage= 1,178 cf

Plug-Flow detention time= 36.7 min calculated for 3,712 cf (100% of inflow)
Center-of-Mass det. time= 36.6 min (880.9 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	2,675 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
258.00	2,100	0	0
258.50	2,300	1,100	1,100
259.00	4,000	1,575	2,675

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	258.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.22 cfs @ 12.44 hrs HW=258.53' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.07 cfs @ 12.44 hrs HW=258.53' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.42 fps)

Pond BR-5: Bio Retention Zone 5

Inflow Area = 7,323 sf, Inflow Depth = 2.53" for 25 Year event
Inflow = 0.71 cfs @ 11.99 hrs, Volume= 1,545 cf
Outflow = 0.44 cfs @ 12.11 hrs, Volume= 1,545 cf, Atten= 38%, Lag= 6.9 min
Discarded = 0.05 cfs @ 12.11 hrs, Volume= 1,329 cf
Primary = 0.39 cfs @ 12.11 hrs, Volume= 217 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.54' @ 12.11 hrs Surf.Area= 1,039 sf Storage= 476 cf

Plug-Flow detention time= 75.4 min calculated for 1,545 cf (100% of inflow)
Center-of-Mass det. time= 75.4 min (923.8 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
261.00	745	0	0
261.50	1,000	436	436
262.00	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	261.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.11 hrs HW=261.54' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.36 cfs @ 12.11 hrs HW=261.54' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.36 cfs @ 0.62 fps)

Pond BR-6: Bio Retention Zone 6

Inflow Area = 6,322 sf, Inflow Depth = 2.53" for 25 Year event
Inflow = 0.62 cfs @ 11.99 hrs, Volume= 1,334 cf
Outflow = 0.20 cfs @ 12.16 hrs, Volume= 1,334 cf, Atten= 68%, Lag= 10.3 min
Discarded = 0.05 cfs @ 12.16 hrs, Volume= 1,232 cf
Primary = 0.15 cfs @ 12.16 hrs, Volume= 102 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.02' @ 12.16 hrs Surf.Area= 1,020 sf Storage= 457 cf

Plug-Flow detention time= 78.6 min calculated for 1,333 cf (100% of inflow)
Center-of-Mass det. time= 78.5 min (926.9 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.50	745	0	0
256.00	1,000	436	436
256.50	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	256.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.16 hrs HW=256.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.13 cfs @ 12.16 hrs HW=256.02' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.13 cfs @ 0.44 fps)

Pond BR-7: Bio Retention Zone 7

Inflow Area = 26,130 sf, Inflow Depth = 2.35" for 25 Year event
Inflow = 2.03 cfs @ 12.04 hrs, Volume= 5,111 cf
Outflow = 1.66 cfs @ 12.11 hrs, Volume= 5,111 cf, Atten= 18%, Lag= 4.4 min
Discarded = 0.10 cfs @ 12.11 hrs, Volume= 3,330 cf
Primary = 1.56 cfs @ 12.11 hrs, Volume= 1,781 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.76' @ 12.11 hrs Surf.Area= 1,503 sf Storage= 1,036 cf

Plug-Flow detention time= 45.3 min calculated for 5,106 cf (100% of inflow)
Center-of-Mass det. time= 45.2 min (901.9 - 856.7)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	1,413 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	1,250	0	0
256.50	1,400	663	663
257.00	1,600	750	1,413

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	256.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.10 cfs @ 12.11 hrs HW=256.75' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=1.51 cfs @ 12.11 hrs HW=256.75' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.51 cfs @ 1.20 fps)

Pond MH7: MH#7

Inflow Area = 95,065 sf, Inflow Depth = 4.10" for 25 Year event
Inflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf
Outflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 255.42' @ 12.08 hrs
Flood Elev= 257.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	254.00'	**24.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.00' S= 0.0381 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.50 cfs @ 12.08 hrs HW=255.40' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.50 cfs @ 4.03 fps)

Pond MH8: MH#8

Inflow Area = 95,065 sf, Inflow Depth = 4.10" for 25 Year event
Inflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf
Outflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.42' @ 12.08 hrs
Flood Elev= 263.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	260.00'	**24.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0750 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.50 cfs @ 12.08 hrs HW=261.40' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.50 cfs @ 4.03 fps)

Pond MH9: MH#9

Inflow Area = 95,065 sf, Inflow Depth = 4.10" for 25 Year event
Inflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf
Outflow = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.64 cfs @ 12.08 hrs, Volume= 32,453 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 264.72' @ 12.08 hrs
Flood Elev= 268.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.30'	**24.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.00' S= 0.0471 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.50 cfs @ 12.08 hrs HW=264.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.50 cfs @ 4.03 fps)

Pond P-1: P-1

Inflow Area = 135,609 sf, Inflow Depth = 0.56" for 25 Year event
Inflow = 2.65 cfs @ 12.11 hrs, Volume= 6,379 cf
Outflow = 0.19 cfs @ 13.41 hrs, Volume= 5,616 cf, Atten= 93%, Lag= 77.8 min
Primary = 0.19 cfs @ 13.41 hrs, Volume= 5,616 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.37' @ 13.41 hrs Surf.Area= 8,262 sf Storage= 8,262 cf (2,819 cf above start)

Plug-Flow detention time= 1,703.5 min calculated for 173 cf (3% of inflow)
Center-of-Mass det. time= 258.0 min (1,145.4 - 887.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.19 cfs @ 13.41 hrs HW=243.37' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.19 cfs @ 1.71 fps)

Pond P-4: P-4

Inflow Area = 63,719 sf, Inflow Depth = 0.22" for 25 Year event
Inflow = 0.04 cfs @ 13.00 hrs, Volume= 1,144 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 267.23' @ 25.15 hrs Surf.Area= 979 sf Storage= 1,144 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WQB5: WQB #5

Inflow Area = 148,651 sf, Inflow Depth > 3.18" for 25 Year event
Inflow = 7.91 cfs @ 11.94 hrs, Volume= 39,384 cf
Outflow = 0.81 cfs @ 13.56 hrs, Volume= 39,384 cf, Atten= 90%, Lag= 97.4 min
Discarded = 0.79 cfs @ 13.56 hrs, Volume= 39,340 cf
Primary = 0.02 cfs @ 13.56 hrs, Volume= 44 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 249.51' @ 13.56 hrs Surf.Area= 8,533 sf Storage= 16,866 cf

Plug-Flow detention time= 211.2 min calculated for 39,384 cf (100% of inflow)
Center-of-Mass det. time= 211.2 min (1,018.8 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	247.00'	21,143 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
247.00	3,500	0	0
248.00	6,888	5,194	5,194
250.00	9,061	15,949	21,143

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	249.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.79 cfs @ 13.56 hrs HW=249.51' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.79 cfs)

Primary OutFlow Max=0.02 cfs @ 13.56 hrs HW=249.51' (Free Discharge)
↑└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.28 fps)

Pond WS 1: WS 1

Inflow Area = 161,904 sf, Inflow Depth = 0.93" for 25 Year event
Inflow = 3.39 cfs @ 12.08 hrs, Volume= 12,553 cf
Outflow = 1.65 cfs @ 12.25 hrs, Volume= 11,637 cf, Atten= 51%, Lag= 10.5 min
Primary = 1.65 cfs @ 12.25 hrs, Volume= 11,637 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 232.70' @ 12.25 hrs Surf.Area= 2,821 sf Storage= 2,149 cf

Plug-Flow detention time= 74.9 min calculated for 11,637 cf (93% of inflow)
Center-of-Mass det. time= 37.4 min (953.8 - 916.4)

Volume	Invert	Avail.Storage	Storage Description
#1	232.00'	15,120 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
232.00	2,270	0	0
234.00	3,837	6,107	6,107
236.00	5,176	9,013	15,120

Device	Routing	Invert	Outlet Devices
#1	Primary	230.80'	**18.0" x 130.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 229.50' S= 0.0100 '/' Cc= 0.900 n= 0.021 Corrugated metal
#2	Device 1	232.30'	**2.00' W x 1.00' H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.65 cfs @ 12.25 hrs HW=232.70' (Free Discharge)
└**1=Culvert** (Passes 1.65 cfs of 6.97 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.65 cfs @ 2.04 fps)

Link ACOE: ACOE Wetlands

Inflow Area = 198,640 sf, Inflow Depth = 3.68" for 25 Year event
Inflow = 25.43 cfs @ 12.05 hrs, Volume= 60,857 cf
Primary = 25.43 cfs @ 12.05 hrs, Volume= 60,857 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Link QD: Quale Dr. CB

Inflow Area = 49,737 sf, Inflow Depth = 0.14" for 25 Year event
Inflow = 0.11 cfs @ 12.42 hrs, Volume= 584 cf
Primary = 0.11 cfs @ 12.42 hrs, Volume= 584 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9-1: 9-1 Runoff Area=111,372 sf Runoff Depth=1.64"
Flow Length=372' Tc=13.0 min CN=44 Runoff=4.94 cfs 15,187 cf

Subcatchment 9-2: 9-2 Runoff Area=14,103 sf Runoff Depth=2.25"
Flow Length=287' Tc=9.7 min CN=50 Runoff=1.06 cfs 2,644 cf

Subcatchment 9-3: 9-3 Runoff Area=36,429 sf Runoff Depth=1.34"
Flow Length=276' Slope=0.0860 '/' Tc=12.7 min CN=41 Runoff=1.23 cfs 4,082 cf

Subcatchment 12-1: 12-1 Runoff Area=63,719 sf Runoff Depth=0.56"
Flow Length=257' Slope=0.0311 '/' Tc=19.1 min CN=32 Runoff=0.30 cfs 2,987 cf

Subcatchment 13-1: 13-1 Runoff Area=43,800 sf Runoff Depth=1.34"
Flow Length=144' Tc=15.4 min CN=41 Runoff=1.33 cfs 4,907 cf

Subcatchment 14-1: 14-1 Runoff Area=23,495 sf Runoff Depth=1.64"
Flow Length=240' Tc=13.8 min CN=44 Runoff=1.00 cfs 3,204 cf

Subcatchment 14-2: 14-2 Runoff Area=14,812 sf Runoff Depth=4.24"
Flow Length=163' Tc=15.3 min CN=68 Runoff=1.83 cfs 5,228 cf

Subcatchment 14-3: 14-3 Runoff Area=11,430 sf Runoff Depth=1.07"
Flow Length=265' Tc=18.3 min CN=38 Runoff=0.21 cfs 1,015 cf

Subcatchment 15-1: 15-1 Runoff Area=84,807 sf Runoff Depth=5.27"
Flow Length=409' Tc=16.4 min CN=77 Runoff=12.51 cfs 37,275 cf

Subcatchment 15-2: 15-2 Runoff Area=29,183 sf Runoff Depth=0.42"
Flow Length=203' Slope=0.1000 '/' Tc=11.2 min CN=30 Runoff=0.08 cfs 1,013 cf

Subcatchment 15-3: 15-3 Runoff Area=11,120 sf Runoff Depth>7.75"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=3.10 cfs 7,186 cf

Subcatchment 15-4: 15-4 Runoff Area=198,640 sf Runoff Depth=4.58"
Flow Length=384' Tc=12.9 min CN=71 Runoff=28.71 cfs 75,801 cf

Subcatchment 15-5: 15-5 Runoff Area=13,283 sf Runoff Depth>7.75"
Flow Length=508' Slope=0.0270 '/' Tc=3.0 min CN=98 Runoff=3.71 cfs 8,584 cf

Subcatchment 15-6: 15-6 Runoff Area=10,258 sf Runoff Depth=7.04"
Flow Length=126' Slope=0.0150 '/' Tc=1.4 min CN=92 Runoff=2.84 cfs 6,021 cf

Subcatchment 16-1: 16-1 Runoff Area=26,130 sf Runoff Depth=3.44"
Flow Length=136' Tc=11.0 min CN=61 Runoff=3.02 cfs 7,501 cf

Subcatchment 16-2: 16-2 Runoff Area=6,322 sf Runoff Depth=3.67"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=0.89 cfs 1,933 cf

Subcatchment 16-3: 16-3 Runoff Area=7,323 sf Runoff Depth=3.67"
Flow Length=50' Slope=0.0200 '/' Tc=7.3 min CN=63 Runoff=1.04 cfs 2,239 cf

Subcatchment 16-4: 16-4 Runoff Area=95,834 sf Runoff Depth=1.07"
Flow Length=223' Tc=13.6 min CN=38 Runoff=2.14 cfs 8,512 cf

Pond 23: CB#23 Peak Elev=243.19' Inflow=2.23 cfs 6,726 cf
15.0" x 45.0' Culvert Outflow=2.23 cfs 6,726 cf

Pond 24: CB#24 Peak Elev=243.38' Inflow=1.23 cfs 4,082 cf
15.0" x 40.0' Culvert Outflow=1.23 cfs 4,082 cf

Pond 26: CB#26 Peak Elev=252.62' Inflow=9.42 cfs 49,080 cf
15.0" x 45.0' Culvert Outflow=9.42 cfs 49,080 cf

Pond 27: CB#27 Peak Elev=253.05' Inflow=13.74 cfs 51,880 cf
Primary=6.44 cfs 41,894 cf Secondary=7.30 cfs 9,986 cf Outflow=13.74 cfs 51,880 cf

Pond 28: CB#28 Peak Elev=266.52' Inflow=12.86 cfs 43,296 cf
24.0" x 150.0' Culvert Outflow=12.86 cfs 43,296 cf

Pond 29: CB#29 Peak Elev=267.91' Inflow=12.51 cfs 37,275 cf
18.0" x 20.0' Culvert Outflow=12.51 cfs 37,275 cf

Pond BR-2: Bio Retention Zone 2 Peak Elev=274.20' Storage=1,822 cf Inflow=1.33 cfs 4,907 cf
Outflow=0.12 cfs 4,907 cf

Pond BR-3: Bio Retention Zone 3 Peak Elev=266.57' Storage=745 cf Inflow=1.00 cfs 3,204 cf
Discarded=0.14 cfs 2,905 cf Primary=0.23 cfs 299 cf Outflow=0.37 cfs 3,204 cf

Pond BR-4: Bio Retention Zone 4 Peak Elev=258.65' Storage=1,485 cf Inflow=1.83 cfs 5,526 cf
Discarded=0.26 cfs 4,483 cf Primary=0.68 cfs 1,044 cf Outflow=0.95 cfs 5,526 cf

Pond BR-5: Bio Retention Zone 5 Peak Elev=261.57' Storage=505 cf Inflow=1.04 cfs 2,239 cf
Discarded=0.05 cfs 1,597 cf Primary=0.90 cfs 642 cf Outflow=0.95 cfs 2,239 cf

Pond BR-6: Bio Retention Zone 6 Peak Elev=256.06' Storage=502 cf Inflow=0.89 cfs 1,933 cf
Discarded=0.05 cfs 1,479 cf Primary=0.83 cfs 453 cf Outflow=0.88 cfs 1,933 cf

Pond BR-7: Bio Retention Zone 7 Peak Elev=256.86' Storage=1,197 cf Inflow=3.02 cfs 7,501 cf
Discarded=0.11 cfs 4,038 cf Primary=2.69 cfs 3,462 cf Outflow=2.80 cfs 7,501 cf

Pond MH7: MH#7 Peak Elev=255.72' Inflow=12.86 cfs 43,296 cf
24.0" x 105.0' Culvert Outflow=12.86 cfs 43,296 cf

Pond MH8: MH#8 Peak Elev=261.72' Inflow=12.86 cfs 43,296 cf
24.0" x 80.0' Culvert Outflow=12.86 cfs 43,296 cf

Pond MH9: MH#9 Peak Elev=265.02' Inflow=12.86 cfs 43,296 cf
24.0" x 70.0' Culvert Outflow=12.86 cfs 43,296 cf

Pond P-1: P-1 Peak Elev=243.93' Storage=11,689 cf Inflow=6.37 cfs 13,069 cf
6.0" x 177.8' Culvert Outflow=0.40 cfs 12,295 cf

Pond P-4: P-4 Peak Elev=268.17' Storage=2,987 cf Inflow=0.30 cfs 2,987 cf
Outflow=0.00 cfs 0 cf

Pond WQB5: WQB #5 Peak Elev=249.75' Storage=18,902 cf Inflow=9.42 cfs 50,093 cf
Discarded=0.81 cfs 44,604 cf Primary=1.48 cfs 5,489 cf Outflow=2.29 cfs 50,093 cf

Pond WS 1: WS 1 Peak Elev=233.13' Storage=3,462 cf Inflow=7.14 cfs 21,913 cf
Outflow=4.89 cfs 20,997 cf

Link ACOE: ACOE Wetlands Inflow=35.70 cfs 85,787 cf
Primary=35.70 cfs 85,787 cf

Link QD: Quale Dr. CB Inflow=0.85 cfs 2,059 cf
Primary=0.85 cfs 2,059 cf

Total Runoff Area = 802,060 sf Runoff Volume = 195,318 cf Average Runoff Depth = 2.92"
83.40% Pervious Area = 668,909 sf 16.60% Impervious Area = 133,151 sf

Subcatchment 9-1: 9-1

Runoff = 4.94 cfs @ 12.07 hrs, Volume= 15,187 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
22,665	98	Paved parking & roofs
88,707	30	Woods, Good, HSG A
111,372	44	Weighted Average
88,707		Pervious Area
22,665		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.3	212	0.0470	1.08		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.3	60	0.3300	2.87		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.0	372	Total			

Subcatchment 9-2: 9-2

Runoff = 1.06 cfs @ 12.02 hrs, Volume= 2,644 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
4,200	98	Paved parking & roofs
9,903	30	Woods, Good, HSG A
14,103	50	Weighted Average
9,903		Pervious Area
4,200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	63	0.0317	0.14		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.9	37	0.3200	0.32		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
0.5	187	0.0850	5.92		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.7	287	Total			

Subcatchment 9-3: 9-3

Runoff = 1.23 cfs @ 12.07 hrs, Volume= 4,082 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,760	98	Paved parking & roofs
30,669	30	Woods, Good, HSG A
36,429	41	Weighted Average
30,669		Pervious Area
5,760		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0860	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	176	0.0860	1.47		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.7	276	Total			

Subcatchment 12-1: 12-1

Runoff = 0.30 cfs @ 12.23 hrs, Volume= 2,987 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
2,028	98	Paved parking & roofs
61,691	30	Woods, Good, HSG A
63,719	32	Weighted Average
61,691		Pervious Area
2,028		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0311	0.10		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
3.0	157	0.0311	0.88		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
19.1	257	Total			

Subcatchment 13-1: 13-1

Runoff = 1.33 cfs @ 12.11 hrs, Volume= 4,907 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,339	98	Paved roads w/curbs & sewers
36,461	30	Woods, Good, HSG A
43,800	41	Weighted Average
36,461		Pervious Area
7,339		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	122	0.0655	0.15		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.4	22	0.6363	0.26		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	144	Total			

Subcatchment 14-1: 14-1

Runoff = 1.00 cfs @ 12.08 hrs, Volume= 3,204 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
4,670	98	Paved parking & roofs
18,825	30	Woods, Good, HSG A
23,495	44	Weighted Average
18,825		Pervious Area
4,670		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	40	0.2900	0.21		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	60	0.0520	0.11		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	55	0.0520	1.14		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
1.1	85	0.0700	1.32		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
13.8	240	Total			

Subcatchment 14-2: 14-2

Runoff = 1.83 cfs @ 12.08 hrs, Volume= 5,228 cf, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
8,275	98	Paved parking & roofs
6,537	30	Woods, Good, HSG A
14,812	68	Weighted Average
6,537		Pervious Area
8,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	34	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
2.5	20	0.0470	0.13		**Sheet Flow, 2** Grass: Dense n= 0.240 P2= 4.00"
3.4	29	0.0470	0.14		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
3.4	15	0.0125	0.07		**Sheet Flow, 4** Grass: Dense n= 0.240 P2= 4.00"
0.6	65	0.1250	1.77		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
15.3	163	Total			

Subcatchment 14-3: 14-3

Runoff = 0.21 cfs @ 12.16 hrs, Volume= 1,015 cf, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
1,350	98	Paved parking & roofs
10,080	30	Woods, Good, HSG A
11,430	38	Weighted Average
10,080		Pervious Area
1,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0300	0.10		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	165	0.0750	1.37		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
18.3	265	Total			

Subcatchment 15-1: 15-1

Runoff = 12.51 cfs @ 12.08 hrs, Volume= 37,275 cf, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
22,495	98	Paved roads w/curbs & sewers
62,312	70	Woods, Good, HSG C
84,807	77	Weighted Average
62,312		Pervious Area
22,495		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0510	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	135	0.0510	1.13		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.7	104	0.1100	2.32		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
0.5	70	0.0140	2.40		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
16.4	409	Total			

Subcatchment 15-2: 15-2

Runoff = 0.08 cfs @ 12.14 hrs, Volume= 1,013 cf, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
29,183	30	Woods, Good, HSG A
29,183		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	103	0.1000	1.58		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.2	203	Total			

Subcatchment 15-3: 15-3

Runoff = 3.10 cfs @ 11.93 hrs, Volume= 7,186 cf, Depth> 7.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
11,120	98	Paved parking & roofs
11,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-4: 15-4

Runoff = 28.71 cfs @ 12.05 hrs, Volume= 75,801 cf, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
194,539	70	Woods, Good, HSG C
4,101	98	Paved roads w/curbs & sewers
198,640	71	Weighted Average
194,539		Pervious Area
4,101		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	87	0.1400	1.87		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
2.7	197	0.0600	1.22		**Shallow Concentrated Flow, 3**
					Woodland Kv= 5.0 fps
12.9	384	Total			

Subcatchment 15-5: 15-5

Runoff = 3.71 cfs @ 11.93 hrs, Volume= 8,584 cf, Depth> 7.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
13,283	98	Paved parking & roofs
13,283		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.73		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
2.0	408	0.0270	3.34		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
3.0	508	Total			

Subcatchment 15-6: 15-6

Runoff = 2.84 cfs @ 11.90 hrs, Volume= 6,021 cf, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
8,042	98	Paved parking & roofs
2,216	72	Woods/grass comb., Good, HSG C
10,258	92	Weighted Average
2,216		Pervious Area
8,042		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	26	0.0150	2.49		**Shallow Concentrated Flow, 26** Paved Kv= 20.3 fps
1.4	126	Total			

Subcatchment 16-1: 16-1

Runoff = 3.02 cfs @ 12.03 hrs, Volume= 7,501 cf, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,550	98	Paved parking & roofs
10,277	32	Woods/grass comb., Good, HSG A
10,303	70	Woods, Good, HSG C
26,130	61	Weighted Average
20,580		Pervious Area
5,550		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0880	0.16		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	36	0.0888	1.49		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
11.0	136	Total			

Subcatchment 16-2: 16-2

Runoff = 0.89 cfs @ 11.99 hrs, Volume= 1,933 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
3,076	98	Paved roads w/curbs & sewers
3,246	30	Woods, Good, HSG A
6,322	63	Weighted Average
3,246		Pervious Area
3,076		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-3: 16-3

Runoff = 1.04 cfs @ 11.99 hrs, Volume= 2,239 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
3,586	98	Paved roads w/curbs & sewers
3,737	30	Woods, Good, HSG A
7,323	63	Weighted Average
3,737		Pervious Area
3,586		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0200	0.11		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"

Subcatchment 16-4: 16-4

Runoff = 2.14 cfs @ 12.10 hrs, Volume= 8,512 cf, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,611	98	Paved parking & roofs
10,770	70	Woods, Good, HSG C
79,453	30	Woods, Good, HSG A
95,834	38	Weighted Average

90,223		Pervious Area
5,611		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	58	0.0680	1.30		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.5	65	0.1800	2.12		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
13.6	223	Total			

Pond 23: CB#23

Inflow Area = 50,532 sf, Inflow Depth = 1.60" for 100 Year event
Inflow = 2.23 cfs @ 12.05 hrs, Volume= 6,726 cf
Outflow = 2.23 cfs @ 12.05 hrs, Volume= 6,726 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.23 cfs @ 12.05 hrs, Volume= 6,726 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 243.19' @ 12.05 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.22 cfs @ 12.05 hrs HW=243.19' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.22 cfs @ 2.93 fps)

Pond 24: CB#24

Inflow Area = 36,429 sf, Inflow Depth = 1.34" for 100 Year event
Inflow = 1.23 cfs @ 12.07 hrs, Volume= 4,082 cf
Outflow = 1.23 cfs @ 12.07 hrs, Volume= 4,082 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.07 hrs, Volume= 4,082 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 243.38' @ 12.07 hrs
Flood Elev= 245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	242.85'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 242.45' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.19 cfs @ 12.07 hrs HW=243.37' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.19 cfs @ 2.46 fps)

Pond 26: CB#26

Inflow Area = 119,468 sf, Inflow Depth > 4.93" for 100 Year event
Inflow = 9.42 cfs @ 11.94 hrs, Volume= 49,080 cf
Outflow = 9.42 cfs @ 11.94 hrs, Volume= 49,080 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.42 cfs @ 11.94 hrs, Volume= 49,080 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 252.62' @ 11.94 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.45'	**15.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.00' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=9.30 cfs @ 11.94 hrs HW=252.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.30 cfs @ 7.58 fps)

Pond 27: CB#27

Inflow Area = 108,348 sf, Inflow Depth > 5.75" for 100 Year event
Inflow = 13.74 cfs @ 11.97 hrs, Volume= 51,880 cf
Outflow = 13.74 cfs @ 11.97 hrs, Volume= 51,880 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.44 cfs @ 11.97 hrs, Volume= 41,894 cf
Secondary = 7.30 cfs @ 11.97 hrs, Volume= 9,986 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 253.05' @ 11.97 hrs
Flood Elev= 252.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	249.65'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 249.45' S= 0.0100 '/' Cc= 0.900 n= 0.010
#2	Secondary	250.90'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.50' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=6.37 cfs @ 11.97 hrs HW=252.99' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.37 cfs @ 8.11 fps)

Secondary OutFlow Max=7.14 cfs @ 11.97 hrs HW=252.98' (Free Discharge)
└**2=Culvert** (Inlet Controls 7.14 cfs @ 5.82 fps)

Pond 28: CB#28

Inflow Area = 95,065 sf, Inflow Depth = 5.47" for 100 Year event
Inflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf
Outflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 266.52' @ 12.08 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.80'	**24.0" x 150.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.30' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=12.66 cfs @ 12.08 hrs HW=266.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.66 cfs @ 4.44 fps)

Pond 29: CB#29

Inflow Area = 84,807 sf, Inflow Depth = 5.27" for 100 Year event
Inflow = 12.51 cfs @ 12.08 hrs, Volume= 37,275 cf
Outflow = 12.51 cfs @ 12.08 hrs, Volume= 37,275 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.51 cfs @ 12.08 hrs, Volume= 37,275 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 267.91' @ 12.08 hrs
Flood Elev= 267.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.80' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=12.32 cfs @ 12.08 hrs HW=267.85' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.32 cfs @ 6.97 fps)

Pond BR-2: Bio Retention Zone 2

Inflow Area = 43,800 sf, Inflow Depth = 1.34" for 100 Year event
Inflow = 1.33 cfs @ 12.11 hrs, Volume= 4,907 cf
Outflow = 0.12 cfs @ 14.13 hrs, Volume= 4,907 cf, Atten= 91%, Lag= 121.2 min
Discarded = 0.12 cfs @ 14.13 hrs, Volume= 4,907 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 274.20' @ 14.13 hrs Surf.Area= 2,499 sf Storage= 1,822 cf

Plug-Flow detention time= 186.2 min calculated for 4,907 cf (100% of inflow)
Center-of-Mass det. time= 186.1 min (1,095.1 - 908.9)

Volume	Invert	Avail.Storage	Storage Description
#1	273.50'	9,093 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
273.50	1,870	0	0
274.00	2,100	993	993
276.00	6,000	8,100	9,093

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.12 cfs @ 14.13 hrs HW=274.20' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Pond BR-3: Bio Retention Zone 3

Inflow Area = 23,495 sf, Inflow Depth = 1.64" for 100 Year event
Inflow = 1.00 cfs @ 12.08 hrs, Volume= 3,204 cf
Outflow = 0.37 cfs @ 12.32 hrs, Volume= 3,204 cf, Atten= 63%, Lag= 14.3 min
Discarded = 0.14 cfs @ 12.32 hrs, Volume= 2,905 cf
Primary = 0.23 cfs @ 12.32 hrs, Volume= 299 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 266.57' @ 12.32 hrs Surf.Area= 1,501 sf Storage= 745 cf

Plug-Flow detention time= 35.5 min calculated for 3,200 cf (100% of inflow)
Center-of-Mass det. time= 35.5 min (930.1 - 894.6)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	1,457 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	1,106	0	0
266.50	1,445	638	638
267.00	1,831	819	1,457

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.14 cfs @ 12.32 hrs HW=266.57' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.22 cfs @ 12.32 hrs HW=266.57' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 0.62 fps)

Pond BR-4: Bio Retention Zone 4

Inflow Area = 38,307 sf, Inflow Depth = 1.73" for 100 Year event
Inflow = 1.83 cfs @ 12.08 hrs, Volume= 5,526 cf
Outflow = 0.95 cfs @ 12.29 hrs, Volume= 5,526 cf, Atten= 48%, Lag= 12.8 min
Discarded = 0.26 cfs @ 12.29 hrs, Volume= 4,483 cf
Primary = 0.68 cfs @ 12.29 hrs, Volume= 1,044 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 258.65' @ 12.29 hrs Surf.Area= 2,813 sf Storage= 1,485 cf

Plug-Flow detention time= 32.8 min calculated for 5,521 cf (100% of inflow)
Center-of-Mass det. time= 32.8 min (862.6 - 829.8)

Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	2,675 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
258.00	2,100	0	0
258.50	2,300	1,100	1,100
259.00	4,000	1,575	2,675

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	258.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.26 cfs @ 12.29 hrs HW=258.65' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.68 cfs @ 12.29 hrs HW=258.65' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.68 cfs @ 0.91 fps)

Pond BR-5: Bio Retention Zone 5

Inflow Area = 7,323 sf, Inflow Depth = 3.67" for 100 Year event
Inflow = 1.04 cfs @ 11.99 hrs, Volume= 2,239 cf
Outflow = 0.95 cfs @ 12.04 hrs, Volume= 2,239 cf, Atten= 8%, Lag= 3.1 min
Discarded = 0.05 cfs @ 12.04 hrs, Volume= 1,597 cf
Primary = 0.90 cfs @ 12.04 hrs, Volume= 642 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.57' @ 12.04 hrs Surf.Area= 1,067 sf Storage= 505 cf

Plug-Flow detention time= 66.2 min calculated for 2,236 cf (100% of inflow)
Center-of-Mass det. time= 66.1 min (903.7 - 837.6)

Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
261.00	745	0	0
261.50	1,000	436	436
262.00	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	261.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.04 hrs HW=261.56' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.86 cfs @ 12.04 hrs HW=261.56' (Free Discharge)
2=Orifice/Grate (Weir Controls 0.86 cfs @ 0.83 fps)

Pond BR-6: Bio Retention Zone 6

Inflow Area = 6,322 sf, Inflow Depth = 3.67" for 100 Year event
Inflow = 0.89 cfs @ 11.99 hrs, Volume= 1,933 cf
Outflow = 0.88 cfs @ 12.06 hrs, Volume= 1,933 cf, Atten= 2%, Lag= 4.0 min
Discarded = 0.05 cfs @ 12.06 hrs, Volume= 1,479 cf
Primary = 0.83 cfs @ 12.06 hrs, Volume= 453 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.06' @ 12.06 hrs Surf.Area= 1,063 sf Storage= 502 cf

Plug-Flow detention time= 68.5 min calculated for 1,931 cf (100% of inflow)
Center-of-Mass det. time= 68.4 min (906.0 - 837.6)

Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	1,061 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.50	745	0	0
256.00	1,000	436	436
256.50	1,500	625	1,061

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	256.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.06 hrs HW=256.06' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.77 cfs @ 12.06 hrs HW=256.06' (Free Discharge)
2=Orifice/Grate (Weir Controls 0.77 cfs @ 0.80 fps)

Pond BR-7: Bio Retention Zone 7

Inflow Area = 26,130 sf, Inflow Depth = 3.44" for 100 Year event
Inflow = 3.02 cfs @ 12.03 hrs, Volume= 7,501 cf
Outflow = 2.80 cfs @ 12.07 hrs, Volume= 7,501 cf, Atten= 7%, Lag= 2.5 min
Discarded = 0.11 cfs @ 12.07 hrs, Volume= 4,038 cf
Primary = 2.69 cfs @ 12.07 hrs, Volume= 3,462 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 256.86' @ 12.07 hrs Surf.Area= 1,545 sf Storage= 1,197 cf

Plug-Flow detention time= 41.7 min calculated for 7,493 cf (100% of inflow)
Center-of-Mass det. time= 41.7 min (886.9 - 845.3)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	1,413 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	1,250	0	0
256.50	1,400	663	663
257.00	1,600	750	1,413

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	256.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.11 cfs @ 12.07 hrs HW=256.85' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=2.59 cfs @ 12.07 hrs HW=256.85' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.59 cfs @ 1.46 fps)

Pond MH7: MH#7

Inflow Area = 95,065 sf, Inflow Depth = 5.47" for 100 Year event
Inflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf
Outflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 255.72' @ 12.08 hrs
Flood Elev= 257.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	254.00'	**24.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 250.00' S= 0.0381 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=12.66 cfs @ 12.08 hrs HW=255.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.66 cfs @ 4.44 fps)

Pond MH8: MH#8

Inflow Area = 95,065 sf, Inflow Depth = 5.47" for 100 Year event
Inflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf
Outflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 261.72' @ 12.08 hrs
Flood Elev= 263.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	260.00'	**24.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0750 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=12.66 cfs @ 12.08 hrs HW=261.70' (Free Discharge)
1=Culvert (Inlet Controls 12.66 cfs @ 4.44 fps)

Pond MH9: MH#9

Inflow Area = 95,065 sf, Inflow Depth = 5.47" for 100 Year event
Inflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf
Outflow = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.86 cfs @ 12.08 hrs, Volume= 43,296 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 265.02' @ 12.08 hrs
Flood Elev= 268.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.30'	**24.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.00' S= 0.0471 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=12.66 cfs @ 12.08 hrs HW=265.00' (Free Discharge)
1=Culvert (Inlet Controls 12.66 cfs @ 4.44 fps)

Pond P-1: P-1

Inflow Area = 135,609 sf, Inflow Depth = 1.16" for 100 Year event
Inflow = 6.37 cfs @ 12.06 hrs, Volume= 13,069 cf
Outflow = 0.40 cfs @ 13.34 hrs, Volume= 12,295 cf, Atten= 94%, Lag= 76.8 min
Primary = 0.40 cfs @ 13.34 hrs, Volume= 12,295 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 242.90' Surf.Area= 5,443 sf Storage= 5,443 cf
Peak Elev= 243.93' @ 13.34 hrs Surf.Area= 11,689 sf Storage= 11,689 cf (6,246 cf above start)

Plug-Flow detention time= 531.2 min calculated for 6,852 cf (52% of inflow)
Center-of-Mass det. time= 218.4 min (1,078.3 - 859.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	28,369 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	0	0	0
244.00	12,096	12,096	12,096
245.00	20,450	16,273	28,369

Device	Routing	Invert	Outlet Devices
#1	Primary	242.99'	**6.0" x 177.8' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 242.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.40 cfs @ 13.34 hrs HW=243.93' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.40 cfs @ 2.02 fps)

Pond P-4: P-4

Inflow Area = 63,719 sf, Inflow Depth = 0.56" for 100 Year event
Inflow = 0.30 cfs @ 12.23 hrs, Volume= 2,987 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 268.17' @ 25.15 hrs Surf.Area= 2,466 sf Storage= 2,987 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	264.00'	69,194 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
264.00	0	0	0
266.00	134	134	134
268.00	1,504	1,638	1,772
270.00	12,959	14,463	16,235
272.00	40,000	52,959	69,194

Pond WQB5: WQB #5

Inflow Area = 148,651 sf, Inflow Depth > 4.04" for 100 Year event
Inflow = 9.42 cfs @ 11.94 hrs, Volume= 50,093 cf
Outflow = 2.29 cfs @ 12.63 hrs, Volume= 50,093 cf, Atten= 76%, Lag= 41.2 min
Discarded = 0.81 cfs @ 12.63 hrs, Volume= 44,604 cf
Primary = 1.48 cfs @ 12.63 hrs, Volume= 5,489 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 249.75' @ 12.63 hrs Surf.Area= 8,788 sf Storage= 18,902 cf

Plug-Flow detention time= 201.4 min calculated for 50,092 cf (100% of inflow)
Center-of-Mass det. time= 201.3 min (1,007.7 - 806.4)

Volume	Invert	Avail.Storage	Storage Description
#1	247.00'	21,143 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
247.00	3,500	0	0
248.00	6,888	5,194	5,194
250.00	9,061	15,949	21,143

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	249.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.81 cfs @ 12.63 hrs HW=249.75' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.81 cfs)

Primary OutFlow Max=1.47 cfs @ 12.63 hrs HW=249.75' (Free Discharge)
↑└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.47 cfs @ 1.19 fps)

Pond WS 1: WS 1

Inflow Area = 161,904 sf, Inflow Depth = 1.62" for 100 Year event
Inflow = 7.14 cfs @ 12.06 hrs, Volume= 21,913 cf
Outflow = 4.89 cfs @ 12.17 hrs, Volume= 20,997 cf, Atten= 32%, Lag= 6.2 min
Primary = 4.89 cfs @ 12.17 hrs, Volume= 20,997 cf

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 233.13' @ 12.17 hrs Surf.Area= 3,158 sf Storage= 3,462 cf

Plug-Flow detention time= 47.3 min calculated for 20,975 cf (96% of inflow)
Center-of-Mass det. time= 25.1 min (918.6 - 893.4)

Volume	Invert	Avail.Storage	Storage Description
#1	232.00'	15,120 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
232.00	2,270	0	0
234.00	3,837	6,107	6,107
236.00	5,176	9,013	15,120

Device	Routing	Invert	Outlet Devices
#1	Primary	230.80'	**18.0" x 130.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 229.50' S= 0.0100 '/' Cc= 0.900 n= 0.021 Corrugated metal
#2	Device 1	232.30'	**2.00' W x 1.00' H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.78 cfs @ 12.17 hrs HW=233.12' (Free Discharge)
└**1=Culvert** (Passes 4.78 cfs of 7.26 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 4.78 cfs @ 2.91 fps)

Link ACOE: ACOE Wetlands

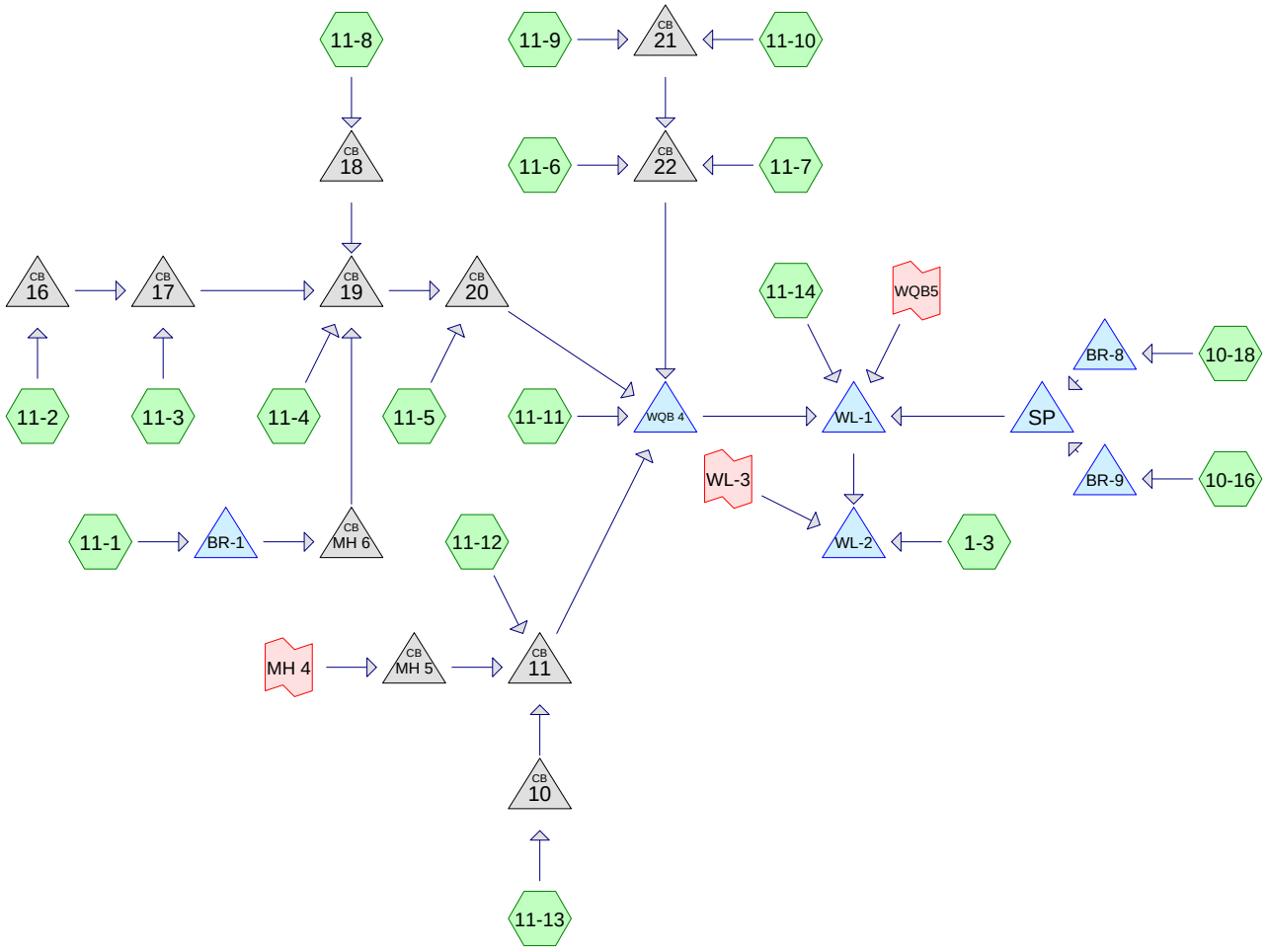
Inflow Area = 198,640 sf, Inflow Depth = 5.18" for 100 Year event
Inflow = 35.70 cfs @ 12.05 hrs, Volume= 85,787 cf
Primary = 35.70 cfs @ 12.05 hrs, Volume= 85,787 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Link QD: Quale Dr. CB

Inflow Area = 49,737 sf, Inflow Depth = 0.50" for 100 Year event
Inflow = 0.85 cfs @ 12.27 hrs, Volume= 2,059 cf
Primary = 0.85 cfs @ 12.27 hrs, Volume= 2,059 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Drainage Diagram for E03 142 Post Development 2
Prepared by Medenbach & Eggers 9/25/2007

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcats)
208,262	30	Woods, Good, HSG A (1-3,11-14)
122,952	32	Woods/grass comb., Good, HSG A (10-16,10-18,11-1,11-10,11-11,11-12,11-13,11-2,11-3,1
353,571	70	Woods, Good, HSG C (1-3,11-14)
113,156	98	Paved parking & roofs (10-16,10-18,11-1,11-11,11-12,11-13,11-3,11-4,11-5,11-6,11-7,11-8
12,480	98	Paved roads w/curbs & sewers (11-10,11-2)
810,421		

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-3: 1-3 Runoff Area=368,255 sf Runoff Depth=0.28"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=53 Runoff=1.80 cfs 8,633 cf

Subcatchment 10-16: 10-16 Runoff Area=22,183 sf Runoff Depth=1.43"
Flow Length=132' Slope=0.0300 '/' Tc=1.1 min CN=77 Runoff=1.57 cfs 2,644 cf

Subcatchment 10-18: 10-18 Runoff Area=21,690 sf Runoff Depth=1.71"
Flow Length=138' Slope=0.0150 '/' Tc=1.5 min CN=81 Runoff=1.79 cfs 3,088 cf

Subcatchment 11-1: 11-1 Runoff Area=34,177 sf Runoff Depth=0.25"
Flow Length=133' Slope=0.0600 '/' Tc=12.8 min CN=52 Runoff=0.10 cfs 716 cf

Subcatchment 11-10: 11-10 Runoff Area=12,079 sf Runoff Depth=1.01"
Flow Length=160' Slope=0.0135 '/' Tc=1.7 min CN=70 Runoff=0.58 cfs 1,015 cf

Subcatchment 11-11: 11-11 Runoff Area=50,602 sf Runoff Depth=0.04"
Flow Length=227' Tc=14.9 min CN=42 Runoff=0.00 cfs 158 cf

Subcatchment 11-12: 11-12 Runoff Area=16,964 sf Runoff Depth=1.94"
Flow Length=266' Slope=0.0600 '/' Tc=1.3 min CN=84 Runoff=1.58 cfs 2,738 cf

Subcatchment 11-13: 11-13 Runoff Area=35,243 sf Runoff Depth=0.71"
Flow Length=239' Tc=14.3 min CN=64 Runoff=0.64 cfs 2,071 cf

Subcatchment 11-14: 11-14 Runoff Area=193,578 sf Runoff Depth=0.49"
Flow Length=300' Tc=16.5 min CN=59 Runoff=1.85 cfs 7,929 cf

Subcatchment 11-2: 11-2 Runoff Area=8,345 sf Runoff Depth=1.30"
Flow Length=167' Tc=7.3 min CN=75 Runoff=0.42 cfs 905 cf

Subcatchment 11-3: 11-3 Runoff Area=5,942 sf Runoff Depth=2.10"
Flow Length=100' Slope=0.0400 '/' Tc=0.8 min CN=86 Runoff=0.60 cfs 1,039 cf

Subcatchment 11-4: 11-4 Runoff Area=6,068 sf Runoff Depth=2.10"
Flow Length=117' Slope=0.0050 '/' Tc=2.1 min CN=86 Runoff=0.59 cfs 1,061 cf

Subcatchment 11-5: 11-5 Runoff Area=9,755 sf Runoff Depth=0.62"
Flow Length=203' Tc=12.9 min CN=62 Runoff=0.16 cfs 500 cf

Subcatchment 11-6: 11-6 Runoff Area=1,840 sf Runoff Depth=3.27"
Flow Length=100' Tc=0.9 min CN=98 Runoff=0.24 cfs 501 cf

Subcatchment 11-7: 11-7 Runoff Area=2,501 sf Runoff Depth=3.27"
Flow Length=120' Slope=0.0135 '/' Tc=1.4 min CN=98 Runoff=0.33 cfs 681 cf

Subcatchment 11-8: 11-8 Runoff Area=10,903 sf Runoff Depth=1.64"
Flow Length=163' Tc=8.5 min CN=80 Runoff=0.67 cfs 1,487 cf

Subcatchment 11-9: 11-9 Runoff Area=10,296 sf Runoff Depth=1.57"
Flow Length=205' Tc=9.2 min CN=79 Runoff=0.59 cfs 1,344 cf

Pond 10: CB 10 Peak Elev=259.77' Inflow=0.64 cfs 2,071 cf
12.0" x 20.0' Culvert Outflow=0.64 cfs 2,071 cf

Pond 11: CB 11 Peak Elev=259.82' Inflow=1.78 cfs 4,814 cf
24.0" x 35.0' Culvert Outflow=1.78 cfs 4,814 cf

Pond 16: CB 16 Peak Elev=267.57' Inflow=0.42 cfs 905 cf
12.0" x 105.0' Culvert Outflow=0.42 cfs 905 cf

Pond 17: CB 17 Peak Elev=265.66' Inflow=0.88 cfs 1,944 cf
15.0" x 120.0' Culvert Outflow=0.88 cfs 1,944 cf

Pond 18: CB 18 Peak Elev=265.18' Inflow=0.67 cfs 1,487 cf
12.0" x 20.0' Culvert Outflow=0.67 cfs 1,487 cf

Pond 19: CB 19 Peak Elev=265.17' Inflow=1.92 cfs 4,492 cf
24.0" x 100.0' Culvert Outflow=1.92 cfs 4,492 cf

Pond 20: (new Pond) Peak Elev=264.08' Inflow=1.97 cfs 4,992 cf
24.0" x 75.0' Culvert Outflow=1.97 cfs 4,992 cf

Pond 21: CB 21 Peak Elev=261.70' Inflow=1.00 cfs 2,358 cf
12.0" x 20.0' Culvert Outflow=1.00 cfs 2,358 cf

Pond 22: CB 22 Peak Elev=261.67' Inflow=1.52 cfs 3,540 cf
15.0" x 40.0' Culvert Outflow=1.52 cfs 3,540 cf

Pond BR-1: Bio Retention Zone #1 Peak Elev=269.01' Storage=18 cf Inflow=0.10 cfs 716 cf
Discarded=0.08 cfs 716 cf Primary=0.00 cfs 0 cf Outflow=0.08 cfs 716 cf

Pond BR-8: Bio Retention Zone 8 Peak Elev=255.48' Storage=1,249 cf Inflow=1.79 cfs 3,088 cf
Discarded=0.13 cfs 3,088 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 3,088 cf

Pond BR-9: Bio Retention Zone 9 Peak Elev=257.32' Storage=951 cf Inflow=1.57 cfs 2,644 cf
Discarded=0.15 cfs 2,644 cf Primary=0.00 cfs 0 cf Outflow=0.15 cfs 2,644 cf

Pond MH 5: MH 5 Peak Elev=268.09' Inflow=0.05 cfs 6 cf
18.0" x 215.0' Culvert Outflow=0.05 cfs 6 cf

Pond MH 6: MH 6 Peak Elev=265.00' Inflow=0.00 cfs 0 cf
12.0" x 85.0' Culvert Outflow=0.00 cfs 0 cf

Pond SP: Subsurface Pond Peak Elev=250.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond WL-1: WL-1 Peak Elev=243.06' Storage=2,097 cf Inflow=2.03 cfs 21,282 cf
Outflow=0.67 cfs 21,272 cf

Pond WL-2: WL-2 Peak Elev=242.00' Storage=115 cf Inflow=1.99 cfs 42,532 cf
Outflow=1.94 cfs 42,532 cf

Pond WQB 4: WQB #4 Peak Elev=257.92' Storage=15,695 cf Inflow=5.25 cfs 13,504 cf
Outflow=0.21 cfs 13,354 cf

Link M 1 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4 Inflow=0.05 cfs 6 cf
Primary=0.05 cfs 6 cf

Link 1 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3 Inflow=0.29 cfs 12,627 cf
Primary=0.29 cfs 12,627 cf

Link WQB 1 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 810,421 sf Runoff Volume = 36,509 cf Average Runoff Depth = 0.54"
84.50% Pervious Area = 684,785 sf 15.50% Impervious Area = 125,636 sf

Subcatchment 1-3: 1-3

Runoff = 1.80 cfs @ 12.05 hrs, Volume= 8,633 cf, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
214,128	70	Woods, Good, HSG C
368,255	53	Weighted Average
368,255		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 10-16: 10-16

Runoff = 1.57 cfs @ 11.92 hrs, Volume= 2,644 cf, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,170	32	Woods/grass comb., Good, HSG A
15,013	98	Paved parking & roofs
22,183	77	Weighted Average
7,170		Pervious Area
15,013		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	32	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.1	132	Total			

Subcatchment 10-18: 10-18

Runoff = 1.79 cfs @ 11.92 hrs, Volume= 3,088 cf, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,600	32	Woods/grass comb., Good, HSG A
16,090	98	Paved parking & roofs
21,690	81	Weighted Average
5,600		Pervious Area
16,090		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.3	38	0.0150	2.49		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	138	Total			

Subcatchment 11-1: 11-1

Runoff = 0.10 cfs @ 12.12 hrs, Volume= 716 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
10,138	98	Paved parking & roofs
24,039	32	Woods/grass comb., Good, HSG A
34,177	52	Weighted Average
24,039		Pervious Area
10,138		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.8	133	Total			

Subcatchment 11-10: 11-10

Runoff = 0.58 cfs @ 11.93 hrs, Volume= 1,015 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,995	98	Paved roads w/curbs & sewers
5,084	32	Woods/grass comb., Good, HSG A
12,079	70	Weighted Average
5,084		Pervious Area
6,995		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.4	60	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.7	160	Total			

Subcatchment 11-11: 11-11

Runoff = 0.00 cfs @ 18.06 hrs, Volume= 158 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,625	98	Paved parking & roofs
42,977	32	Woods/grass comb., Good, HSG A
50,602	42	Weighted Average
42,977		Pervious Area
7,625		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0480	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	66	0.0480	1.10		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.4	61	0.2200	2.35		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
14.9	227	Total			

Subcatchment 11-12: 11-12

Runoff = 1.58 cfs @ 11.92 hrs, Volume= 2,738 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
13,321	98	Paved parking & roofs
3,643	32	Woods/grass comb., Good, HSG A
16,964	84	Weighted Average
3,643		Pervious Area
13,321		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.6	166	0.0600	4.97		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	266	Total			

Subcatchment 11-13: 11-13

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,071 cf, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
17,129	98	Paved parking & roofs
18,114	32	Woods/grass comb., Good, HSG A
35,243	64	Weighted Average
18,114		Pervious Area
17,129		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0540	0.13		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.0540	1.16		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
0.2	37	0.2700	3.64		**Shallow Concentrated Flow, 3**
					Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0050	1.44		**Shallow Concentrated Flow, 4**
					Paved Kv= 20.3 fps
14.3	239	Total			

Subcatchment 11-14: 11-14

Runoff = 1.85 cfs @ 12.12 hrs, Volume= 7,929 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
54,135	30	Woods, Good, HSG A
139,443	70	Woods, Good, HSG C
193,578	59	Weighted Average
193,578		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 11-2: 11-2

Runoff = 0.42 cfs @ 11.99 hrs, Volume= 905 cf, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,485	98	Paved roads w/curbs & sewers
2,860	32	Woods/grass comb., Good, HSG A
8,345	75	Weighted Average
2,860		Pervious Area
5,485		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	70	0.0570	0.18		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.3	30	0.0570	1.84		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	67	0.0590	1.70		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
7.3	167	Total			

Subcatchment 11-3: 11-3

Runoff = 0.60 cfs @ 11.91 hrs, Volume= 1,039 cf, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
4,846	98	Paved parking & roofs
1,096	32	Woods/grass comb., Good, HSG A
5,942	86	Weighted Average
1,096		Pervious Area
4,846		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"

Subcatchment 11-4: 11-4

Runoff = 0.59 cfs @ 11.93 hrs, Volume= 1,061 cf, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
5,008	98	Paved parking & roofs
1,060	32	Woods/grass comb., Good, HSG A
6,068	86	Weighted Average
1,060		Pervious Area
5,008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.88		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	17	0.0050	1.44		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
2.1	117	Total			

Subcatchment 11-5: 11-5

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 500 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
4,368	98	Paved parking & roofs
5,387	32	Woods/grass comb., Good, HSG A
9,755	62	Weighted Average
5,387		Pervious Area
4,368		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0680	0.14		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	16	0.0680	1.83		**Shallow Concentrated Flow, 2**
					Short Grass Pasture Kv= 7.0 fps
1.0	87	0.0050	1.44		**Shallow Concentrated Flow, 3**
					Paved Kv= 20.3 fps
12.9	203	Total			

Subcatchment 11-6: 11-6

Runoff = 0.24 cfs @ 11.91 hrs, Volume= 501 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
1,840	98	Paved parking & roofs
1,840		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.7	70	0.0275	1.63		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.9	100	Total			

Subcatchment 11-7: 11-7

Runoff = 0.33 cfs @ 11.92 hrs, Volume= 681 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
2,501	98	Paved parking & roofs
2,501		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.1	20	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	120	Total			

Subcatchment 11-8: 11-8

Runoff = 0.67 cfs @ 12.00 hrs, Volume= 1,487 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,942	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,903	80	Weighted Average
2,961		Pervious Area

7,942 Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.4	70	0.0050	0.82		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	63	0.0050	1.44		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
8.5	163	Total			

Subcatchment 11-9: 11-9

Runoff = 0.59 cfs @ 12.01 hrs, Volume= 1,344 cf, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,335	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,296	79	Weighted Average
2,961		Pervious Area
7,335		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	36	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.3	64	0.0050	0.81		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	105	0.0275	3.37		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.2	205	Total			

Pond 10: CB 10

Inflow Area = 35,243 sf, Inflow Depth = 0.71" for 1 Year event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 2,071 cf
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 2,071 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.09 hrs, Volume= 2,071 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 259.77' @ 12.09 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.30'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.20' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.64 cfs @ 12.09 hrs HW=259.77' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.64 cfs @ 2.62 fps)

Pond 11: CB 11

Inflow Area = 52,207 sf, Inflow Depth = 1.11" for 1 Year event
Inflow = 1.78 cfs @ 11.92 hrs, Volume= 4,814 cf
Outflow = 1.78 cfs @ 11.92 hrs, Volume= 4,814 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 11.92 hrs, Volume= 4,814 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 259.82' @ 11.92 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.20'	**24.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.02' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.78 cfs @ 11.92 hrs HW=259.82' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.78 cfs @ 3.22 fps)

Pond 16: CB 16

Inflow Area = 8,345 sf, Inflow Depth = 1.30" for 1 Year event
Inflow = 0.42 cfs @ 11.99 hrs, Volume= 905 cf
Outflow = 0.42 cfs @ 11.99 hrs, Volume= 905 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 11.99 hrs, Volume= 905 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 267.57' @ 11.99 hrs
Flood Elev= 269.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.25'	**12.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.20' S= 0.0195 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.42 cfs @ 11.99 hrs HW=267.57' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.42 cfs @ 1.93 fps)

Pond 17: CB 17

Inflow Area = 14,287 sf, Inflow Depth = 1.63" for 1 Year event
Inflow = 0.88 cfs @ 11.91 hrs, Volume= 1,944 cf
Outflow = 0.88 cfs @ 11.91 hrs, Volume= 1,944 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 11.91 hrs, Volume= 1,944 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.66' @ 11.91 hrs
Flood Elev= 267.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.87 cfs @ 11.91 hrs HW=265.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.87 cfs @ 3.19 fps)

Pond 18: CB 18

Inflow Area = 10,903 sf, Inflow Depth = 1.64" for 1 Year event
Inflow = 0.67 cfs @ 12.00 hrs, Volume= 1,487 cf
Outflow = 0.67 cfs @ 12.00 hrs, Volume= 1,487 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.00 hrs, Volume= 1,487 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.18' @ 12.00 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.70'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.67 cfs @ 12.00 hrs HW=265.18' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.67 cfs @ 2.65 fps)

Pond 19: CB 19

Inflow Area = 65,435 sf, Inflow Depth = 0.82" for 1 Year event
Inflow = 1.92 cfs @ 11.93 hrs, Volume= 4,492 cf
Outflow = 1.92 cfs @ 11.93 hrs, Volume= 4,492 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 11.93 hrs, Volume= 4,492 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.17' @ 11.93 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.60'	**24.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.50' S= 0.0110 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.92 cfs @ 11.93 hrs HW=265.17' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.92 cfs @ 2.58 fps)

Pond 20: (new Pond)

Inflow Area = 75,190 sf, Inflow Depth = 0.80" for 1 Year event
Inflow = 1.97 cfs @ 11.93 hrs, Volume= 4,992 cf
Outflow = 1.97 cfs @ 11.93 hrs, Volume= 4,992 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.97 cfs @ 11.93 hrs, Volume= 4,992 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 264.08' @ 11.93 hrs
Flood Elev= 266.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.50'	**24.0" x 75.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.25' S= 0.0300 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.96 cfs @ 11.93 hrs HW=264.08' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.96 cfs @ 2.59 fps)

Pond 21: CB 21

Inflow Area = 22,375 sf, Inflow Depth = 1.26" for 1 Year event
Inflow = 1.00 cfs @ 11.94 hrs, Volume= 2,358 cf
Outflow = 1.00 cfs @ 11.94 hrs, Volume= 2,358 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 11.94 hrs, Volume= 2,358 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 261.70' @ 11.94 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.00 cfs @ 11.94 hrs HW=261.70' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.00 cfs @ 2.90 fps)

Pond 22: CB 22

Inflow Area = 26,716 sf, Inflow Depth = 1.59" for 1 Year event
Inflow = 1.52 cfs @ 11.92 hrs, Volume= 3,540 cf
Outflow = 1.52 cfs @ 11.92 hrs, Volume= 3,540 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 11.92 hrs, Volume= 3,540 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 261.67' @ 11.92 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.00'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.80' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.52 cfs @ 11.92 hrs HW=261.67' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.52 cfs @ 3.30 fps)

Pond BR-1: Bio Retention Zone #1

Inflow Area = 34,177 sf, Inflow Depth = 0.25" for 1 Year event
Inflow = 0.10 cfs @ 12.12 hrs, Volume= 716 cf
Outflow = 0.08 cfs @ 12.18 hrs, Volume= 716 cf, Atten= 13%, Lag= 3.6 min
Discarded = 0.08 cfs @ 12.18 hrs, Volume= 716 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 269.01' @ 12.18 hrs Surf.Area= 2,404 sf Storage= 18 cf

Plug-Flow detention time= 3.6 min calculated for 716 cf (100% of inflow)
Center-of-Mass det. time= 3.6 min (973.7 - 970.1)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	2,847 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.00	2,397	0	0
269.50	2,841	1,310	1,310
270.00	3,310	1,538	2,847

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Device 3	269.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Primary	265.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0051 '/' Cc= 0.900 n= 0.010

Discarded OutFlow Max=0.11 cfs @ 12.18 hrs HW=269.01' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=269.00' (Free Discharge)
└**3=Culvert** (Passes 0.00 cfs of 5.33 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond BR-8: Bio Retention Zone 8

Inflow Area = 21,690 sf, Inflow Depth = 1.71" for 1 Year event
Inflow = 1.79 cfs @ 11.92 hrs, Volume= 3,088 cf
Outflow = 0.13 cfs @ 12.45 hrs, Volume= 3,088 cf, Atten= 93%, Lag= 31.6 min
Discarded = 0.13 cfs @ 12.45 hrs, Volume= 3,088 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 255.48' @ 12.45 hrs Surf.Area= 2,848 sf Storage= 1,249 cf

Plug-Flow detention time= 81.3 min calculated for 3,088 cf (100% of inflow)
Center-of-Mass det. time= 81.3 min (909.0 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	255.00'	2,783 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.00	2,390	0	0
255.50	2,870	1,315	1,315
256.00	3,000	1,468	2,783

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	255.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.13 cfs @ 12.45 hrs HW=255.48' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=255.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond BR-9: Bio Retention Zone 9

Inflow Area = 22,183 sf, Inflow Depth = 1.43" for 1 Year event
Inflow = 1.57 cfs @ 11.92 hrs, Volume= 2,644 cf
Outflow = 0.15 cfs @ 12.30 hrs, Volume= 2,644 cf, Atten= 90%, Lag= 23.0 min
Discarded = 0.15 cfs @ 12.30 hrs, Volume= 2,644 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 257.32' @ 12.30 hrs Surf.Area= 3,320 sf Storage= 951 cf

Plug-Flow detention time= 52.3 min calculated for 2,644 cf (100% of inflow)
Center-of-Mass det. time= 52.3 min (891.8 - 839.5)

Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,508 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	2,579	0	0
257.50	3,727	1,577	1,577
258.00	4,000	1,932	3,508

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	257.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.15 cfs @ 12.30 hrs HW=257.32' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=257.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond MH 5: MH 5

Inflow	=	0.05 cfs @	11.92 hrs, Volume=	6 cf
Outflow	=	0.05 cfs @	11.92 hrs, Volume=	6 cf, Atten= 0%, Lag= 0.0 min
Primary	=	0.05 cfs @	11.92 hrs, Volume=	6 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 268.09' @ 11.92 hrs
Flood Elev= 272.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0419 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.04 cfs @ 11.92 hrs HW=268.09' (Free Discharge)
1=Culvert (Inlet Controls 0.04 cfs @ 1.01 fps)

Pond MH 6: MH 6

Inflow Area =		34,177 sf,	Inflow Depth = 0.00"	for 1 Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.00' @ 0.00 hrs
Flood Elev= 273.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**12.0" x 85.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.57' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=265.00' (Free Discharge)
1=Culvert (Controls 0.00 cfs)

Pond SP: Subsurface Pond

Inflow Area =		43,873 sf,	Inflow Depth = 0.00"	for 1 Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 250.00' @ 0.00 hrs Surf.Area= 2,888 sf Storage= 0 cf
Flood Elev= 253.00' Surf.Area= 2,888 sf Storage= 5,788 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	1,917 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
			8,664 cf Overall - 3,871 cf Embedded = 4,793 cf x 40.0% Voids
#2	250.50'	3,871 cf	**44.6"W x 30.0"H x 600.00'L StormTech SC-740**Inside #1
		5,788 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	2,888	0	0
253.00	2,888	8,664	8,664

Device	Routing	Invert	Outlet Devices
#1	Primary	250.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=250.00' (Free Discharge)
↑—**2=Exfiltration** (Passes 0.00 cfs of 0.13 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=250.00' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond WL-1: WL-1

Inflow Area = 590,817 sf, Inflow Depth > 0.43" for 1 Year event
Inflow = 2.03 cfs @ 12.12 hrs, Volume= 21,282 cf
Outflow = 0.67 cfs @ 12.66 hrs, Volume= 21,272 cf, Atten= 67%, Lag= 31.9 min
Primary = 0.67 cfs @ 12.66 hrs, Volume= 21,272 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 243.06' @ 12.66 hrs Surf.Area= 28,325 sf Storage= 2,097 cf

Plug-Flow detention time= 66.7 min calculated for 21,272 cf (100% of inflow)
Center-of-Mass det. time= 65.6 min (1,241.5 - 1,175.9)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.66 cfs @ 12.66 hrs HW=243.06' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.66 cfs @ 0.68 fps)

Pond WL-2: WL-2

Inflow Area = 1,395,923 sf, Inflow Depth > 0.37" for 1 Year event
Inflow = 1.99 cfs @ 12.05 hrs, Volume= 42,532 cf
Outflow = 1.94 cfs @ 12.07 hrs, Volume= 42,532 cf, Atten= 3%, Lag= 1.0 min
Primary = 1.94 cfs @ 12.07 hrs, Volume= 42,532 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 242.00' @ 12.07 hrs Surf.Area= 7,069 sf Storage= 115 cf

Plug-Flow detention time= 1.0 min calculated for 42,532 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (1,159.5 - 1,158.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.21 cfs @ 12.07 hrs HW=242.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 21.21 cfs @ 1.92 fps)

Pond WQB 4: WQB #4

Inflow Area = 204,715 sf, Inflow Depth = 0.79" for 1 Year event
Inflow = 5.25 cfs @ 11.92 hrs, Volume= 13,504 cf
Outflow = 0.21 cfs @ 14.48 hrs, Volume= 13,354 cf, Atten= 96%, Lag= 153.6 min
Primary = 0.21 cfs @ 14.48 hrs, Volume= 13,354 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 257.00' Surf.Area= 6,398 sf Storage= 8,179 cf
Peak Elev= 257.92' @ 14.48 hrs Surf.Area= 10,022 sf Storage= 15,695 cf (7,516 cf above start)
Flood Elev= 261.00' Surf.Area= 16,368 sf Storage= 56,725 cf (48,546 cf above start)

Plug-Flow detention time= 1,087.1 min calculated for 5,175 cf (38% of inflow)
Center-of-Mass det. time= 486.8 min (1,326.4 - 839.7)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	74,067 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,320	0	0
256.00	2,440	3,760	3,760
258.00	10,356	12,796	16,556
260.00	14,419	24,775	41,331
262.00	18,317	32,736	74,067

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	**12.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 256.40' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Device 1	257.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	258.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=0.21 cfs @ 14.48 hrs HW=257.92' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 2.31 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 4.28 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Link MH 4: Manhole 4 18" Inflow

Inflow = 0.05 cfs @ 11.92 hrs, Volume= 6 cf
Primary = 0.05 cfs @ 11.92 hrs, Volume= 6 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

1 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4

Link WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth = 0.35" for 1 Year event
Inflow = 0.29 cfs @ 14.98 hrs, Volume= 12,627 cf
Primary = 0.29 cfs @ 14.98 hrs, Volume= 12,627 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

1 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3

Link WQB5: WQB#5

Inflow Area = 148,651 sf, Inflow Depth = 0.00" for 1 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

1 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-3: 1-3 Runoff Area=368,255 sf Runoff Depth=1.36"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=53 Runoff=17.54 cfs 41,863 cf

Subcatchment 10-16: 10-16 Runoff Area=22,183 sf Runoff Depth=3.48"
Flow Length=132' Slope=0.0300 '/' Tc=1.1 min CN=77 Runoff=3.70 cfs 6,431 cf

Subcatchment 10-18: 10-18 Runoff Area=21,690 sf Runoff Depth=3.88"
Flow Length=138' Slope=0.0150 '/' Tc=1.5 min CN=81 Runoff=3.92 cfs 7,020 cf

Subcatchment 11-1: 11-1 Runoff Area=34,177 sf Runoff Depth=1.29"
Flow Length=133' Slope=0.0600 '/' Tc=12.8 min CN=52 Runoff=1.24 cfs 3,672 cf

Subcatchment 11-10: 11-10 Runoff Area=12,079 sf Runoff Depth=2.81"
Flow Length=160' Slope=0.0135 '/' Tc=1.7 min CN=70 Runoff=1.63 cfs 2,824 cf

Subcatchment 11-11: 11-11 Runoff Area=50,602 sf Runoff Depth=0.62"
Flow Length=227' Tc=14.9 min CN=42 Runoff=0.50 cfs 2,594 cf

Subcatchment 11-12: 11-12 Runoff Area=16,964 sf Runoff Depth=4.20"
Flow Length=266' Slope=0.0600 '/' Tc=1.3 min CN=84 Runoff=3.27 cfs 5,932 cf

Subcatchment 11-13: 11-13 Runoff Area=35,243 sf Runoff Depth=2.26"
Flow Length=239' Tc=14.3 min CN=64 Runoff=2.39 cfs 6,647 cf

Subcatchment 11-14: 11-14 Runoff Area=193,578 sf Runoff Depth=1.84"
Flow Length=300' Tc=16.5 min CN=59 Runoff=9.56 cfs 29,660 cf

Subcatchment 11-2: 11-2 Runoff Area=8,345 sf Runoff Depth=3.28"
Flow Length=167' Tc=7.3 min CN=75 Runoff=1.07 cfs 2,282 cf

Subcatchment 11-3: 11-3 Runoff Area=5,942 sf Runoff Depth=4.41"
Flow Length=100' Slope=0.0400 '/' Tc=0.8 min CN=86 Runoff=1.20 cfs 2,183 cf

Subcatchment 11-4: 11-4 Runoff Area=6,068 sf Runoff Depth=4.41"
Flow Length=117' Slope=0.0050 '/' Tc=2.1 min CN=86 Runoff=1.18 cfs 2,230 cf

Subcatchment 11-5: 11-5 Runoff Area=9,755 sf Runoff Depth=2.09"
Flow Length=203' Tc=12.9 min CN=62 Runoff=0.64 cfs 1,699 cf

Subcatchment 11-6: 11-6 Runoff Area=1,840 sf Runoff Depth=5.76"
Flow Length=100' Tc=0.9 min CN=98 Runoff=0.42 cfs 883 cf

Subcatchment 11-7: 11-7 Runoff Area=2,501 sf Runoff Depth=5.76"
Flow Length=120' Slope=0.0135 '/' Tc=1.4 min CN=98 Runoff=0.57 cfs 1,201 cf

Subcatchment 11-8: 11-8 Runoff Area=10,903 sf Runoff Depth=3.78"
Flow Length=163' Tc=8.5 min CN=80 Runoff=1.52 cfs 3,436 cf

Subcatchment 11-9: 11-9 Runoff Area=10,296 sf Runoff Depth=3.68"
Flow Length=205' Tc=9.2 min CN=79 Runoff=1.36 cfs 3,157 cf

Pond 10: CB 10 Peak Elev=260.35' Inflow=2.39 cfs 6,647 cf
12.0" x 20.0' Culvert Outflow=2.39 cfs 6,647 cf

Pond 11: CB 11 Peak Elev=260.51' Inflow=6.59 cfs 13,688 cf
24.0" x 35.0' Culvert Outflow=6.59 cfs 13,688 cf

Pond 16: CB 16 Peak Elev=267.78' Inflow=1.07 cfs 2,282 cf
12.0" x 105.0' Culvert Outflow=1.07 cfs 2,282 cf

Pond 17: CB 17 Peak Elev=265.92' Inflow=1.96 cfs 4,466 cf
15.0" x 120.0' Culvert Outflow=1.96 cfs 4,466 cf

Pond 18: CB 18 Peak Elev=265.47' Inflow=1.52 cfs 3,436 cf
12.0" x 20.0' Culvert Outflow=1.52 cfs 3,436 cf

Pond 19: CB 19 Peak Elev=265.48' Inflow=4.25 cfs 10,131 cf
24.0" x 100.0' Culvert Outflow=4.25 cfs 10,131 cf

Pond 20: (new Pond) Peak Elev=264.42' Inflow=4.58 cfs 11,830 cf
24.0" x 75.0' Culvert Outflow=4.58 cfs 11,830 cf

Pond 21: CB 21 Peak Elev=262.22' Inflow=2.62 cfs 5,981 cf
12.0" x 20.0' Culvert Outflow=2.62 cfs 5,981 cf

Pond 22: CB 22 Peak Elev=262.13' Inflow=3.55 cfs 8,065 cf
15.0" x 40.0' Culvert Outflow=3.55 cfs 8,065 cf

Pond BR-1: Bio Retention Zone #1 Peak Elev=269.47' Storage=1,221 cf Inflow=1.24 cfs 3,672 cf
Discarded=0.13 cfs 3,672 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 3,672 cf

Pond BR-8: Bio Retention Zone 8 Peak Elev=255.81' Storage=2,212 cf Inflow=3.92 cfs 7,020 cf
Discarded=0.14 cfs 4,821 cf Primary=2.20 cfs 2,199 cf Outflow=2.34 cfs 7,020 cf

Pond BR-9: Bio Retention Zone 9 Peak Elev=257.70' Storage=2,318 cf Inflow=3.70 cfs 6,431 cf
Discarded=0.18 cfs 5,081 cf Primary=1.12 cfs 1,350 cf Outflow=1.30 cfs 6,431 cf

Pond MH 5: MH 5 Peak Elev=268.70' Inflow=2.28 cfs 1,108 cf
18.0" x 215.0' Culvert Outflow=2.28 cfs 1,108 cf

Pond MH 6: MH 6 Peak Elev=265.00' Inflow=0.00 cfs 0 cf
12.0" x 85.0' Culvert Outflow=0.00 cfs 0 cf

Pond SP: Subsurface Pond Peak Elev=251.01' Storage=1,847 cf Inflow=3.29 cfs 3,550 cf
Discarded=0.13 cfs 1,619 cf Primary=0.71 cfs 1,931 cf Outflow=0.84 cfs 3,550 cf

Pond WL-1: WL-1 Peak Elev=243.33' Storage=10,586 cf Inflow=13.57 cfs 67,579 cf
Outflow=7.56 cfs 67,566 cf

Pond WL-2: WL-2 Peak Elev=242.03' Storage=1,124 cf Inflow=19.30 cfs 143,317 cf
Outflow=18.96 cfs 143,317 cf

Pond WQB 4: WQB #4 Peak Elev=258.59' Storage=23,000 cf Inflow=14.70 cfs 36,177 cf
Outflow=3.56 cfs 35,988 cf

Li 10 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4 Inflow=2.28 cfs 1,108 cf
Primary=2.28 cfs 1,108 cf

Lin 10 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3 Inflow=2.16 cfs 33,888 cf
Primary=2.16 cfs 33,888 cf

Link WQ 10 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 810,421 sf Runoff Volume = 123,715 cf Average Runoff Depth = 1.83"
84.50% Pervious Area = 684,785 sf 15.50% Impervious Area = 125,636 sf

Subcatchment 1-3: 1-3

Runoff = 17.54 cfs @ 12.01 hrs, Volume= 41,863 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
214,128	70	Woods, Good, HSG C
368,255	53	Weighted Average
368,255		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 10-16: 10-16

Runoff = 3.70 cfs @ 11.91 hrs, Volume= 6,431 cf, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,170	32	Woods/grass comb., Good, HSG A
15,013	98	Paved parking & roofs
22,183	77	Weighted Average
7,170		Pervious Area
15,013		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	32	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.1	132	Total			

Subcatchment 10-18: 10-18

Runoff = 3.92 cfs @ 11.92 hrs, Volume= 7,020 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,600	32	Woods/grass comb., Good, HSG A
16,090	98	Paved parking & roofs
21,690	81	Weighted Average
5,600		Pervious Area
16,090		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.3	38	0.0150	2.49		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	138	Total			

Subcatchment 11-1: 11-1

Runoff = 1.24 cfs @ 12.07 hrs, Volume= 3,672 cf, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
10,138	98	Paved parking & roofs
24,039	32	Woods/grass comb., Good, HSG A
34,177	52	Weighted Average
24,039		Pervious Area
10,138		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.8	133	Total			

Subcatchment 11-10: 11-10

Runoff = 1.63 cfs @ 11.92 hrs, Volume= 2,824 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,995	98	Paved roads w/curbs & sewers
5,084	32	Woods/grass comb., Good, HSG A
12,079	70	Weighted Average
5,084		Pervious Area
6,995		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.4	60	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.7	160	Total			

Subcatchment 11-11: 11-11

Runoff = 0.50 cfs @ 12.13 hrs, Volume= 2,594 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,625	98	Paved parking & roofs
42,977	32	Woods/grass comb., Good, HSG A
50,602	42	Weighted Average
42,977		Pervious Area
7,625		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0480	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	66	0.0480	1.10		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.4	61	0.2200	2.35		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
14.9	227	Total			

Subcatchment 11-12: 11-12

Runoff = 3.27 cfs @ 11.92 hrs, Volume= 5,932 cf, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
13,321	98	Paved parking & roofs
3,643	32	Woods/grass comb., Good, HSG A
16,964	84	Weighted Average
3,643		Pervious Area
13,321		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.6	166	0.0600	4.97		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	266	Total			

Subcatchment 11-13: 11-13

Runoff = 2.39 cfs @ 12.07 hrs, Volume= 6,647 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
17,129	98	Paved parking & roofs
18,114	32	Woods/grass comb., Good, HSG A
35,243	64	Weighted Average
18,114		Pervious Area
17,129		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0540	0.13		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.0540	1.16		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
0.2	37	0.2700	3.64		**Shallow Concentrated Flow, 3**
					Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0050	1.44		**Shallow Concentrated Flow, 4**
					Paved Kv= 20.3 fps
14.3	239	Total			

Subcatchment 11-14: 11-14

Runoff = 9.56 cfs @ 12.10 hrs, Volume= 29,660 cf, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
54,135	30	Woods, Good, HSG A
139,443	70	Woods, Good, HSG C
193,578	59	Weighted Average
193,578		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 11-2: 11-2

Runoff = 1.07 cfs @ 11.99 hrs, Volume= 2,282 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,485	98	Paved roads w/curbs & sewers
2,860	32	Woods/grass comb., Good, HSG A
8,345	75	Weighted Average
2,860		Pervious Area
5,485		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	70	0.0570	0.18		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.3	30	0.0570	1.84		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	67	0.0590	1.70		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
7.3	167	Total			

Subcatchment 11-3: 11-3

Runoff = 1.20 cfs @ 11.91 hrs, Volume= 2,183 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
4,846	98	Paved parking & roofs
1,096	32	Woods/grass comb., Good, HSG A
5,942	86	Weighted Average
1,096		Pervious Area
4,846		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"

Subcatchment 11-4: 11-4

Runoff = 1.18 cfs @ 11.92 hrs, Volume= 2,230 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
5,008	98	Paved parking & roofs
1,060	32	Woods/grass comb., Good, HSG A
6,068	86	Weighted Average
1,060		Pervious Area
5,008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.88		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	17	0.0050	1.44		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
2.1	117	Total			

Subcatchment 11-5: 11-5

Runoff = 0.64 cfs @ 12.06 hrs, Volume= 1,699 cf, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
4,368	98	Paved parking & roofs
5,387	32	Woods/grass comb., Good, HSG A
9,755	62	Weighted Average
5,387		Pervious Area
4,368		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0680	0.14		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	16	0.0680	1.83		**Shallow Concentrated Flow, 2**
					Short Grass Pasture Kv= 7.0 fps
1.0	87	0.0050	1.44		**Shallow Concentrated Flow, 3**
					Paved Kv= 20.3 fps
12.9	203	Total			

Subcatchment 11-6: 11-6

Runoff = 0.42 cfs @ 11.91 hrs, Volume= 883 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
1,840	98	Paved parking & roofs
1,840		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.7	70	0.0275	1.63		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.9	100	Total			

Subcatchment 11-7: 11-7

Runoff = 0.57 cfs @ 11.92 hrs, Volume= 1,201 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
2,501	98	Paved parking & roofs
2,501		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.1	20	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	120	Total			

Subcatchment 11-8: 11-8

Runoff = 1.52 cfs @ 12.00 hrs, Volume= 3,436 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,942	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,903	80	Weighted Average
2,961		Pervious Area

7,942 Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.4	70	0.0050	0.82		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	63	0.0050	1.44		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
8.5	163	Total			

Subcatchment 11-9: 11-9

Runoff = 1.36 cfs @ 12.01 hrs, Volume= 3,157 cf, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,335	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,296	79	Weighted Average
2,961		Pervious Area
7,335		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	36	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.3	64	0.0050	0.81		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	105	0.0275	3.37		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.2	205	Total			

Pond 10: CB 10

Inflow Area = 35,243 sf, Inflow Depth = 2.26" for 10 Year event
Inflow = 2.39 cfs @ 12.07 hrs, Volume= 6,647 cf
Outflow = 2.39 cfs @ 12.07 hrs, Volume= 6,647 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.39 cfs @ 12.07 hrs, Volume= 6,647 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.35' @ 12.07 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.30'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.20' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.39 cfs @ 12.07 hrs HW=260.35' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.39 cfs @ 3.61 fps)

Pond 11: CB 11

Inflow Area = 52,207 sf, Inflow Depth = 3.15" for 10 Year event
Inflow = 6.59 cfs @ 11.92 hrs, Volume= 13,688 cf
Outflow = 6.59 cfs @ 11.92 hrs, Volume= 13,688 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.59 cfs @ 11.92 hrs, Volume= 13,688 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.51' @ 11.92 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.20'	**24.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.02' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.57 cfs @ 11.92 hrs HW=260.50' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.57 cfs @ 4.30 fps)

Pond 16: CB 16

Inflow Area = 8,345 sf, Inflow Depth = 3.28" for 10 Year event
Inflow = 1.07 cfs @ 11.99 hrs, Volume= 2,282 cf
Outflow = 1.07 cfs @ 11.99 hrs, Volume= 2,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 11.99 hrs, Volume= 2,282 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 267.78' @ 11.99 hrs
Flood Elev= 269.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.25'	**12.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.20' S= 0.0195 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.06 cfs @ 11.99 hrs HW=267.78' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.06 cfs @ 2.49 fps)

Pond 17: CB 17

Inflow Area = 14,287 sf, Inflow Depth = 3.75" for 10 Year event
Inflow = 1.96 cfs @ 11.91 hrs, Volume= 4,466 cf
Outflow = 1.96 cfs @ 11.91 hrs, Volume= 4,466 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.96 cfs @ 11.91 hrs, Volume= 4,466 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.92' @ 11.91 hrs
Flood Elev= 267.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.95 cfs @ 11.91 hrs HW=265.92' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.95 cfs @ 3.85 fps)

Pond 18: CB 18

Inflow Area = 10,903 sf, Inflow Depth = 3.78" for 10 Year event
Inflow = 1.52 cfs @ 12.00 hrs, Volume= 3,436 cf
Outflow = 1.52 cfs @ 12.00 hrs, Volume= 3,436 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.00 hrs, Volume= 3,436 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.47' @ 12.00 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.70'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.51 cfs @ 12.00 hrs HW=265.47' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.51 cfs @ 3.21 fps)

Pond 19: CB 19

Inflow Area = 65,435 sf, Inflow Depth = 1.86" for 10 Year event
Inflow = 4.25 cfs @ 11.93 hrs, Volume= 10,131 cf
Outflow = 4.25 cfs @ 11.93 hrs, Volume= 10,131 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 11.93 hrs, Volume= 10,131 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.48' @ 11.93 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.60'	**24.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.50' S= 0.0110 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.25 cfs @ 11.93 hrs HW=265.48' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 4.25 cfs @ 3.19 fps)

Pond 20: (new Pond)

Inflow Area = 75,190 sf, Inflow Depth = 1.89" for 10 Year event
Inflow = 4.58 cfs @ 11.94 hrs, Volume= 11,830 cf
Outflow = 4.58 cfs @ 11.94 hrs, Volume= 11,830 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.58 cfs @ 11.94 hrs, Volume= 11,830 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 264.42' @ 11.94 hrs
Flood Elev= 266.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.50'	**24.0" x 75.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.25' S= 0.0300 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.58 cfs @ 11.94 hrs HW=264.42' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.58 cfs @ 3.26 fps)

Pond 21: CB 21

Inflow Area = 22,375 sf, Inflow Depth = 3.21" for 10 Year event
Inflow = 2.62 cfs @ 11.93 hrs, Volume= 5,981 cf
Outflow = 2.62 cfs @ 11.93 hrs, Volume= 5,981 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 11.93 hrs, Volume= 5,981 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.22' @ 11.93 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.61 cfs @ 11.93 hrs HW=262.22' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.61 cfs @ 3.70 fps)

Pond 22: CB 22

Inflow Area = 26,716 sf, Inflow Depth = 3.62" for 10 Year event
Inflow = 3.55 cfs @ 11.92 hrs, Volume= 8,065 cf
Outflow = 3.55 cfs @ 11.92 hrs, Volume= 8,065 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.55 cfs @ 11.92 hrs, Volume= 8,065 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.13' @ 11.92 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.00'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.80' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.53 cfs @ 11.92 hrs HW=262.13' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.53 cfs @ 3.99 fps)

Pond BR-1: Bio Retention Zone #1

Inflow Area = 34,177 sf, Inflow Depth = 1.29" for 10 Year event
Inflow = 1.24 cfs @ 12.07 hrs, Volume= 3,672 cf
Outflow = 0.13 cfs @ 13.07 hrs, Volume= 3,672 cf, Atten= 90%, Lag= 60.0 min
Discarded = 0.13 cfs @ 13.07 hrs, Volume= 3,672 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 269.47' @ 13.07 hrs Surf.Area= 2,813 sf Storage= 1,221 cf

Plug-Flow detention time= 83.9 min calculated for 3,672 cf (100% of inflow)
Center-of-Mass det. time= 83.9 min (974.5 - 890.5)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	2,847 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.00	2,397	0	0
269.50	2,841	1,310	1,310
270.00	3,310	1,538	2,847

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Device 3	269.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Primary	265.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0051 '/' Cc= 0.900 n= 0.010

Discarded OutFlow Max=0.13 cfs @ 13.07 hrs HW=269.47' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=269.00' (Free Discharge)
↑—**3=Culvert** (Passes 0.00 cfs of 5.33 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond BR-8: Bio Retention Zone 8

Inflow Area = 21,690 sf, Inflow Depth = 3.88" for 10 Year event
Inflow = 3.92 cfs @ 11.92 hrs, Volume= 7,020 cf
Outflow = 2.34 cfs @ 11.97 hrs, Volume= 7,020 cf, Atten= 40%, Lag= 3.4 min
Discarded = 0.14 cfs @ 11.97 hrs, Volume= 4,821 cf
Primary = 2.20 cfs @ 11.97 hrs, Volume= 2,199 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 255.81' @ 11.97 hrs Surf.Area= 2,950 sf Storage= 2,212 cf

Plug-Flow detention time= 66.2 min calculated for 7,020 cf (100% of inflow)
Center-of-Mass det. time= 66.2 min (870.5 - 804.3)

Volume	Invert	Avail.Storage	Storage Description
#1	255.00'	2,783 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.00	2,390	0	0
255.50	2,870	1,315	1,315
256.00	3,000	1,468	2,783

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	255.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.14 cfs @ 11.97 hrs HW=255.81' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=2.19 cfs @ 11.97 hrs HW=255.81' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 2.19 cfs @ 1.78 fps)

Pond BR-9: Bio Retention Zone 9

Inflow Area = 22,183 sf, Inflow Depth = 3.48" for 10 Year event
Inflow = 3.70 cfs @ 11.91 hrs, Volume= 6,431 cf
Outflow = 1.30 cfs @ 11.99 hrs, Volume= 6,431 cf, Atten= 65%, Lag= 4.8 min
Discarded = 0.18 cfs @ 11.99 hrs, Volume= 5,081 cf
Primary = 1.12 cfs @ 11.99 hrs, Volume= 1,350 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 257.70' @ 11.99 hrs Surf.Area= 3,834 sf Storage= 2,318 cf

Plug-Flow detention time= 71.0 min calculated for 6,430 cf (100% of inflow)
Center-of-Mass det. time= 71.0 min (885.0 - 814.0)

Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,508 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	2,579	0	0
257.50	3,727	1,577	1,577
258.00	4,000	1,932	3,508

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	257.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.99 hrs HW=257.70' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.11 cfs @ 11.99 hrs HW=257.70' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 1.11 cfs @ 1.42 fps)

Pond MH 5: MH 5

Inflow = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf
Outflow = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 268.70' @ 11.92 hrs
Flood Elev= 272.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0419 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.26 cfs @ 11.92 hrs HW=268.69' (Free Discharge)
1=Culvert (Inlet Controls 2.26 cfs @ 2.83 fps)

Pond MH 6: MH 6

Inflow Area = 34,177 sf, Inflow Depth = 0.00" for 10 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.00' @ 0.00 hrs
Flood Elev= 273.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**12.0" x 85.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.57' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=265.00' (Free Discharge)
1=Culvert (Controls 0.00 cfs)

Pond SP: Subsurface Pond

Inflow Area = 43,873 sf, Inflow Depth = 0.97" for 10 Year event
Inflow = 3.29 cfs @ 11.98 hrs, Volume= 3,550 cf
Outflow = 0.84 cfs @ 12.26 hrs, Volume= 3,550 cf, Atten= 74%, Lag= 16.8 min
Discarded = 0.13 cfs @ 11.90 hrs, Volume= 1,619 cf
Primary = 0.71 cfs @ 12.26 hrs, Volume= 1,931 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 251.01' @ 12.26 hrs Surf.Area= 2,888 sf Storage= 1,847 cf
Flood Elev= 253.00' Surf.Area= 2,888 sf Storage= 5,788 cf

Plug-Flow detention time= 48.1 min calculated for 3,549 cf (100% of inflow)
Center-of-Mass det. time= 48.1 min (780.1 - 732.1)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	1,917 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
			8,664 cf Overall - 3,871 cf Embedded = 4,793 cf x 40.0% Voids
#2	250.50'	3,871 cf	**44.6"W x 30.0"H x 600.00'L StormTech SC-740**Inside #1
		5,788 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	2,888	0	0
253.00	2,888	8,664	8,664

Device	Routing	Invert	Outlet Devices
#1	Primary	250.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.13 cfs @ 11.90 hrs HW=250.05' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.71 cfs @ 12.26 hrs HW=251.01' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.71 cfs @ 2.44 fps)

Pond WL-1: WL-1

Inflow Area = 590,817 sf, Inflow Depth > 1.37" for 10 Year event
Inflow = 13.57 cfs @ 12.11 hrs, Volume= 67,579 cf
Outflow = 7.56 cfs @ 12.36 hrs, Volume= 67,566 cf, Atten= 44%, Lag= 15.3 min
Primary = 7.56 cfs @ 12.36 hrs, Volume= 67,566 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 243.33' @ 12.36 hrs Surf.Area= 30,756 sf Storage= 10,586 cf

Plug-Flow detention time= 43.1 min calculated for 67,555 cf (100% of inflow)
Center-of-Mass det. time= 42.6 min (1,038.5 - 995.9)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.56 cfs @ 12.36 hrs HW=243.33' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.56 cfs @ 1.54 fps)

Pond WL-2: WL-2

Inflow Area = 1,395,923 sf, Inflow Depth > 1.23" for 10 Year event
Inflow = 19.30 cfs @ 12.02 hrs, Volume= 143,317 cf
Outflow = 18.96 cfs @ 12.04 hrs, Volume= 143,317 cf, Atten= 2%, Lag= 1.0 min
Primary = 18.96 cfs @ 12.04 hrs, Volume= 143,317 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 242.03' @ 12.04 hrs Surf.Area= 8,690 sf Storage= 1,124 cf

Plug-Flow detention time= 1.0 min calculated for 143,293 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (1,004.7 - 1,003.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.06 cfs @ 12.04 hrs HW=242.03' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 23.06 cfs @ 1.97 fps)

Pond WQB 4: WQB #4

Inflow Area = 204,715 sf, Inflow Depth = 2.12" for 10 Year event
Inflow = 14.70 cfs @ 11.92 hrs, Volume= 36,177 cf
Outflow = 3.56 cfs @ 12.22 hrs, Volume= 35,988 cf, Atten= 76%, Lag= 17.6 min
Primary = 3.56 cfs @ 12.22 hrs, Volume= 35,988 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 257.00' Surf.Area= 6,398 sf Storage= 8,179 cf
Peak Elev= 258.59' @ 12.22 hrs Surf.Area= 11,551 sf Storage= 23,000 cf (14,821 cf above start)
Flood Elev= 261.00' Surf.Area= 16,368 sf Storage= 56,725 cf (48,546 cf above start)

Plug-Flow detention time= 494.7 min calculated for 27,804 cf (77% of inflow)
Center-of-Mass det. time= 288.8 min (1,111.0 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	74,067 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,320	0	0
256.00	2,440	3,760	3,760
258.00	10,356	12,796	16,556
260.00	14,419	24,775	41,331
262.00	18,317	32,736	74,067

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	**12.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 256.40' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Device 1	257.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	258.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=258.59' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.56 cfs @ 4.53 fps)
  ├**2=Orifice/Grate** (Passes < 0.29 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 4.41 cfs potential flow)

Link MH 4: Manhole 4 18" Inflow

Inflow = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf
Primary = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

10 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4

Link WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth = 0.93" for 10 Year event
Inflow = 2.16 cfs @ 12.61 hrs, Volume= 33,888 cf
Primary = 2.16 cfs @ 12.61 hrs, Volume= 33,888 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

10 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3

Link WQB5: WQB#5

Inflow Area = 148,651 sf, Inflow Depth = 0.00" for 10 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

10 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-3: 1-3 Runoff Area=368,255 sf Runoff Depth=1.64"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=53 Runoff=21.63 cfs 50,428 cf

Subcatchment 10-16: 10-16 Runoff Area=22,183 sf Runoff Depth=3.92"
Flow Length=132' Slope=0.0300 '/' Tc=1.1 min CN=77 Runoff=4.14 cfs 7,245 cf

Subcatchment 10-18: 10-18 Runoff Area=21,690 sf Runoff Depth=4.34"
Flow Length=138' Slope=0.0150 '/' Tc=1.5 min CN=81 Runoff=4.35 cfs 7,848 cf

Subcatchment 11-1: 11-1 Runoff Area=34,177 sf Runoff Depth=1.56"
Flow Length=133' Slope=0.0600 '/' Tc=12.8 min CN=52 Runoff=1.55 cfs 4,443 cf

Subcatchment 11-10: 11-10 Runoff Area=12,079 sf Runoff Depth=3.21"
Flow Length=160' Slope=0.0135 '/' Tc=1.7 min CN=70 Runoff=1.86 cfs 3,228 cf

Subcatchment 11-11: 11-11 Runoff Area=50,602 sf Runoff Depth=0.80"
Flow Length=227' Tc=14.9 min CN=42 Runoff=0.76 cfs 3,358 cf

Subcatchment 11-12: 11-12 Runoff Area=16,964 sf Runoff Depth=4.67"
Flow Length=266' Slope=0.0600 '/' Tc=1.3 min CN=84 Runoff=3.61 cfs 6,597 cf

Subcatchment 11-13: 11-13 Runoff Area=35,243 sf Runoff Depth=2.63"
Flow Length=239' Tc=14.3 min CN=64 Runoff=2.79 cfs 7,714 cf

Subcatchment 11-14: 11-14 Runoff Area=193,578 sf Runoff Depth=2.17"
Flow Length=300' Tc=16.5 min CN=59 Runoff=11.43 cfs 34,932 cf

Subcatchment 11-2: 11-2 Runoff Area=8,345 sf Runoff Depth=3.71"
Flow Length=167' Tc=7.3 min CN=75 Runoff=1.20 cfs 2,581 cf

Subcatchment 11-3: 11-3 Runoff Area=5,942 sf Runoff Depth=4.89"
Flow Length=100' Slope=0.0400 '/' Tc=0.8 min CN=86 Runoff=1.32 cfs 2,419 cf

Subcatchment 11-4: 11-4 Runoff Area=6,068 sf Runoff Depth=4.89"
Flow Length=117' Slope=0.0050 '/' Tc=2.1 min CN=86 Runoff=1.30 cfs 2,471 cf

Subcatchment 11-5: 11-5 Runoff Area=9,755 sf Runoff Depth=2.44"
Flow Length=203' Tc=12.9 min CN=62 Runoff=0.75 cfs 1,983 cf

Subcatchment 11-6: 11-6 Runoff Area=1,840 sf Runoff Depth=6.26"
Flow Length=100' Tc=0.9 min CN=98 Runoff=0.46 cfs 960 cf

Subcatchment 11-7: 11-7 Runoff Area=2,501 sf Runoff Depth=6.26"
Flow Length=120' Slope=0.0135 '/' Tc=1.4 min CN=98 Runoff=0.61 cfs 1,305 cf

Subcatchment 11-8: 11-8 Runoff Area=10,903 sf Runoff Depth=4.24"
Flow Length=163' Tc=8.5 min CN=80 Runoff=1.69 cfs 3,848 cf

Subcatchment 11-9: 11-9 Runoff Area=10,296 sf Runoff Depth=4.13"
Flow Length=205' Tc=9.2 min CN=79 Runoff=1.52 cfs 3,543 cf

Pond 10: CB 10 Peak Elev=260.49' Inflow=2.79 cfs 7,714 cf
12.0" x 20.0' Culvert Outflow=2.79 cfs 7,714 cf

Pond 11: CB 11 Peak Elev=260.63' Inflow=7.66 cfs 15,784 cf
24.0" x 35.0' Culvert Outflow=7.66 cfs 15,784 cf

Pond 16: CB 16 Peak Elev=267.82' Inflow=1.20 cfs 2,581 cf
12.0" x 105.0' Culvert Outflow=1.20 cfs 2,581 cf

Pond 17: CB 17 Peak Elev=265.97' Inflow=2.19 cfs 5,001 cf
15.0" x 120.0' Culvert Outflow=2.19 cfs 5,001 cf

Pond 18: CB 18 Peak Elev=265.53' Inflow=1.69 cfs 3,848 cf
12.0" x 20.0' Culvert Outflow=1.69 cfs 3,848 cf

Pond 19: CB 19 Peak Elev=265.53' Inflow=4.73 cfs 11,668 cf
24.0" x 100.0' Culvert Outflow=4.73 cfs 11,668 cf

Pond 20: (new Pond) Peak Elev=264.48' Inflow=5.13 cfs 13,651 cf
24.0" x 75.0' Culvert Outflow=5.13 cfs 13,651 cf

Pond 21: CB 21 Peak Elev=262.36' Inflow=2.96 cfs 6,771 cf
12.0" x 20.0' Culvert Outflow=2.96 cfs 6,771 cf

Pond 22: CB 22 Peak Elev=262.23' Inflow=3.97 cfs 9,036 cf
15.0" x 40.0' Culvert Outflow=3.97 cfs 9,036 cf

Pond BR-1: Bio Retention Zone #1 Peak Elev=269.53' Storage=1,383 cf Inflow=1.55 cfs 4,443 cf
Discarded=0.13 cfs 4,094 cf Primary=0.22 cfs 348 cf Outflow=0.35 cfs 4,443 cf

Pond BR-8: Bio Retention Zone 8 Peak Elev=255.85' Storage=2,349 cf Inflow=4.35 cfs 7,848 cf
Discarded=0.14 cfs 5,119 cf Primary=2.71 cfs 2,729 cf Outflow=2.85 cfs 7,848 cf

Pond BR-9: Bio Retention Zone 9 Peak Elev=257.75' Storage=2,519 cf Inflow=4.14 cfs 7,245 cf
Discarded=0.18 cfs 5,408 cf Primary=1.59 cfs 1,837 cf Outflow=1.77 cfs 7,245 cf

Pond MH 5: MH 5 Peak Elev=268.78' Inflow=2.80 cfs 1,473 cf
18.0" x 215.0' Culvert Outflow=2.80 cfs 1,473 cf

Pond MH 6: MH 6 Peak Elev=265.24' Inflow=0.22 cfs 348 cf
12.0" x 85.0' Culvert Outflow=0.22 cfs 348 cf

Pond SP: Subsurface Pond Peak Elev=251.20' Storage=2,281 cf Inflow=4.27 cfs 4,566 cf
Discarded=0.13 cfs 1,696 cf Primary=1.01 cfs 2,870 cf Outflow=1.15 cfs 4,566 cf

Pond WL-1: WL-1 Peak Elev=243.38' Storage=12,189 cf Inflow=16.10 cfs 79,483 cf
Outflow=9.36 cfs 79,470 cf

Pond WL-2: WL-2 Peak Elev=242.04' Storage=1,423 cf Inflow=24.26 cfs 169,548 cf
Outflow=23.62 cfs 169,548 cf

Pond WQB 4: WQB #4 Peak Elev=258.78' Storage=25,287 cf Inflow=16.77 cfs 41,829 cf
Outflow=3.84 cfs 41,637 cf

Li 25 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4 Inflow=2.80 cfs 1,473 cf
Primary=2.80 cfs 1,473 cf

Lin 25 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3 Inflow=3.02 cfs 39,650 cf
Primary=3.02 cfs 39,650 cf

Link W 25 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5 Inflow=0.02 cfs 44 cf
Primary=0.02 cfs 44 cf

Total Runoff Area = 810,421 sf Runoff Volume = 144,903 cf Average Runoff Depth = 2.15"
84.50% Pervious Area = 684,785 sf 15.50% Impervious Area = 125,636 sf

Subcatchment 1-3: 1-3

Runoff = 21.63 cfs @ 12.01 hrs, Volume= 50,428 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
214,128	70	Woods, Good, HSG C
368,255	53	Weighted Average
368,255		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 10-16: 10-16

Runoff = 4.14 cfs @ 11.91 hrs, Volume= 7,245 cf, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,170	32	Woods/grass comb., Good, HSG A
15,013	98	Paved parking & roofs
22,183	77	Weighted Average
7,170		Pervious Area
15,013		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	32	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.1	132	Total			

Subcatchment 10-18: 10-18

Runoff = 4.35 cfs @ 11.92 hrs, Volume= 7,848 cf, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,600	32	Woods/grass comb., Good, HSG A
16,090	98	Paved parking & roofs
21,690	81	Weighted Average
5,600		Pervious Area
16,090		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.3	38	0.0150	2.49		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	138	Total			

Subcatchment 11-1: 11-1

Runoff = 1.55 cfs @ 12.06 hrs, Volume= 4,443 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
10,138	98	Paved parking & roofs
24,039	32	Woods/grass comb., Good, HSG A
34,177	52	Weighted Average
24,039		Pervious Area
10,138		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.8	133	Total			

Subcatchment 11-10: 11-10

Runoff = 1.86 cfs @ 11.92 hrs, Volume= 3,228 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,995	98	Paved roads w/curbs & sewers
5,084	32	Woods/grass comb., Good, HSG A
12,079	70	Weighted Average
5,084		Pervious Area
6,995		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.4	60	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.7	160	Total			

Subcatchment 11-11: 11-11

Runoff = 0.76 cfs @ 12.11 hrs, Volume= 3,358 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,625	98	Paved parking & roofs
42,977	32	Woods/grass comb., Good, HSG A
50,602	42	Weighted Average
42,977		Pervious Area
7,625		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0480	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	66	0.0480	1.10		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.4	61	0.2200	2.35		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
14.9	227	Total			

Subcatchment 11-12: 11-12

Runoff = 3.61 cfs @ 11.92 hrs, Volume= 6,597 cf, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
13,321	98	Paved parking & roofs
3,643	32	Woods/grass comb., Good, HSG A
16,964	84	Weighted Average
3,643		Pervious Area
13,321		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	166	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	266	Total			

Subcatchment 11-13: 11-13

Runoff = 2.79 cfs @ 12.07 hrs, Volume= 7,714 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
17,129	98	Paved parking & roofs
18,114	32	Woods/grass comb., Good, HSG A
35,243	64	Weighted Average
18,114		Pervious Area
17,129		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0540	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.0540	1.16		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.2	37	0.2700	3.64		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0050	1.44		**Shallow Concentrated Flow, 4** Paved Kv= 20.3 fps
14.3	239	Total			

Subcatchment 11-14: 11-14

Runoff = 11.43 cfs @ 12.10 hrs, Volume= 34,932 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
54,135	30	Woods, Good, HSG A
139,443	70	Woods, Good, HSG C
193,578	59	Weighted Average
193,578		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 11-2: 11-2

Runoff = 1.20 cfs @ 11.99 hrs, Volume= 2,581 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,485	98	Paved roads w/curbs & sewers
2,860	32	Woods/grass comb., Good, HSG A
8,345	75	Weighted Average
2,860		Pervious Area
5,485		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	70	0.0570	0.18		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.3	30	0.0570	1.84		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	67	0.0590	1.70		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
7.3	167	Total			

Subcatchment 11-3: 11-3

Runoff = 1.32 cfs @ 11.91 hrs, Volume= 2,419 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
4,846	98	Paved parking & roofs
1,096	32	Woods/grass comb., Good, HSG A
5,942	86	Weighted Average
1,096		Pervious Area
4,846		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"

Subcatchment 11-4: 11-4

Runoff = 1.30 cfs @ 11.92 hrs, Volume= 2,471 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
5,008	98	Paved parking & roofs
1,060	32	Woods/grass comb., Good, HSG A
6,068	86	Weighted Average
1,060		Pervious Area
5,008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.88		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	17	0.0050	1.44		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
2.1	117	Total			

Subcatchment 11-5: 11-5

Runoff = 0.75 cfs @ 12.05 hrs, Volume= 1,983 cf, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
4,368	98	Paved parking & roofs
5,387	32	Woods/grass comb., Good, HSG A
9,755	62	Weighted Average
5,387		Pervious Area
4,368		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0680	0.14		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	16	0.0680	1.83		**Shallow Concentrated Flow, 2**
					Short Grass Pasture Kv= 7.0 fps
1.0	87	0.0050	1.44		**Shallow Concentrated Flow, 3**
					Paved Kv= 20.3 fps
12.9	203	Total			

Subcatchment 11-6: 11-6

Runoff = 0.46 cfs @ 11.91 hrs, Volume= 960 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
1,840	98	Paved parking & roofs
1,840		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.7	70	0.0275	1.63		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.9	100	Total			

Subcatchment 11-7: 11-7

Runoff = 0.61 cfs @ 11.92 hrs, Volume= 1,305 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
2,501	98	Paved parking & roofs
2,501		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.1	20	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	120	Total			

Subcatchment 11-8: 11-8

Runoff = 1.69 cfs @ 12.00 hrs, Volume= 3,848 cf, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,942	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,903	80	Weighted Average
2,961		Pervious Area

7,942 Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.4	70	0.0050	0.82		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	63	0.0050	1.44		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
8.5	163	Total			

Subcatchment 11-9: 11-9

Runoff = 1.52 cfs @ 12.01 hrs, Volume= 3,543 cf, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,335	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,296	79	Weighted Average
2,961		Pervious Area
7,335		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	36	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.3	64	0.0050	0.81		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	105	0.0275	3.37		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.2	205	Total			

Pond 10: CB 10

Inflow Area = 35,243 sf, Inflow Depth = 2.63" for 25 Year event
Inflow = 2.79 cfs @ 12.07 hrs, Volume= 7,714 cf
Outflow = 2.79 cfs @ 12.07 hrs, Volume= 7,714 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.79 cfs @ 12.07 hrs, Volume= 7,714 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.49' @ 12.07 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.30'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.20' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.79 cfs @ 12.07 hrs HW=260.49' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.79 cfs @ 3.78 fps)

Pond 11: CB 11

Inflow Area = 52,207 sf, Inflow Depth = 3.63" for 25 Year event
Inflow = 7.66 cfs @ 11.92 hrs, Volume= 15,784 cf
Outflow = 7.66 cfs @ 11.92 hrs, Volume= 15,784 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.66 cfs @ 11.92 hrs, Volume= 15,784 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.63' @ 11.92 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.20'	**24.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.02' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=7.63 cfs @ 11.92 hrs HW=260.63' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.63 cfs @ 4.45 fps)

Pond 16: CB 16

Inflow Area = 8,345 sf, Inflow Depth = 3.71" for 25 Year event
Inflow = 1.20 cfs @ 11.99 hrs, Volume= 2,581 cf
Outflow = 1.20 cfs @ 11.99 hrs, Volume= 2,581 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 11.99 hrs, Volume= 2,581 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 267.82' @ 11.99 hrs
Flood Elev= 269.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.25'	**12.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.20' S= 0.0195 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.20 cfs @ 11.99 hrs HW=267.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.20 cfs @ 2.58 fps)

Pond 17: CB 17

Inflow Area = 14,287 sf, Inflow Depth = 4.20" for 25 Year event
Inflow = 2.19 cfs @ 11.91 hrs, Volume= 5,001 cf
Outflow = 2.19 cfs @ 11.91 hrs, Volume= 5,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.19 cfs @ 11.91 hrs, Volume= 5,001 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.97' @ 11.91 hrs
Flood Elev= 267.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.17 cfs @ 11.91 hrs HW=265.97' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.17 cfs @ 3.94 fps)

Pond 18: CB 18

Inflow Area = 10,903 sf, Inflow Depth = 4.24" for 25 Year event
Inflow = 1.69 cfs @ 12.00 hrs, Volume= 3,848 cf
Outflow = 1.69 cfs @ 12.00 hrs, Volume= 3,848 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.69 cfs @ 12.00 hrs, Volume= 3,848 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.53' @ 12.00 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.70'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.69 cfs @ 12.00 hrs HW=265.53' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.69 cfs @ 3.30 fps)

Pond 19: CB 19

Inflow Area = 65,435 sf, Inflow Depth = 2.14" for 25 Year event
Inflow = 4.73 cfs @ 11.93 hrs, Volume= 11,668 cf
Outflow = 4.73 cfs @ 11.93 hrs, Volume= 11,668 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.73 cfs @ 11.93 hrs, Volume= 11,668 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.53' @ 11.93 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.60'	**24.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.50' S= 0.0110 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.73 cfs @ 11.93 hrs HW=265.53' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 4.73 cfs @ 3.29 fps)

Pond 20: (new Pond)

Inflow Area = 75,190 sf, Inflow Depth = 2.18" for 25 Year event
Inflow = 5.13 cfs @ 11.94 hrs, Volume= 13,651 cf
Outflow = 5.13 cfs @ 11.94 hrs, Volume= 13,651 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.13 cfs @ 11.94 hrs, Volume= 13,651 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 264.48' @ 11.94 hrs
Flood Elev= 266.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.50'	**24.0" x 75.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.25' S= 0.0300 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=5.12 cfs @ 11.94 hrs HW=264.48' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.12 cfs @ 3.36 fps)

Pond 21: CB 21

Inflow Area = 22,375 sf, Inflow Depth = 3.63" for 25 Year event
Inflow = 2.96 cfs @ 11.93 hrs, Volume= 6,771 cf
Outflow = 2.96 cfs @ 11.93 hrs, Volume= 6,771 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.96 cfs @ 11.93 hrs, Volume= 6,771 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.36' @ 11.93 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.96 cfs @ 11.93 hrs HW=262.36' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.96 cfs @ 3.85 fps)

Pond 22: CB 22

Inflow Area = 26,716 sf, Inflow Depth = 4.06" for 25 Year event
Inflow = 3.97 cfs @ 11.92 hrs, Volume= 9,036 cf
Outflow = 3.97 cfs @ 11.92 hrs, Volume= 9,036 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.97 cfs @ 11.92 hrs, Volume= 9,036 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.23' @ 11.92 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.00'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.80' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.96 cfs @ 11.92 hrs HW=262.22' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.96 cfs @ 4.10 fps)

Pond BR-1: Bio Retention Zone #1

Inflow Area = 34,177 sf, Inflow Depth = 1.56" for 25 Year event
Inflow = 1.55 cfs @ 12.06 hrs, Volume= 4,443 cf
Outflow = 0.35 cfs @ 12.41 hrs, Volume= 4,443 cf, Atten= 77%, Lag= 20.8 min
Discarded = 0.13 cfs @ 12.41 hrs, Volume= 4,094 cf
Primary = 0.22 cfs @ 12.41 hrs, Volume= 348 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 269.53' @ 12.41 hrs Surf.Area= 2,865 sf Storage= 1,383 cf

Plug-Flow detention time= 88.3 min calculated for 4,442 cf (100% of inflow)
Center-of-Mass det. time= 88.3 min (971.9 - 883.6)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	2,847 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.00	2,397	0	0
269.50	2,841	1,310	1,310
270.00	3,310	1,538	2,847

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Device 3	269.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Primary	265.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0051 '/' Cc= 0.900 n= 0.010

Discarded OutFlow Max=0.13 cfs @ 12.41 hrs HW=269.53' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.22 cfs @ 12.41 hrs HW=269.53' (Free Discharge)
└**3=Culvert** (Passes 0.22 cfs of 5.73 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.22 cfs @ 0.53 fps)

Pond BR-8: Bio Retention Zone 8

Inflow Area = 21,690 sf, Inflow Depth = 4.34" for 25 Year event
Inflow = 4.35 cfs @ 11.92 hrs, Volume= 7,848 cf
Outflow = 2.85 cfs @ 11.97 hrs, Volume= 7,848 cf, Atten= 35%, Lag= 3.0 min
Discarded = 0.14 cfs @ 11.97 hrs, Volume= 5,119 cf
Primary = 2.71 cfs @ 11.97 hrs, Volume= 2,729 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 255.85' @ 11.97 hrs Surf.Area= 2,962 sf Storage= 2,349 cf

Plug-Flow detention time= 63.9 min calculated for 7,848 cf (100% of inflow)
Center-of-Mass det. time= 63.9 min (865.0 - 801.1)

Volume	Invert	Avail.Storage	Storage Description
#1	255.00'	2,783 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.00	2,390	0	0
255.50	2,870	1,315	1,315
256.00	3,000	1,468	2,783

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	255.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.14 cfs @ 11.97 hrs HW=255.85' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=2.71 cfs @ 11.97 hrs HW=255.85' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 2.71 cfs @ 1.91 fps)

Pond BR-9: Bio Retention Zone 9

Inflow Area = 22,183 sf, Inflow Depth = 3.92" for 25 Year event
Inflow = 4.14 cfs @ 11.91 hrs, Volume= 7,245 cf
Outflow = 1.77 cfs @ 11.99 hrs, Volume= 7,245 cf, Atten= 57%, Lag= 4.3 min
Discarded = 0.18 cfs @ 11.99 hrs, Volume= 5,408 cf
Primary = 1.59 cfs @ 11.99 hrs, Volume= 1,837 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 257.75' @ 11.99 hrs Surf.Area= 3,863 sf Storage= 2,519 cf

Plug-Flow detention time= 68.1 min calculated for 7,244 cf (100% of inflow)
Center-of-Mass det. time= 68.1 min (878.6 - 810.6)

Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,508 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	2,579	0	0
257.50	3,727	1,577	1,577
258.00	4,000	1,932	3,508

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	257.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.99 hrs HW=257.75' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.59 cfs @ 11.99 hrs HW=257.75' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 1.59 cfs @ 1.60 fps)

Pond MH 5: MH 5

Inflow = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf
Outflow = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 268.78' @ 11.92 hrs
Flood Elev= 272.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0419 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.78 cfs @ 11.92 hrs HW=268.78' (Free Discharge)
1=Culvert (Inlet Controls 2.78 cfs @ 3.00 fps)

Pond MH 6: MH 6

Inflow Area = 34,177 sf, Inflow Depth = 0.12" for 25 Year event
Inflow = 0.22 cfs @ 12.41 hrs, Volume= 348 cf
Outflow = 0.22 cfs @ 12.41 hrs, Volume= 348 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.41 hrs, Volume= 348 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.24' @ 12.41 hrs
Flood Elev= 273.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**12.0" x 85.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.57' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.22 cfs @ 12.41 hrs HW=265.24' (Free Discharge)
1=Culvert (Barrel Controls 0.22 cfs @ 2.26 fps)

Pond SP: Subsurface Pond

Inflow Area = 43,873 sf, Inflow Depth = 1.25" for 25 Year event
Inflow = 4.27 cfs @ 11.98 hrs, Volume= 4,566 cf
Outflow = 1.15 cfs @ 12.22 hrs, Volume= 4,566 cf, Atten= 73%, Lag= 14.6 min
Discarded = 0.13 cfs @ 11.87 hrs, Volume= 1,696 cf
Primary = 1.01 cfs @ 12.22 hrs, Volume= 2,870 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 251.20' @ 12.22 hrs Surf.Area= 2,888 sf Storage= 2,281 cf
Flood Elev= 253.00' Surf.Area= 2,888 sf Storage= 5,788 cf

Plug-Flow detention time= 43.8 min calculated for 4,566 cf (100% of inflow)
Center-of-Mass det. time= 43.8 min (775.5 - 731.7)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	1,917 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 8,664 cf Overall - 3,871 cf Embedded = 4,793 cf x 40.0% Voids
#2	250.50'	3,871 cf	**44.6"W x 30.0"H x 600.00'L StormTech SC-740**Inside #1
		5,788 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	2,888	0	0
253.00	2,888	8,664	8,664

Device	Routing	Invert	Outlet Devices
#1	Primary	250.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.13 cfs @ 11.87 hrs HW=250.03' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=1.01 cfs @ 12.22 hrs HW=251.20' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.01 cfs @ 2.90 fps)

Pond WL-1: WL-1

Inflow Area = 590,817 sf, Inflow Depth > 1.61" for 25 Year event
Inflow = 16.10 cfs @ 12.10 hrs, Volume= 79,483 cf
Outflow = 9.36 cfs @ 12.33 hrs, Volume= 79,470 cf, Atten= 42%, Lag= 13.4 min
Primary = 9.36 cfs @ 12.33 hrs, Volume= 79,470 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 243.38' @ 12.33 hrs Surf.Area= 31,215 sf Storage= 12,189 cf

Plug-Flow detention time= 40.3 min calculated for 79,457 cf (100% of inflow)
Center-of-Mass det. time= 39.9 min (1,014.0 - 974.1)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.35 cfs @ 12.33 hrs HW=243.38' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 9.35 cfs @ 1.66 fps)

Pond WL-2: WL-2

Inflow Area = 1,395,923 sf, Inflow Depth > 1.46" for 25 Year event
Inflow = 24.26 cfs @ 12.02 hrs, Volume= 169,548 cf
Outflow = 23.62 cfs @ 12.04 hrs, Volume= 169,548 cf, Atten= 3%, Lag= 1.2 min
Primary = 23.62 cfs @ 12.04 hrs, Volume= 169,548 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 242.04' @ 12.04 hrs Surf.Area= 9,170 sf Storage= 1,423 cf

Plug-Flow detention time= 1.0 min calculated for 169,548 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (985.3 - 984.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.62 cfs @ 12.04 hrs HW=242.04' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 23.62 cfs @ 1.99 fps)

Pond WQB 4: WQB #4

Inflow Area = 204,715 sf, Inflow Depth = 2.45" for 25 Year event
Inflow = 16.77 cfs @ 11.92 hrs, Volume= 41,829 cf
Outflow = 3.84 cfs @ 12.23 hrs, Volume= 41,637 cf, Atten= 77%, Lag= 18.6 min
Primary = 3.84 cfs @ 12.23 hrs, Volume= 41,637 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 257.00' Surf.Area= 6,398 sf Storage= 8,179 cf
Peak Elev= 258.78' @ 12.23 hrs Surf.Area= 11,946 sf Storage= 25,287 cf (17,108 cf above start)
Flood Elev= 261.00' Surf.Area= 16,368 sf Storage= 56,725 cf (48,546 cf above start)

Plug-Flow detention time= 433.2 min calculated for 33,458 cf (80% of inflow)
Center-of-Mass det. time= 260.9 min (1,079.8 - 818.9)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	74,067 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,320	0	0
256.00	2,440	3,760	3,760
258.00	10,356	12,796	16,556
260.00	14,419	24,775	41,331
262.00	18,317	32,736	74,067

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	**12.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 256.40' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Device 1	257.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	258.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=3.84 cfs @ 12.23 hrs HW=258.78' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.84 cfs @ 4.89 fps)
  └**2=Orifice/Grate** (Passes < 0.30 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 6.75 cfs potential flow)

Link MH 4: Manhole 4 18" Inflow

Inflow = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf
Primary = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

25 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4

Link WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth = 1.09" for 25 Year event
Inflow = 3.02 cfs @ 12.53 hrs, Volume= 39,650 cf
Primary = 3.02 cfs @ 12.53 hrs, Volume= 39,650 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

25 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3

Link WQB5: WQB#5

Inflow Area = 148,651 sf, Inflow Depth = 0.00" for 25 Year event
Inflow = 0.02 cfs @ 13.55 hrs, Volume= 44 cf
Primary = 0.02 cfs @ 13.55 hrs, Volume= 44 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

25 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-3: 1-3 Runoff Area=368,255 sf Runoff Depth=2.57"
Flow Length=200' Slope=0.2000 '/' Tc=8.3 min CN=53 Runoff=35.03 cfs 78,819 cf

Subcatchment 10-16: 10-16 Runoff Area=22,183 sf Runoff Depth=5.27"
Flow Length=132' Slope=0.0300 '/' Tc=1.1 min CN=77 Runoff=5.48 cfs 9,750 cf

Subcatchment 10-18: 10-18 Runoff Area=21,690 sf Runoff Depth=5.74"
Flow Length=138' Slope=0.0150 '/' Tc=1.5 min CN=81 Runoff=5.65 cfs 10,379 cf

Subcatchment 11-1: 11-1 Runoff Area=34,177 sf Runoff Depth=2.46"
Flow Length=133' Slope=0.0600 '/' Tc=12.8 min CN=52 Runoff=2.59 cfs 7,011 cf

Subcatchment 11-10: 11-10 Runoff Area=12,079 sf Runoff Depth=4.46"
Flow Length=160' Slope=0.0135 '/' Tc=1.7 min CN=70 Runoff=2.55 cfs 4,494 cf

Subcatchment 11-11: 11-11 Runoff Area=50,602 sf Runoff Depth=1.44"
Flow Length=227' Tc=14.9 min CN=42 Runoff=1.75 cfs 6,074 cf

Subcatchment 11-12: 11-12 Runoff Area=16,964 sf Runoff Depth=6.10"
Flow Length=266' Slope=0.0600 '/' Tc=1.3 min CN=84 Runoff=4.62 cfs 8,617 cf

Subcatchment 11-13: 11-13 Runoff Area=35,243 sf Runoff Depth=3.78"
Flow Length=239' Tc=14.3 min CN=64 Runoff=4.06 cfs 11,105 cf

Subcatchment 11-14: 11-14 Runoff Area=193,578 sf Runoff Depth=3.22"
Flow Length=300' Tc=16.5 min CN=59 Runoff=17.43 cfs 51,983 cf

Subcatchment 11-2: 11-2 Runoff Area=8,345 sf Runoff Depth=5.04"
Flow Length=167' Tc=7.3 min CN=75 Runoff=1.61 cfs 3,506 cf

Subcatchment 11-3: 11-3 Runoff Area=5,942 sf Runoff Depth=6.33"
Flow Length=100' Slope=0.0400 '/' Tc=0.8 min CN=86 Runoff=1.68 cfs 3,135 cf

Subcatchment 11-4: 11-4 Runoff Area=6,068 sf Runoff Depth=6.33"
Flow Length=117' Slope=0.0050 '/' Tc=2.1 min CN=86 Runoff=1.65 cfs 3,202 cf

Subcatchment 11-5: 11-5 Runoff Area=9,755 sf Runoff Depth=3.56"
Flow Length=203' Tc=12.9 min CN=62 Runoff=1.11 cfs 2,891 cf

Subcatchment 11-6: 11-6 Runoff Area=1,840 sf Runoff Depth=7.76"
Flow Length=100' Tc=0.9 min CN=98 Runoff=0.56 cfs 1,190 cf

Subcatchment 11-7: 11-7 Runoff Area=2,501 sf Runoff Depth=7.76"
Flow Length=120' Slope=0.0135 '/' Tc=1.4 min CN=98 Runoff=0.75 cfs 1,617 cf

Subcatchment 11-8: 11-8 Runoff Area=10,903 sf Runoff Depth=5.62"
Flow Length=163' Tc=8.5 min CN=80 Runoff=2.21 cfs 5,111 cf

Subcatchment 11-9: 11-9 Runoff Area=10,296 sf Runoff Depth=5.51"
Flow Length=205' Tc=9.2 min CN=79 Runoff=2.01 cfs 4,726 cf

Pond 10: CB 10 Peak Elev=260.98' Inflow=4.06 cfs 11,105 cf
12.0" x 20.0' Culvert Outflow=4.06 cfs 11,105 cf

Pond 11: CB 11 Peak Elev=260.99' Inflow=10.94 cfs 22,444 cf
24.0" x 35.0' Culvert Outflow=10.94 cfs 22,444 cf

Pond 16: CB 16 Peak Elev=267.93' Inflow=1.61 cfs 3,506 cf
12.0" x 105.0' Culvert Outflow=1.61 cfs 3,506 cf

Pond 17: CB 17 Peak Elev=266.11' Inflow=2.86 cfs 6,641 cf
15.0" x 120.0' Culvert Outflow=2.86 cfs 6,641 cf

Pond 18: CB 18 Peak Elev=265.69' Inflow=2.21 cfs 5,111 cf
12.0" x 20.0' Culvert Outflow=2.21 cfs 5,111 cf

Pond 19: CB 19 Peak Elev=265.68' Inflow=6.17 cfs 16,964 cf
24.0" x 100.0' Culvert Outflow=6.17 cfs 16,964 cf

Pond 20: (new Pond) Peak Elev=264.65' Inflow=6.80 cfs 19,855 cf
24.0" x 75.0' Culvert Outflow=6.80 cfs 19,855 cf

Pond 21: CB 21 Peak Elev=262.76' Inflow=4.02 cfs 9,219 cf
12.0" x 20.0' Culvert Outflow=4.02 cfs 9,219 cf

Pond 22: CB 22 Peak Elev=262.56' Inflow=5.27 cfs 12,027 cf
15.0" x 40.0' Culvert Outflow=5.27 cfs 12,027 cf

Pond BR-1: Bio Retention Zone #1 Peak Elev=269.60' Storage=1,606 cf Inflow=2.59 cfs 7,011 cf
Discarded=0.14 cfs 5,001 cf Primary=1.72 cfs 2,010 cf Outflow=1.86 cfs 7,011 cf

Pond BR-8: Bio Retention Zone 8 Peak Elev=255.97' Storage=2,696 cf Inflow=5.65 cfs 10,379 cf
Discarded=0.14 cfs 5,957 cf Primary=4.16 cfs 4,422 cf Outflow=4.30 cfs 10,379 cf

Pond BR-9: Bio Retention Zone 9 Peak Elev=257.88' Storage=3,044 cf Inflow=5.48 cfs 9,750 cf
Discarded=0.18 cfs 6,339 cf Primary=3.05 cfs 3,411 cf Outflow=3.23 cfs 9,750 cf

Pond MH 5: MH 5 Peak Elev=269.01' Inflow=4.35 cfs 2,722 cf
18.0" x 215.0' Culvert Outflow=4.35 cfs 2,722 cf

Pond MH 6: MH 6 Peak Elev=265.76' Inflow=1.72 cfs 2,010 cf
12.0" x 85.0' Culvert Outflow=1.72 cfs 2,010 cf

Pond SP: Subsurface Pond Peak Elev=251.91' Storage=3,901 cf Inflow=7.18 cfs 7,833 cf
Discarded=0.13 cfs 1,920 cf Primary=1.74 cfs 5,914 cf Outflow=1.88 cfs 7,833 cf

Pond WL-1: WL-1 Peak Elev=243.52' Storage=16,796 cf Inflow=23.61 cfs 123,589 cf
Outflow=15.15 cfs 123,576 cf

Pond WL-2: WL-2 Peak Elev=242.18' Storage=6,132 cf Inflow=41.24 cfs 261,680 cf
Outflow=32.70 cfs 261,680 cf

Pond WQB 4: WQB #4 Peak Elev=259.49' Storage=34,282 cf Inflow=23.30 cfs 60,399 cf
Outflow=4.72 cfs 60,204 cf

L 100 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4 Inflow=4.35 cfs 2,722 cf
Primary=4.35 cfs 2,722 cf

Li 100 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3 Inflow=6.70 cfs 59,285 cf
Primary=6.70 cfs 59,285 cf

Lin 100 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5 Inflow=1.48 cfs 5,489 cf
Primary=1.48 cfs 5,489 cf

Total Runoff Area = 810,421 sf Runoff Volume = 213,609 cf Average Runoff Depth = 3.16"
84.50% Pervious Area = 684,785 sf 15.50% Impervious Area = 125,636 sf

Subcatchment 1-3: 1-3

Runoff = 35.03 cfs @ 12.01 hrs, Volume= 78,819 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
154,127	30	Woods, Good, HSG A
214,128	70	Woods, Good, HSG C
368,255	53	Weighted Average
368,255		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	100	0.2000	2.24		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.3	200	Total			

Subcatchment 10-16: 10-16

Runoff = 5.48 cfs @ 11.91 hrs, Volume= 9,750 cf, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,170	32	Woods/grass comb., Good, HSG A
15,013	98	Paved parking & roofs
22,183	77	Weighted Average
7,170		Pervious Area
15,013		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	32	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.1	132	Total			

Subcatchment 10-18: 10-18

Runoff = 5.65 cfs @ 11.92 hrs, Volume= 10,379 cf, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,600	32	Woods/grass comb., Good, HSG A
16,090	98	Paved parking & roofs
21,690	81	Weighted Average
5,600		Pervious Area
16,090		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.3	38	0.0150	2.49		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	138	Total			

Subcatchment 11-1: 11-1

Runoff = 2.59 cfs @ 12.06 hrs, Volume= 7,011 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
10,138	98	Paved parking & roofs
24,039	32	Woods/grass comb., Good, HSG A
34,177	52	Weighted Average
24,039		Pervious Area
10,138		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0600	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
12.8	133	Total			

Subcatchment 11-10: 11-10

Runoff = 2.55 cfs @ 11.92 hrs, Volume= 4,494 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,995	98	Paved roads w/curbs & sewers
5,084	32	Woods/grass comb., Good, HSG A
12,079	70	Weighted Average
5,084		Pervious Area
6,995		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.4	60	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.7	160	Total			

Subcatchment 11-11: 11-11

Runoff = 1.75 cfs @ 12.10 hrs, Volume= 6,074 cf, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,625	98	Paved parking & roofs
42,977	32	Woods/grass comb., Good, HSG A
50,602	42	Weighted Average
42,977		Pervious Area
7,625		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0480	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	66	0.0480	1.10		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.4	61	0.2200	2.35		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
14.9	227	Total			

Subcatchment 11-12: 11-12

Runoff = 4.62 cfs @ 11.92 hrs, Volume= 8,617 cf, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
13,321	98	Paved parking & roofs
3,643	32	Woods/grass comb., Good, HSG A
16,964	84	Weighted Average
3,643		Pervious Area
13,321		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.6	166	0.0600	4.97		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	266	Total			

Subcatchment 11-13: 11-13

Runoff = 4.06 cfs @ 12.06 hrs, Volume= 11,105 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
17,129	98	Paved parking & roofs
18,114	32	Woods/grass comb., Good, HSG A
35,243	64	Weighted Average
18,114		Pervious Area
17,129		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0540	0.13		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.0540	1.16		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
0.2	37	0.2700	3.64		**Shallow Concentrated Flow, 3**
					Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0050	1.44		**Shallow Concentrated Flow, 4**
					Paved Kv= 20.3 fps
14.3	239	Total			

Subcatchment 11-14: 11-14

Runoff = 17.43 cfs @ 12.09 hrs, Volume= 51,983 cf, Depth= 3.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
54,135	30	Woods, Good, HSG A
139,443	70	Woods, Good, HSG C
193,578	59	Weighted Average
193,578		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	50	0.0500	1.12		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
2.5	150	0.0400	1.00		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.5	300	Total			

Subcatchment 11-2: 11-2

Runoff = 1.61 cfs @ 11.99 hrs, Volume= 3,506 cf, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,485	98	Paved roads w/curbs & sewers
2,860	32	Woods/grass comb., Good, HSG A
8,345	75	Weighted Average
2,860		Pervious Area
5,485		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	70	0.0570	0.18		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.3	30	0.0570	1.84		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	67	0.0590	1.70		**Shallow Concentrated Flow, 3** Short Grass Pasture Kv= 7.0 fps
7.3	167	Total			

Subcatchment 11-3: 11-3

Runoff = 1.68 cfs @ 11.91 hrs, Volume= 3,135 cf, Depth= 6.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
4,846	98	Paved parking & roofs
1,096	32	Woods/grass comb., Good, HSG A
5,942	86	Weighted Average
1,096		Pervious Area
4,846		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"

Subcatchment 11-4: 11-4

Runoff = 1.65 cfs @ 11.92 hrs, Volume= 3,202 cf, Depth= 6.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
5,008	98	Paved parking & roofs
1,060	32	Woods/grass comb., Good, HSG A
6,068	86	Weighted Average
1,060		Pervious Area
5,008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.88		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	17	0.0050	1.44		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
2.1	117	Total			

Subcatchment 11-5: 11-5

Runoff = 1.11 cfs @ 12.05 hrs, Volume= 2,891 cf, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
4,368	98	Paved parking & roofs
5,387	32	Woods/grass comb., Good, HSG A
9,755	62	Weighted Average
5,387		Pervious Area
4,368		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0680	0.14		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	16	0.0680	1.83		**Shallow Concentrated Flow, 2**
					Short Grass Pasture Kv= 7.0 fps
1.0	87	0.0050	1.44		**Shallow Concentrated Flow, 3**
					Paved Kv= 20.3 fps
12.9	203	Total			

Subcatchment 11-6: 11-6

Runoff = 0.56 cfs @ 11.91 hrs, Volume= 1,190 cf, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
1,840	98	Paved parking & roofs
1,840		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.7	70	0.0275	1.63		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.9	100	Total			

Subcatchment 11-7: 11-7

Runoff = 0.75 cfs @ 11.92 hrs, Volume= 1,617 cf, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
2,501	98	Paved parking & roofs
2,501		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0135	1.31		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.1	20	0.0135	2.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	120	Total			

Subcatchment 11-8: 11-8

Runoff = 2.21 cfs @ 12.00 hrs, Volume= 5,111 cf, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,942	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,903	80	Weighted Average
2,961		Pervious Area

7,942 Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.4	70	0.0050	0.82		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	63	0.0050	1.44		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
8.5	163	Total			

Subcatchment 11-9: 11-9

Runoff = 2.01 cfs @ 12.01 hrs, Volume= 4,726 cf, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,335	98	Paved parking & roofs
2,961	32	Woods/grass comb., Good, HSG A
10,296	79	Weighted Average
2,961		Pervious Area
7,335		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	36	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
1.3	64	0.0050	0.81		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	105	0.0275	3.37		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
9.2	205	Total			

Pond 10: CB 10

Inflow Area = 35,243 sf, Inflow Depth = 3.78" for 100 Year event
Inflow = 4.06 cfs @ 12.06 hrs, Volume= 11,105 cf
Outflow = 4.06 cfs @ 12.06 hrs, Volume= 11,105 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.06 cfs @ 12.06 hrs, Volume= 11,105 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.98' @ 12.06 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.30'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.20' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.05 cfs @ 12.06 hrs HW=260.97' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.05 cfs @ 5.16 fps)

Pond 11: CB 11

Inflow Area = 52,207 sf, Inflow Depth = 5.16" for 100 Year event
Inflow = 10.94 cfs @ 11.92 hrs, Volume= 22,444 cf
Outflow = 10.94 cfs @ 11.92 hrs, Volume= 22,444 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.94 cfs @ 11.92 hrs, Volume= 22,444 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 260.99' @ 11.92 hrs
Flood Elev= 261.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.20'	**24.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.02' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=10.90 cfs @ 11.92 hrs HW=260.99' (Free Discharge)
└**1=Culvert** (Barrel Controls 10.90 cfs @ 4.86 fps)

Pond 16: CB 16

Inflow Area = 8,345 sf, Inflow Depth = 5.04" for 100 Year event
Inflow = 1.61 cfs @ 11.99 hrs, Volume= 3,506 cf
Outflow = 1.61 cfs @ 11.99 hrs, Volume= 3,506 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 11.99 hrs, Volume= 3,506 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 267.93' @ 11.99 hrs
Flood Elev= 269.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.25'	**12.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.20' S= 0.0195 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.61 cfs @ 11.99 hrs HW=267.93' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.61 cfs @ 2.81 fps)

Pond 17: CB 17

Inflow Area = 14,287 sf, Inflow Depth = 5.58" for 100 Year event
Inflow = 2.86 cfs @ 11.91 hrs, Volume= 6,641 cf
Outflow = 2.86 cfs @ 11.91 hrs, Volume= 6,641 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 11.91 hrs, Volume= 6,641 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 266.11' @ 11.91 hrs
Flood Elev= 267.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.85 cfs @ 11.91 hrs HW=266.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.85 cfs @ 4.18 fps)

Pond 18: CB 18

Inflow Area = 10,903 sf, Inflow Depth = 5.62" for 100 Year event
Inflow = 2.21 cfs @ 12.00 hrs, Volume= 5,111 cf
Outflow = 2.21 cfs @ 12.00 hrs, Volume= 5,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.21 cfs @ 12.00 hrs, Volume= 5,111 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.69' @ 12.00 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.70'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.21 cfs @ 12.00 hrs HW=265.69' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.21 cfs @ 3.54 fps)

Pond 19: CB 19

Inflow Area = 65,435 sf, Inflow Depth = 3.11" for 100 Year event
Inflow = 6.17 cfs @ 11.93 hrs, Volume= 16,964 cf
Outflow = 6.17 cfs @ 11.93 hrs, Volume= 16,964 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.17 cfs @ 11.93 hrs, Volume= 16,964 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.68' @ 11.93 hrs
Flood Elev= 267.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	264.60'	**24.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.50' S= 0.0110 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.16 cfs @ 11.93 hrs HW=265.68' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.16 cfs @ 3.55 fps)

Pond 20: (new Pond)

Inflow Area = 75,190 sf, Inflow Depth = 3.17" for 100 Year event
Inflow = 6.80 cfs @ 11.94 hrs, Volume= 19,855 cf
Outflow = 6.80 cfs @ 11.94 hrs, Volume= 19,855 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.80 cfs @ 11.94 hrs, Volume= 19,855 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 264.65' @ 11.94 hrs
Flood Elev= 266.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.50'	**24.0" x 75.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.25' S= 0.0300 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.79 cfs @ 11.94 hrs HW=264.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.79 cfs @ 3.65 fps)

Pond 21: CB 21

Inflow Area = 22,375 sf, Inflow Depth = 4.94" for 100 Year event
Inflow = 4.02 cfs @ 11.93 hrs, Volume= 9,219 cf
Outflow = 4.02 cfs @ 11.93 hrs, Volume= 9,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.02 cfs @ 11.93 hrs, Volume= 9,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.76' @ 11.93 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.02 cfs @ 11.93 hrs HW=262.76' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.02 cfs @ 5.12 fps)

Pond 22: CB 22

Inflow Area = 26,716 sf, Inflow Depth = 5.40" for 100 Year event
Inflow = 5.27 cfs @ 11.92 hrs, Volume= 12,027 cf
Outflow = 5.27 cfs @ 11.92 hrs, Volume= 12,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.27 cfs @ 11.92 hrs, Volume= 12,027 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 262.56' @ 11.92 hrs
Flood Elev= 263.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.00'	**15.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 260.80' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=5.26 cfs @ 11.92 hrs HW=262.56' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.26 cfs @ 4.41 fps)

Pond BR-1: Bio Retention Zone #1

Inflow Area = 34,177 sf, Inflow Depth = 2.46" for 100 Year event
Inflow = 2.59 cfs @ 12.06 hrs, Volume= 7,011 cf
Outflow = 1.86 cfs @ 12.15 hrs, Volume= 7,011 cf, Atten= 28%, Lag= 5.4 min
Discarded = 0.14 cfs @ 12.15 hrs, Volume= 5,001 cf
Primary = 1.72 cfs @ 12.15 hrs, Volume= 2,010 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 269.60' @ 12.15 hrs Surf.Area= 2,937 sf Storage= 1,606 cf

Plug-Flow detention time= 77.7 min calculated for 7,009 cf (100% of inflow)
Center-of-Mass det. time= 77.7 min (946.0 - 868.3)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	2,847 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.00	2,397	0	0
269.50	2,841	1,310	1,310
270.00	3,310	1,538	2,847

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Device 3	269.50'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Primary	265.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.60' S= 0.0051 '/' Cc= 0.900 n= 0.010

Discarded OutFlow Max=0.14 cfs @ 12.15 hrs HW=269.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=1.72 cfs @ 12.15 hrs HW=269.60' (Free Discharge)
└**3=Culvert** (Passes 1.72 cfs of 5.78 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.72 cfs @ 1.05 fps)

Pond BR-8: Bio Retention Zone 8

Inflow Area = 21,690 sf, Inflow Depth = 5.74" for 100 Year event
Inflow = 5.65 cfs @ 11.92 hrs, Volume= 10,379 cf
Outflow = 4.30 cfs @ 11.96 hrs, Volume= 10,379 cf, Atten= 24%, Lag= 2.3 min
Discarded = 0.14 cfs @ 11.96 hrs, Volume= 5,957 cf
Primary = 4.16 cfs @ 11.96 hrs, Volume= 4,422 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 255.97' @ 11.96 hrs Surf.Area= 2,993 sf Storage= 2,696 cf

Plug-Flow detention time= 59.2 min calculated for 10,377 cf (100% of inflow)
Center-of-Mass det. time= 59.2 min (852.4 - 793.2)

Volume	Invert	Avail.Storage	Storage Description
#1	255.00'	2,783 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.00	2,390	0	0
255.50	2,870	1,315	1,315
256.00	3,000	1,468	2,783

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	255.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.14 cfs @ 11.96 hrs HW=255.97' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=4.14 cfs @ 11.96 hrs HW=255.97' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 4.14 cfs @ 2.20 fps)

Pond BR-9: Bio Retention Zone 9

Inflow Area = 22,183 sf, Inflow Depth = 5.27" for 100 Year event
Inflow = 5.48 cfs @ 11.91 hrs, Volume= 9,750 cf
Outflow = 3.23 cfs @ 11.97 hrs, Volume= 9,750 cf, Atten= 41%, Lag= 3.3 min
Discarded = 0.18 cfs @ 11.97 hrs, Volume= 6,339 cf
Primary = 3.05 cfs @ 11.97 hrs, Volume= 3,411 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 257.88' @ 11.97 hrs Surf.Area= 3,936 sf Storage= 3,044 cf

Plug-Flow detention time= 61.8 min calculated for 9,749 cf (100% of inflow)
Center-of-Mass det. time= 61.8 min (863.9 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,508 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	2,579	0	0
257.50	3,727	1,577	1,577
258.00	4,000	1,932	3,508

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	257.50'	**4.00' W x 4.00' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.97 hrs HW=257.88' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=3.04 cfs @ 11.97 hrs HW=257.88' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 3.04 cfs @ 1.99 fps)

Pond MH 5: MH 5

Inflow = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf
Outflow = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 269.01' @ 11.92 hrs
Flood Elev= 272.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0419 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.33 cfs @ 11.92 hrs HW=269.01' (Free Discharge)
1=Culvert (Inlet Controls 4.33 cfs @ 3.42 fps)

Pond MH 6: MH 6

Inflow Area = 34,177 sf, Inflow Depth = 0.71" for 100 Year event
Inflow = 1.72 cfs @ 12.15 hrs, Volume= 2,010 cf
Outflow = 1.72 cfs @ 12.15 hrs, Volume= 2,010 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.72 cfs @ 12.15 hrs, Volume= 2,010 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 265.76' @ 12.15 hrs
Flood Elev= 273.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**12.0" x 85.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.57' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.72 cfs @ 12.15 hrs HW=265.76' (Free Discharge)
1=Culvert (Barrel Controls 1.72 cfs @ 3.70 fps)

Pond SP: Subsurface Pond

Inflow Area = 43,873 sf, Inflow Depth = 2.14" for 100 Year event
Inflow = 7.18 cfs @ 11.96 hrs, Volume= 7,833 cf
Outflow = 1.88 cfs @ 12.18 hrs, Volume= 7,833 cf, Atten= 74%, Lag= 12.9 min
Discarded = 0.13 cfs @ 11.82 hrs, Volume= 1,920 cf
Primary = 1.74 cfs @ 12.18 hrs, Volume= 5,914 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 251.91' @ 12.18 hrs Surf.Area= 2,888 sf Storage= 3,901 cf
Flood Elev= 253.00' Surf.Area= 2,888 sf Storage= 5,788 cf

Plug-Flow detention time= 39.7 min calculated for 7,833 cf (100% of inflow)
Center-of-Mass det. time= 39.7 min (771.1 - 731.4)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	1,917 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
			8,664 cf Overall - 3,871 cf Embedded = 4,793 cf x 40.0% Voids
#2	250.50'	3,871 cf	**44.6"W x 30.0"H x 600.00'L StormTech SC-740**Inside #1
		5,788 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	2,888	0	0
253.00	2,888	8,664	8,664

Device	Routing	Invert	Outlet Devices
#1	Primary	250.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.13 cfs @ 11.82 hrs HW=250.05' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=1.74 cfs @ 12.18 hrs HW=251.91' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.74 cfs @ 5.00 fps)

Pond WL-1: WL-1

Inflow Area = 590,817 sf, Inflow Depth > 2.51" for 100 Year event
Inflow = 23.61 cfs @ 12.10 hrs, Volume= 123,589 cf
Outflow = 15.15 cfs @ 12.27 hrs, Volume= 123,576 cf, Atten= 36%, Lag= 10.5 min
Primary = 15.15 cfs @ 12.27 hrs, Volume= 123,576 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 243.52' @ 12.27 hrs Surf.Area= 32,534 sf Storage= 16,796 cf

Plug-Flow detention time= 33.5 min calculated for 123,556 cf (100% of inflow)
Center-of-Mass det. time= 33.3 min (958.2 - 924.9)

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	141,974 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	27,724	0	0
244.00	36,990	32,357	32,357
246.00	72,627	109,617	141,974

Device	Routing	Invert	Outlet Devices
#1	Primary	243.00'	**15.0' long x 74.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.15 cfs @ 12.27 hrs HW=243.52' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 15.15 cfs @ 1.95 fps)

Pond WL-2: WL-2

Inflow Area = 1,395,923 sf, Inflow Depth = 2.25" for 100 Year event
Inflow = 41.24 cfs @ 12.02 hrs, Volume= 261,680 cf
Outflow = 32.70 cfs @ 12.10 hrs, Volume= 261,680 cf, Atten= 21%, Lag= 4.6 min
Primary = 32.70 cfs @ 12.10 hrs, Volume= 261,680 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 242.18' @ 12.10 hrs Surf.Area= 16,732 sf Storage= 6,132 cf

Plug-Flow detention time= 1.3 min calculated for 261,680 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (942.7 - 941.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	369,553 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	6,884	0	0
243.00	63,019	34,952	34,952
244.00	102,891	82,955	117,907
246.00	148,755	251,646	369,553

Device	Routing	Invert	Outlet Devices
#1	Primary	241.50'	**22.0' long x 118.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=32.69 cfs @ 12.10 hrs HW=242.18' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 32.69 cfs @ 2.20 fps)

Pond WQB 4: WQB #4

Inflow Area = 204,715 sf, Inflow Depth = 3.54" for 100 Year event
Inflow = 23.30 cfs @ 11.92 hrs, Volume= 60,399 cf
Outflow = 4.72 cfs @ 12.32 hrs, Volume= 60,204 cf, Atten= 80%, Lag= 23.8 min
Primary = 4.72 cfs @ 12.32 hrs, Volume= 60,204 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 257.00' Surf.Area= 6,398 sf Storage= 8,179 cf
Peak Elev= 259.49' @ 12.32 hrs Surf.Area= 13,389 sf Storage= 34,282 cf (26,103 cf above start)
Flood Elev= 261.00' Surf.Area= 16,368 sf Storage= 56,725 cf (48,546 cf above start)

Plug-Flow detention time= 318.2 min calculated for 52,016 cf (86% of inflow)
Center-of-Mass det. time= 205.0 min (1,015.1 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	74,067 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,320	0	0
256.00	2,440	3,760	3,760
258.00	10,356	12,796	16,556
260.00	14,419	24,775	41,331
262.00	18,317	32,736	74,067

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	**12.0" x 120.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 256.40' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Device 1	257.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	258.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.0' Crest Height

Primary OutFlow Max=4.72 cfs @ 12.32 hrs HW=259.49' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.72 cfs @ 6.01 fps)
  └**2=Orifice/Grate** (Passes < 0.36 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 17.59 cfs potential flow)

Link MH 4: Manhole 4 18" Inflow

Inflow = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf
Primary = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100 Year Secondary Outflow Imported from E03 142 Post Development 3~Pond MH4

Link WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth = 1.63" for 100 Year event
Inflow = 6.70 cfs @ 12.35 hrs, Volume= 59,285 cf
Primary = 6.70 cfs @ 12.35 hrs, Volume= 59,285 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

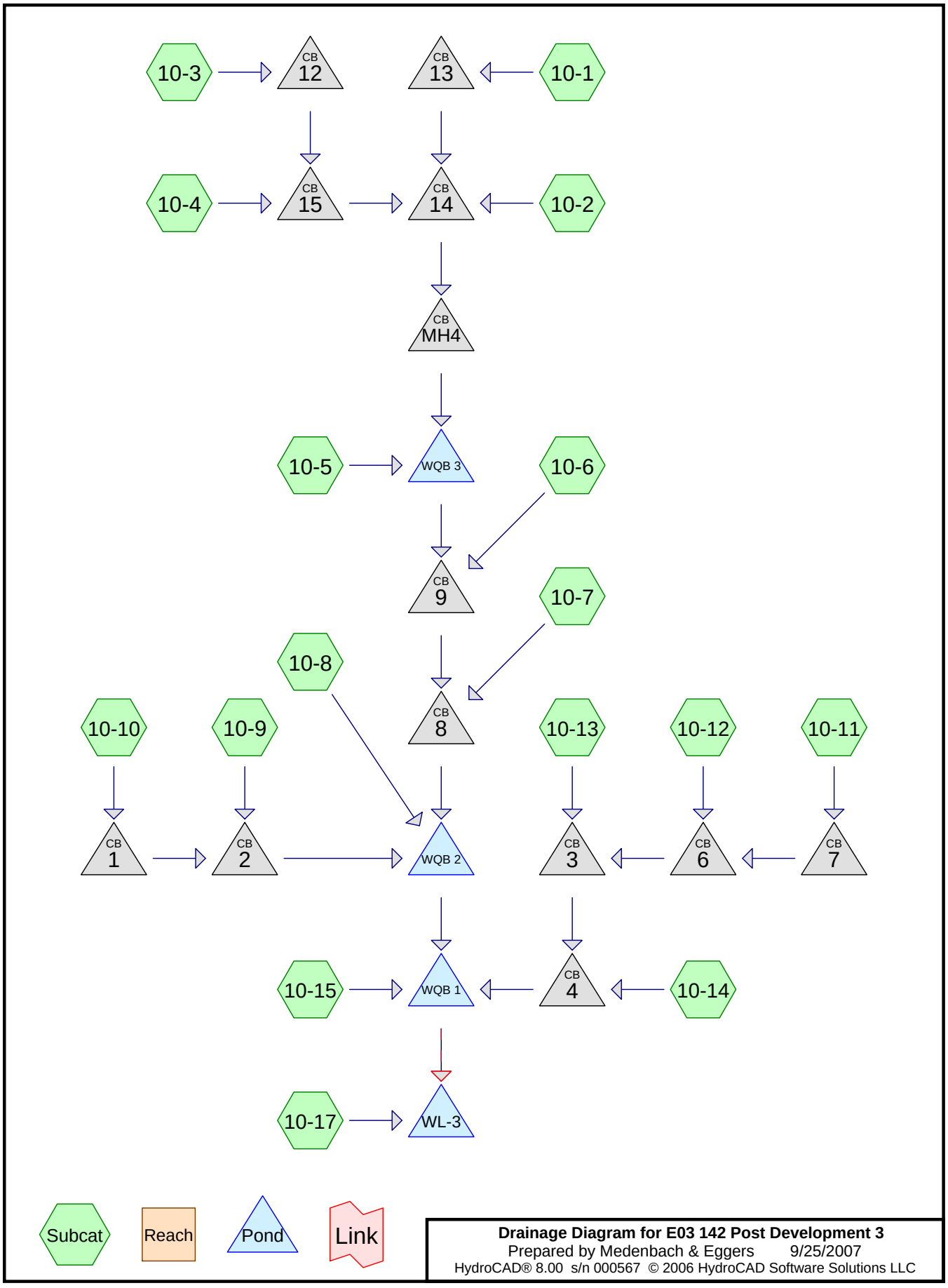
100 Year Primary Outflow Imported from E03 142 Post Development 3~Pond WL-3

Link WQB5: WQB#5

Inflow Area = 148,651 sf, Inflow Depth = 0.44" for 100 Year event
Inflow = 1.48 cfs @ 12.65 hrs, Volume= 5,489 cf
Primary = 1.48 cfs @ 12.65 hrs, Volume= 5,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100 Year Primary Outflow Imported from E03 142 Post Development~Pond WQB5



Drainage Diagram for E03 142 Post Development 3
Prepared by Medenbach & Eggers 9/25/2007

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcats)
312,797	32	Woods/grass comb., Good, HSG A (10-1,10-10,10-11,10-12,10-15,10-17,10-3,10-4,10-5,10
93,185	98	Paved parking & roofs (10-1,10-10,10-11,10-13,10-14,10-2,10-3,10-4,10-5,10-6,10-9)
30,869	98	Paved roads w/curbs & sewers (10-12,10-17,10-7,10-8)
436,851		

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10-1: 10-1 Runoff Area=4,805 sf Runoff Depth=1.50"
Flow Length=85' Slope=0.0500 '/' Tc=7.9 min CN=78 Runoff=0.28 cfs 600 cf

Subcatchment 10-10: 10-10 Runoff Area=7,560 sf Runoff Depth=2.45"
Flow Length=300' Tc=10.0 min CN=90 Runoff=0.64 cfs 1,542 cf

Subcatchment 10-11: 10-11 Runoff Area=20,275 sf Runoff Depth=1.12"
Flow Length=188' Tc=19.8 min CN=72 Runoff=0.55 cfs 1,894 cf

Subcatchment 10-12: 10-12 Runoff Area=11,460 sf Runoff Depth=1.43"
Flow Length=200' Tc=10.9 min CN=77 Runoff=0.56 cfs 1,366 cf

Subcatchment 10-13: 10-13 Runoff Area=6,520 sf Runoff Depth=3.27"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=0.85 cfs 1,775 cf

Subcatchment 10-14: 10-14 Runoff Area=6,595 sf Runoff Depth=3.27"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=0.86 cfs 1,795 cf

Subcatchment 10-15: 10-15 Runoff Area=15,781 sf Runoff Depth=0.00"
Flow Length=113' Slope=0.1400 '/' Tc=8.9 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment 10-17: 10-17 Runoff Area=192,532 sf Runoff Depth=0.00"
Flow Length=314' Tc=15.9 min CN=35 Runoff=0.00 cfs 0 cf

Subcatchment 10-2: 10-2 Runoff Area=2,370 sf Runoff Depth=3.27"
Flow Length=130' Slope=0.0130 '/' Tc=1.5 min CN=98 Runoff=0.31 cfs 645 cf

Subcatchment 10-3: 10-3 Runoff Area=18,313 sf Runoff Depth=1.78"
Flow Length=170' Tc=8.8 min CN=82 Runoff=1.21 cfs 2,720 cf

Subcatchment 10-4: 10-4 Runoff Area=17,249 sf Runoff Depth=1.86"
Flow Length=160' Slope=0.0250 '/' Tc=1.3 min CN=83 Runoff=1.55 cfs 2,672 cf

Subcatchment 10-5: 10-5 Runoff Area=54,463 sf Runoff Depth=0.12"
Flow Length=188' Tc=11.4 min CN=47 Runoff=0.02 cfs 562 cf

Subcatchment 10-6: 10-6 Runoff Area=11,270 sf Runoff Depth=1.94"
Flow Length=180' Tc=7.5 min CN=84 Runoff=0.84 cfs 1,819 cf

Subcatchment 10-7: 10-7 Runoff Area=8,090 sf Runoff Depth=2.10"
Flow Length=200' Slope=0.0300 '/' Tc=1.4 min CN=86 Runoff=0.80 cfs 1,415 cf

Subcatchment 10-8: 10-8 Runoff Area=46,708 sf Runoff Depth=0.04"
Flow Length=175' Tc=16.3 min CN=42 Runoff=0.00 cfs 146 cf

Subcatchment 10-9: 10-9 Runoff Area=12,860 sf Runoff Depth=0.95"
Flow Length=248' Slope=0.0550 '/' Tc=1.2 min CN=69 Runoff=0.60 cfs 1,022 cf

Pond 1: CB 1 Peak Elev=265.85' Inflow=0.64 cfs 1,542 cf
12.0" x 35.0' Culvert Outflow=0.64 cfs 1,542 cf

Pond 2: CB 2 Peak Elev=265.68' Inflow=1.04 cfs 2,565 cf
15.0" x 80.0' Culvert Outflow=1.04 cfs 2,565 cf

Pond 3: CB 3 Peak Elev=259.65' Inflow=1.33 cfs 5,035 cf
15.0" x 20.0' Culvert Outflow=1.33 cfs 5,035 cf

Pond 4: CB 4 Peak Elev=259.72' Inflow=2.18 cfs 6,830 cf
15.0" x 50.0' Culvert Outflow=2.18 cfs 6,830 cf

Pond 6: CB 6 Peak Elev=262.27' Inflow=1.00 cfs 3,260 cf
15.0" x 200.0' Culvert Outflow=1.00 cfs 3,260 cf

Pond 7: CB 7 Peak Elev=262.41' Inflow=0.55 cfs 1,894 cf
12.0" x 35.0' Culvert Outflow=0.55 cfs 1,894 cf

Pond 8: CB 8 Peak Elev=265.94' Inflow=1.44 cfs 3,233 cf
18.0" x 215.0' Culvert Outflow=1.44 cfs 3,233 cf

Pond 9: CB 9 Peak Elev=266.02' Inflow=0.84 cfs 1,819 cf
18.0" x 20.0' Culvert Outflow=0.84 cfs 1,819 cf

Pond 12: CB 12 Peak Elev=273.92' Inflow=1.21 cfs 2,720 cf
12.0" x 20.0' Culvert Outflow=1.21 cfs 2,720 cf

Pond 13: CB 13 Peak Elev=269.39' Inflow=0.28 cfs 600 cf
12.0" x 20.0' Culvert Outflow=0.28 cfs 600 cf

Pond 14: CB 14 Peak Elev=269.84' Inflow=2.87 cfs 6,637 cf
18.0" x 95.0' Culvert Outflow=2.87 cfs 6,637 cf

Pond 15: CB 15 Peak Elev=273.92' Inflow=2.37 cfs 5,392 cf
15.0" x 160.0' Culvert Outflow=2.37 cfs 5,392 cf

Pond MH4: MH 4 Peak Elev=268.90' Inflow=2.87 cfs 6,637 cf
Primary=2.82 cfs 6,631 cf Secondary=0.05 cfs 6 cf Outflow=2.87 cfs 6,637 cf

Pond WL-3: WL-3 Peak Elev=244.02' Storage=766 cf Inflow=0.31 cfs 12,639 cf
Outflow=0.29 cfs 12,627 cf

Pond WQB 1: WQB #1 Peak Elev=256.78' Storage=7,687 cf Inflow=2.34 cfs 12,744 cf
Primary=0.31 cfs 12,639 cf Secondary=0.00 cfs 0 cf Outflow=0.31 cfs 12,639 cf

Pond WQB 2: WQB 2 Peak Elev=259.51' Storage=4,998 cf Inflow=2.48 cfs 5,944 cf
Outflow=0.22 cfs 5,914 cf

Pond WQB 3: WQB #3 Peak Elev=267.26' Storage=579 cf Inflow=2.82 cfs 7,192 cf
Discarded=1.74 cfs 7,192 cf Primary=0.00 cfs 0 cf Outflow=1.74 cfs 7,192 cf

Total Runoff Area = 436,851 sf Runoff Volume = 19,972 cf Average Runoff Depth = 0.55"
71.60% Pervious Area = 312,797 sf 28.40% Impervious Area = 124,054 sf

Subcatchment 10-1: 10-1

Runoff = 0.28 cfs @ 12.00 hrs, Volume= 600 cf, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
1,460	32	Woods/grass comb., Good, HSG A
3,345	98	Paved parking & roofs
4,805	78	Weighted Average
1,460		Pervious Area
3,345		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	40	0.0500	0.16		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.2	15	0.0500	1.52		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
3.4	30	0.0500	0.15		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
7.9	85	Total			

Subcatchment 10-10: 10-10

Runoff = 0.64 cfs @ 12.01 hrs, Volume= 1,542 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,660	98	Paved parking & roofs
900	32	Woods/grass comb., Good, HSG A
7,560	90	Weighted Average
900		Pervious Area
6,660		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	45	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.4	55	0.0550	2.05		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	200	0.0550	4.76		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.0	300	Total			

Subcatchment 10-11: 10-11

Runoff = 0.55 cfs @ 12.14 hrs, Volume= 1,894 cf, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
12,240	98	Paved parking & roofs
8,035	32	Woods/grass comb., Good, HSG A
20,275	72	Weighted Average
8,035		Pervious Area
12,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	88	0.1300	2.52		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
19.8	188	Total			

Subcatchment 10-12: 10-12

Runoff = 0.56 cfs @ 12.03 hrs, Volume= 1,366 cf, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,792	98	Paved roads w/curbs & sewers
3,668	32	Woods/grass comb., Good, HSG A
11,460	77	Weighted Average
3,668		Pervious Area
7,792		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	30	0.0100	0.05		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	70	0.0320	1.73		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0320	3.63		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.9	200	Total			

Subcatchment 10-13: 10-13

Runoff = 0.85 cfs @ 11.91 hrs, Volume= 1,775 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,520	98	Paved parking & roofs
6,520		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-14: 10-14

Runoff = 0.86 cfs @ 11.91 hrs, Volume= 1,795 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,595	98	Paved parking & roofs
6,595		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-15: 10-15

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
15,781	32	Woods/grass comb., Good, HSG A
15,781		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.1400	0.19		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	13	0.1400	1.87		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.9	113	Total			

Subcatchment 10-17: 10-17

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
182,870	32	Woods/grass comb., Good, HSG A
9,662	98	Paved roads w/curbs & sewers
192,532	35	Weighted Average
182,870		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	75	0.0910	1.51		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.9	64	0.0625	1.25		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
0.9	75	0.0800	1.41		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
15.9	314	Total			

Subcatchment 10-2: 10-2

Runoff = 0.31 cfs @ 11.92 hrs, Volume= 645 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
2,370	98	Paved parking & roofs
2,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	30	0.0130	2.31		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	130	Total			

Subcatchment 10-3: 10-3

Runoff = 1.21 cfs @ 12.00 hrs, Volume= 2,720 cf, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
4,563	32	Woods/grass comb., Good, HSG A
13,750	98	Paved parking & roofs
18,313	82	Weighted Average
4,563		Pervious Area
13,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.6	70	0.0100	2.03		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
8.8	170	Total			

Subcatchment 10-4: 10-4

Runoff = 1.55 cfs @ 11.92 hrs, Volume= 2,672 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
3,909	32	Woods/grass comb., Good, HSG A
13,340	98	Paved parking & roofs
17,249	83	Weighted Average
3,909		Pervious Area
13,340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0250	1.68		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	60	0.0250	3.21		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	160	Total			

Subcatchment 10-5: 10-5

Runoff = 0.02 cfs @ 12.50 hrs, Volume= 562 cf, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
12,225	98	Paved parking & roofs
42,238	32	Woods/grass comb., Good, HSG A
54,463	47	Weighted Average
42,238		Pervious Area
12,225		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
11.4	188	Total			

Subcatchment 10-6: 10-6

Runoff = 0.84 cfs @ 11.99 hrs, Volume= 1,819 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
8,870	98	Paved parking & roofs
2,400	32	Woods/grass comb., Good, HSG A
11,270	84	Weighted Average
2,400		Pervious Area
8,870		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.7	70	0.0300	1.68		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.4	80	0.0300	3.52		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
7.5	180	Total			

Subcatchment 10-7: 10-7

Runoff = 0.80 cfs @ 11.92 hrs, Volume= 1,415 cf, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,615	98	Paved roads w/curbs & sewers
1,475	32	Woods/grass comb., Good, HSG A
8,090	86	Weighted Average
1,475		Pervious Area
6,615		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	200	Total			

Subcatchment 10-8: 10-8

Runoff = 0.00 cfs @ 18.13 hrs, Volume= 146 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
6,800	98	Paved roads w/curbs & sewers
39,908	32	Woods/grass comb., Good, HSG A
46,708	42	Weighted Average
39,908		Pervious Area
6,800		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	90	0.0440	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	10	0.0470	0.08		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	75	0.0470	1.08		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.3	175	Total			

Subcatchment 10-9: 10-9

Runoff = 0.60 cfs @ 11.92 hrs, Volume= 1,022 cf, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=3.50"

Area (sf)	CN	Description
7,270	98	Paved parking & roofs
5,590	32	Woods/grass comb., Good, HSG A
12,860	69	Weighted Average
5,590		Pervious Area
7,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0550	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	148	0.0550	4.76		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.2	248	Total			

Pond 1: CB 1

Inflow Area = 7,560 sf, Inflow Depth = 2.45" for 1 Year event
Inflow = 0.64 cfs @ 12.01 hrs, Volume= 1,542 cf
Outflow = 0.64 cfs @ 12.01 hrs, Volume= 1,542 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.01 hrs, Volume= 1,542 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 265.85' @ 12.01 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.22' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.63 cfs @ 12.01 hrs HW=265.85' (Free Discharge)
1=Culvert (Barrel Controls 0.63 cfs @ 2.76 fps)

Pond 2: CB 2

Inflow Area = 20,420 sf, Inflow Depth = 1.51" for 1 Year event
Inflow = 1.04 cfs @ 11.93 hrs, Volume= 2,565 cf
Outflow = 1.04 cfs @ 11.93 hrs, Volume= 2,565 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 11.93 hrs, Volume= 2,565 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 265.68' @ 11.93 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.04 cfs @ 11.93 hrs HW=265.68' (Free Discharge)
1=Culvert (Inlet Controls 1.04 cfs @ 2.37 fps)

Pond 3: CB 3

Inflow Area = 38,255 sf, Inflow Depth = 1.58" for 1 Year event
Inflow = 1.33 cfs @ 11.92 hrs, Volume= 5,035 cf
Outflow = 1.33 cfs @ 11.92 hrs, Volume= 5,035 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 11.92 hrs, Volume= 5,035 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 259.65' @ 11.92 hrs
Flood Elev= 261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.90' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.32 cfs @ 11.92 hrs HW=259.64' (Free Discharge)
1=Culvert (Barrel Controls 1.32 cfs @ 3.02 fps)

Pond 4: CB 4

Inflow Area = 44,850 sf, Inflow Depth = 1.83" for 1 Year event
Inflow = 2.18 cfs @ 11.92 hrs, Volume= 6,830 cf
Outflow = 2.18 cfs @ 11.92 hrs, Volume= 6,830 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.18 cfs @ 11.92 hrs, Volume= 6,830 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 259.72' @ 11.92 hrs
Flood Elev= 261.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	258.90'	**15.0" x 50.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.65' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.18 cfs @ 11.92 hrs HW=259.72' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.18 cfs @ 3.64 fps)

Pond 6: CB 6

Inflow Area = 31,735 sf, Inflow Depth = 1.23" for 1 Year event
Inflow = 1.00 cfs @ 12.07 hrs, Volume= 3,260 cf
Outflow = 1.00 cfs @ 12.07 hrs, Volume= 3,260 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.07 hrs, Volume= 3,260 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.27' @ 12.07 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.80'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0140 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.00 cfs @ 12.07 hrs HW=262.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.00 cfs @ 2.34 fps)

Pond 7: CB 7

Inflow Area = 20,275 sf, Inflow Depth = 1.12" for 1 Year event
Inflow = 0.55 cfs @ 12.14 hrs, Volume= 1,894 cf
Outflow = 0.55 cfs @ 12.14 hrs, Volume= 1,894 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.14 hrs, Volume= 1,894 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.41' @ 12.14 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	262.00'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.82' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.55 cfs @ 12.14 hrs HW=262.41' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.55 cfs @ 2.67 fps)

Pond 8: CB 8

Inflow Area = 116,560 sf, Inflow Depth = 0.33" for 1 Year event
Inflow = 1.44 cfs @ 11.93 hrs, Volume= 3,233 cf
Outflow = 1.44 cfs @ 11.93 hrs, Volume= 3,233 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.44 cfs @ 11.93 hrs, Volume= 3,233 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 265.94' @ 11.93 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.10' S= 0.0107 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.44 cfs @ 11.93 hrs HW=265.94' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.44 cfs @ 2.50 fps)

Pond 9: CB 9

Inflow Area = 108,470 sf, Inflow Depth = 0.20" for 1 Year event
Inflow = 0.84 cfs @ 11.99 hrs, Volume= 1,819 cf
Outflow = 0.84 cfs @ 11.99 hrs, Volume= 1,819 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 11.99 hrs, Volume= 1,819 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.02' @ 11.99 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.60'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.84 cfs @ 11.99 hrs HW=266.02' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.84 cfs @ 3.11 fps)

Pond 12: CB 12

Inflow Area = 18,313 sf, Inflow Depth = 1.78" for 1 Year event
Inflow = 1.21 cfs @ 12.00 hrs, Volume= 2,720 cf
Outflow = 1.21 cfs @ 12.00 hrs, Volume= 2,720 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.00 hrs, Volume= 2,720 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 273.92' @ 12.00 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.25'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 273.15' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.21 cfs @ 12.00 hrs HW=273.92' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.21 cfs @ 3.04 fps)

Pond 13: CB 13

Inflow Area = 4,805 sf, Inflow Depth = 1.50" for 1 Year event
Inflow = 0.28 cfs @ 12.00 hrs, Volume= 600 cf
Outflow = 0.28 cfs @ 12.00 hrs, Volume= 600 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.00 hrs, Volume= 600 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 269.39' @ 12.00 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.28 cfs @ 12.00 hrs HW=269.39' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.28 cfs @ 2.16 fps)

Pond 14: CB 14

Inflow Area = 42,737 sf, Inflow Depth = 1.86" for 1 Year event
Inflow = 2.87 cfs @ 11.92 hrs, Volume= 6,637 cf
Outflow = 2.87 cfs @ 11.92 hrs, Volume= 6,637 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 11.92 hrs, Volume= 6,637 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 269.84' @ 11.92 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	**18.0" x 95.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 268.52' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.86 cfs @ 11.92 hrs HW=269.84' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.86 cfs @ 4.05 fps)

Pond 15: CB 15

Inflow Area = 35,562 sf, Inflow Depth = 1.82" for 1 Year event
Inflow = 2.37 cfs @ 11.92 hrs, Volume= 5,392 cf
Outflow = 2.37 cfs @ 11.92 hrs, Volume= 5,392 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.37 cfs @ 11.92 hrs, Volume= 5,392 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 273.92' @ 11.92 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.15'	**15.0" x 160.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0259 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.36 cfs @ 11.92 hrs HW=273.92' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.36 cfs @ 2.98 fps)

Pond MH4: MH 4

Inflow Area = 42,737 sf, Inflow Depth = 1.86" for 1 Year event
Inflow = 2.87 cfs @ 11.92 hrs, Volume= 6,637 cf
Outflow = 2.87 cfs @ 11.92 hrs, Volume= 6,637 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 11.92 hrs, Volume= 6,631 cf
Secondary = 0.05 cfs @ 11.92 hrs, Volume= 6 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 268.90' @ 11.92 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.80'	**12.0" x 90.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 267.35' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Secondary	268.80'	**15.0" x 135.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.00' S= 0.0281 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.81 cfs @ 11.92 hrs HW=268.89' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.81 cfs @ 4.09 fps)

Secondary OutFlow Max=0.04 cfs @ 11.92 hrs HW=268.89' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.04 cfs @ 1.03 fps)

Pond WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth > 0.35" for 1 Year event
Inflow = 0.31 cfs @ 14.10 hrs, Volume= 12,639 cf
Outflow = 0.29 cfs @ 14.98 hrs, Volume= 12,627 cf, Atten= 6%, Lag= 53.2 min
Primary = 0.29 cfs @ 14.98 hrs, Volume= 12,627 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.02' @ 14.98 hrs Surf.Area= 34,865 sf Storage= 766 cf

Plug-Flow detention time= 44.4 min calculated for 12,623 cf (100% of inflow)
Center-of-Mass det. time= 43.5 min (1,156.9 - 1,113.4)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.20 cfs @ 14.98 hrs HW=244.02' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.20 cfs @ 0.37 fps)

Pond WQB 1: WQB #1

Inflow Area = 244,319 sf, Inflow Depth > 0.63" for 1 Year event
Inflow = 2.34 cfs @ 11.92 hrs, Volume= 12,744 cf
Outflow = 0.31 cfs @ 14.10 hrs, Volume= 12,639 cf, Atten= 87%, Lag= 130.7 min
Primary = 0.31 cfs @ 14.10 hrs, Volume= 12,639 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 255.50' Surf.Area= 2,716 sf Storage= 3,274 cf
Peak Elev= 256.78' @ 14.10 hrs Surf.Area= 4,565 sf Storage= 7,687 cf (4,413 cf above start)
Flood Elev= 258.00' Surf.Area= 6,916 sf Storage= 14,708 cf (11,434 cf above start)

Plug-Flow detention time= 462.2 min calculated for 9,362 cf (73% of inflow)
Center-of-Mass det. time= 227.1 min (1,113.4 - 886.3)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	14,708 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,650	0	0
256.00	3,071	4,721	4,721
258.00	6,916	9,987	14,708

Device	Routing	Invert	Outlet Devices
#1	Primary	255.50'	**18.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0429 '/' Cc= 0.900 n= 0.010
#2	Device 1	255.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	256.75'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	257.25'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.30 cfs @ 14.10 hrs HW=256.78' (Free Discharge)
└**1=Culvert** (Passes 0.30 cfs of 6.17 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 5.17 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.54 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=255.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WQB 2: WQB 2

Inflow Area = 183,688 sf, Inflow Depth = 0.39" for 1 Year event
Inflow = 2.48 cfs @ 11.93 hrs, Volume= 5,944 cf
Outflow = 0.22 cfs @ 12.55 hrs, Volume= 5,914 cf, Atten= 91%, Lag= 37.2 min
Primary = 0.22 cfs @ 12.55 hrs, Volume= 5,914 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 258.50' Surf.Area= 1,940 sf Storage= 2,277 cf
Peak Elev= 259.51' @ 12.55 hrs Surf.Area= 3,461 sf Storage= 4,998 cf (2,721 cf above start)
Flood Elev= 262.00' Surf.Area= 6,340 sf Storage= 17,431 cf (15,154 cf above start)

Plug-Flow detention time= 401.0 min calculated for 3,636 cf (61% of inflow)
Center-of-Mass det. time= 153.2 min (984.1 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	24,240 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	311	0	0
258.00	1,185	1,496	1,496
260.00	4,205	5,390	6,886
262.00	6,340	10,545	17,431
263.00	7,277	6,809	24,240

Device	Routing	Invert	Outlet Devices
#1	Primary	258.50'	**15.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.00' S= 0.0071 '/' Cc= 0.900 n= 0.010
#2	Device 1	258.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	260.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	262.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=0.22 cfs @ 12.55 hrs HW=259.51' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 3.53 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.52 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond WQB 3: WQB #3

Inflow Area = 97,200 sf, Inflow Depth = 0.89" for 1 Year event
Inflow = 2.82 cfs @ 11.92 hrs, Volume= 7,192 cf
Outflow = 1.74 cfs @ 12.02 hrs, Volume= 7,192 cf, Atten= 39%, Lag= 6.0 min
Discarded = 1.74 cfs @ 12.02 hrs, Volume= 7,192 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 267.26' @ 12.02 hrs Surf.Area= 2,500 sf Storage= 579 cf
Flood Elev= 270.00' Surf.Area= 6,585 sf Storage= 13,523 cf

Plug-Flow detention time= 1.7 min calculated for 7,192 cf (100% of inflow)
Center-of-Mass det. time= 1.7 min (838.5 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	13,523 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.00	1,993	0	0
268.00	3,961	2,977	2,977
270.00	6,585	10,546	13,523

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**30.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.63' S= 0.0050 '/' Cc= 0.900 n= 0.010
#3	Device 2	268.50'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 2	270.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=1.74 cfs @ 12.02 hrs HW=267.26' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.74 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=267.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 0.90 cfs potential flow)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10-1: 10-1 Runoff Area=4,805 sf Runoff Depth=3.58"
Flow Length=85' Slope=0.0500 '/' Tc=7.9 min CN=78 Runoff=0.65 cfs 1,433 cf

Subcatchment 10-10: 10-10 Runoff Area=7,560 sf Runoff Depth=4.85"
Flow Length=300' Tc=10.0 min CN=90 Runoff=1.21 cfs 3,053 cf

Subcatchment 10-11: 10-11 Runoff Area=20,275 sf Runoff Depth=2.99"
Flow Length=188' Tc=19.8 min CN=72 Runoff=1.56 cfs 5,057 cf

Subcatchment 10-12: 10-12 Runoff Area=11,460 sf Runoff Depth=3.48"
Flow Length=200' Tc=10.9 min CN=77 Runoff=1.36 cfs 3,323 cf

Subcatchment 10-13: 10-13 Runoff Area=6,520 sf Runoff Depth=5.76"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.47 cfs 3,131 cf

Subcatchment 10-14: 10-14 Runoff Area=6,595 sf Runoff Depth=5.76"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.49 cfs 3,167 cf

Subcatchment 10-15: 10-15 Runoff Area=15,781 sf Runoff Depth=0.13"
Flow Length=113' Slope=0.1400 '/' Tc=8.9 min CN=32 Runoff=0.01 cfs 175 cf

Subcatchment 10-17: 10-17 Runoff Area=192,532 sf Runoff Depth=0.25"
Flow Length=314' Tc=15.9 min CN=35 Runoff=0.20 cfs 4,019 cf

Subcatchment 10-2: 10-2 Runoff Area=2,370 sf Runoff Depth=5.76"
Flow Length=130' Slope=0.0130 '/' Tc=1.5 min CN=98 Runoff=0.53 cfs 1,138 cf

Subcatchment 10-3: 10-3 Runoff Area=18,313 sf Runoff Depth=3.99"
Flow Length=170' Tc=8.8 min CN=82 Runoff=2.64 cfs 6,085 cf

Subcatchment 10-4: 10-4 Runoff Area=17,249 sf Runoff Depth=4.09"
Flow Length=160' Slope=0.0250 '/' Tc=1.3 min CN=83 Runoff=3.26 cfs 5,881 cf

Subcatchment 10-5: 10-5 Runoff Area=54,463 sf Runoff Depth=0.93"
Flow Length=188' Tc=11.4 min CN=47 Runoff=1.32 cfs 4,237 cf

Subcatchment 10-6: 10-6 Runoff Area=11,270 sf Runoff Depth=4.20"
Flow Length=180' Tc=7.5 min CN=84 Runoff=1.77 cfs 3,941 cf

Subcatchment 10-7: 10-7 Runoff Area=8,090 sf Runoff Depth=4.41"
Flow Length=200' Slope=0.0300 '/' Tc=1.4 min CN=86 Runoff=1.61 cfs 2,973 cf

Subcatchment 10-8: 10-8 Runoff Area=46,708 sf Runoff Depth=0.62"
Flow Length=175' Tc=16.3 min CN=42 Runoff=0.43 cfs 2,394 cf

Subcatchment 10-9: 10-9 Runoff Area=12,860 sf Runoff Depth=2.71"
Flow Length=248' Slope=0.0550 '/' Tc=1.2 min CN=69 Runoff=1.71 cfs 2,907 cf

Pond 1: CB 1 Peak Elev=266.05' Inflow=1.21 cfs 3,053 cf
12.0" x 35.0' Culvert Outflow=1.21 cfs 3,053 cf

Pond 2: CB 2 Peak Elev=266.01' Inflow=2.56 cfs 5,960 cf
15.0" x 80.0' Culvert Outflow=2.56 cfs 5,960 cf

Pond 3: CB 3 Peak Elev=260.04' Inflow=2.93 cfs 11,510 cf
15.0" x 20.0' Culvert Outflow=2.93 cfs 11,510 cf

Pond 4: CB 4 Peak Elev=260.20' Inflow=4.39 cfs 14,677 cf
15.0" x 50.0' Culvert Outflow=4.39 cfs 14,677 cf

Pond 6: CB 6 Peak Elev=262.63' Inflow=2.66 cfs 8,380 cf
15.0" x 200.0' Culvert Outflow=2.66 cfs 8,380 cf

Pond 7: CB 7 Peak Elev=262.76' Inflow=1.56 cfs 5,057 cf
12.0" x 35.0' Culvert Outflow=1.56 cfs 5,057 cf

Pond 8: CB 8 Peak Elev=266.21' Inflow=2.99 cfs 6,914 cf
18.0" x 215.0' Culvert Outflow=2.99 cfs 6,914 cf

Pond 9: CB 9 Peak Elev=266.25' Inflow=1.77 cfs 3,941 cf
18.0" x 20.0' Culvert Outflow=1.77 cfs 3,941 cf

Pond 12: CB 12 Peak Elev=274.38' Inflow=2.64 cfs 6,085 cf
12.0" x 20.0' Culvert Outflow=2.64 cfs 6,085 cf

Pond 13: CB 13 Peak Elev=269.57' Inflow=0.65 cfs 1,433 cf
12.0" x 20.0' Culvert Outflow=0.65 cfs 1,433 cf

Pond 14: CB 14 Peak Elev=270.37' Inflow=6.16 cfs 14,537 cf
18.0" x 95.0' Culvert Outflow=6.16 cfs 14,537 cf

Pond 15: CB 15 Peak Elev=274.53' Inflow=5.14 cfs 11,966 cf
15.0" x 160.0' Culvert Outflow=5.14 cfs 11,966 cf

Pond MH4: MH 4 Peak Elev=269.55' Inflow=6.16 cfs 14,537 cf
Primary=3.88 cfs 13,429 cf Secondary=2.28 cfs 1,108 cf Outflow=6.16 cfs 14,537 cf

Pond WL-3: WL-3 Peak Elev=244.09' Storage=3,730 cf Inflow=3.50 cfs 33,923 cf
Outflow=2.16 cfs 33,888 cf

Pond WQB 1: WQB #1 Peak Elev=257.19' Storage=9,720 cf Inflow=4.64 cfs 30,083 cf
Primary=3.34 cfs 29,904 cf Secondary=0.00 cfs 0 cf Outflow=3.34 cfs 29,904 cf

Pond WQB 2: WQB 2 Peak Elev=260.26' Storage=8,010 cf Inflow=5.56 cfs 15,268 cf
Outflow=1.66 cfs 15,231 cf

Pond WQB 3: WQB #3 Peak Elev=267.85' Storage=2,413 cf Inflow=4.46 cfs 17,666 cf
Discarded=2.55 cfs 17,666 cf Primary=0.00 cfs 0 cf Outflow=2.55 cfs 17,666 cf

Total Runoff Area = 436,851 sf Runoff Volume = 52,912 cf Average Runoff Depth = 1.45"
71.60% Pervious Area = 312,797 sf 28.40% Impervious Area = 124,054 sf

Subcatchment 10-1: 10-1

Runoff = 0.65 cfs @ 11.99 hrs, Volume= 1,433 cf, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
1,460	32	Woods/grass comb., Good, HSG A
3,345	98	Paved parking & roofs
4,805	78	Weighted Average
1,460		Pervious Area
3,345		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	40	0.0500	0.16		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.2	15	0.0500	1.52		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
3.4	30	0.0500	0.15		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
7.9	85	Total			

Subcatchment 10-10: 10-10

Runoff = 1.21 cfs @ 12.01 hrs, Volume= 3,053 cf, Depth= 4.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,660	98	Paved parking & roofs
900	32	Woods/grass comb., Good, HSG A
7,560	90	Weighted Average
900		Pervious Area
6,660		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	45	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.4	55	0.0550	2.05		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	200	0.0550	4.76		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.0	300	Total			

Subcatchment 10-11: 10-11

Runoff = 1.56 cfs @ 12.12 hrs, Volume= 5,057 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
12,240	98	Paved parking & roofs
8,035	32	Woods/grass comb., Good, HSG A
20,275	72	Weighted Average
8,035		Pervious Area
12,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	88	0.1300	2.52		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
19.8	188	Total			

Subcatchment 10-12: 10-12

Runoff = 1.36 cfs @ 12.03 hrs, Volume= 3,323 cf, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,792	98	Paved roads w/curbs & sewers
3,668	32	Woods/grass comb., Good, HSG A
11,460	77	Weighted Average
3,668		Pervious Area
7,792		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	30	0.0100	0.05		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	70	0.0320	1.73		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0320	3.63		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.9	200	Total			

Subcatchment 10-13: 10-13

Runoff = 1.47 cfs @ 11.91 hrs, Volume= 3,131 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,520	98	Paved parking & roofs
6,520		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-14: 10-14

Runoff = 1.49 cfs @ 11.91 hrs, Volume= 3,167 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,595	98	Paved parking & roofs
6,595		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-15: 10-15

Runoff = 0.01 cfs @ 14.88 hrs, Volume= 175 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
15,781	32	Woods/grass comb., Good, HSG A
15,781		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.1400	0.19		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	13	0.1400	1.87		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.9	113	Total			

Subcatchment 10-17: 10-17

Runoff = 0.20 cfs @ 12.49 hrs, Volume= 4,019 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
182,870	32	Woods/grass comb., Good, HSG A
9,662	98	Paved roads w/curbs & sewers
192,532	35	Weighted Average
182,870		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	75	0.0910	1.51		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.9	64	0.0625	1.25		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
0.9	75	0.0800	1.41		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
15.9	314	Total			

Subcatchment 10-2: 10-2

Runoff = 0.53 cfs @ 11.92 hrs, Volume= 1,138 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
2,370	98	Paved parking & roofs
2,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	30	0.0130	2.31		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	130	Total			

Subcatchment 10-3: 10-3

Runoff = 2.64 cfs @ 12.00 hrs, Volume= 6,085 cf, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
4,563	32	Woods/grass comb., Good, HSG A
13,750	98	Paved parking & roofs
18,313	82	Weighted Average
4,563		Pervious Area
13,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.6	70	0.0100	2.03		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
8.8	170	Total			

Subcatchment 10-4: 10-4

Runoff = 3.26 cfs @ 11.92 hrs, Volume= 5,881 cf, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
3,909	32	Woods/grass comb., Good, HSG A
13,340	98	Paved parking & roofs
17,249	83	Weighted Average
3,909		Pervious Area
13,340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0250	1.68		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	60	0.0250	3.21		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	160	Total			

Subcatchment 10-5: 10-5

Runoff = 1.32 cfs @ 12.06 hrs, Volume= 4,237 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
12,225	98	Paved parking & roofs
42,238	32	Woods/grass comb., Good, HSG A
54,463	47	Weighted Average
42,238		Pervious Area
12,225		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
11.4	188	Total			

Subcatchment 10-6: 10-6

Runoff = 1.77 cfs @ 11.99 hrs, Volume= 3,941 cf, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
8,870	98	Paved parking & roofs
2,400	32	Woods/grass comb., Good, HSG A
11,270	84	Weighted Average
2,400		Pervious Area
8,870		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.7	70	0.0300	1.68		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.4	80	0.0300	3.52		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
7.5	180	Total			

Subcatchment 10-7: 10-7

Runoff = 1.61 cfs @ 11.92 hrs, Volume= 2,973 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,615	98	Paved roads w/curbs & sewers
1,475	32	Woods/grass comb., Good, HSG A
8,090	86	Weighted Average
1,475		Pervious Area
6,615		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	200	Total			

Subcatchment 10-8: 10-8

Runoff = 0.43 cfs @ 12.15 hrs, Volume= 2,394 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
6,800	98	Paved roads w/curbs & sewers
39,908	32	Woods/grass comb., Good, HSG A
46,708	42	Weighted Average
39,908		Pervious Area
6,800		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	90	0.0440	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	10	0.0470	0.08		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	75	0.0470	1.08		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.3	175	Total			

Subcatchment 10-9: 10-9

Runoff = 1.71 cfs @ 11.92 hrs, Volume= 2,907 cf, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
7,270	98	Paved parking & roofs
5,590	32	Woods/grass comb., Good, HSG A
12,860	69	Weighted Average
5,590		Pervious Area
7,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0550	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	148	0.0550	4.76		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.2	248	Total			

Pond 1: CB 1

Inflow Area = 7,560 sf, Inflow Depth = 4.85" for 10 Year event
Inflow = 1.21 cfs @ 12.01 hrs, Volume= 3,053 cf
Outflow = 1.21 cfs @ 12.01 hrs, Volume= 3,053 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.01 hrs, Volume= 3,053 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.05' @ 12.01 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.22' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.21 cfs @ 12.01 hrs HW=266.05' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.21 cfs @ 3.19 fps)

Pond 2: CB 2

Inflow Area = 20,420 sf, Inflow Depth = 3.50" for 10 Year event
Inflow = 2.56 cfs @ 11.92 hrs, Volume= 5,960 cf
Outflow = 2.56 cfs @ 11.92 hrs, Volume= 5,960 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.56 cfs @ 11.92 hrs, Volume= 5,960 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.01' @ 11.92 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.55 cfs @ 11.92 hrs HW=266.00' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.55 cfs @ 3.05 fps)

Pond 3: CB 3

Inflow Area = 38,255 sf, Inflow Depth = 3.61" for 10 Year event
Inflow = 2.93 cfs @ 11.93 hrs, Volume= 11,510 cf
Outflow = 2.93 cfs @ 11.93 hrs, Volume= 11,510 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 11.93 hrs, Volume= 11,510 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.04' @ 11.93 hrs
Flood Elev= 261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.90' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.93 cfs @ 11.93 hrs HW=260.04' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.93 cfs @ 3.65 fps)

Pond 4: CB 4

Inflow Area = 44,850 sf, Inflow Depth = 3.93" for 10 Year event
Inflow = 4.39 cfs @ 11.92 hrs, Volume= 14,677 cf
Outflow = 4.39 cfs @ 11.92 hrs, Volume= 14,677 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.39 cfs @ 11.92 hrs, Volume= 14,677 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.20' @ 11.92 hrs
Flood Elev= 261.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	258.90'	**15.0" x 50.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.65' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.39 cfs @ 11.92 hrs HW=260.20' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.39 cfs @ 4.27 fps)

Pond 6: CB 6

Inflow Area = 31,735 sf, Inflow Depth = 3.17" for 10 Year event
Inflow = 2.66 cfs @ 12.06 hrs, Volume= 8,380 cf
Outflow = 2.66 cfs @ 12.06 hrs, Volume= 8,380 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.66 cfs @ 12.06 hrs, Volume= 8,380 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.63' @ 12.06 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.80'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0140 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.66 cfs @ 12.06 hrs HW=262.63' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.66 cfs @ 3.09 fps)

Pond 7: CB 7

Inflow Area = 20,275 sf, Inflow Depth = 2.99" for 10 Year event
Inflow = 1.56 cfs @ 12.12 hrs, Volume= 5,057 cf
Outflow = 1.56 cfs @ 12.12 hrs, Volume= 5,057 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.12 hrs, Volume= 5,057 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.76' @ 12.12 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	262.00'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.82' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.56 cfs @ 12.12 hrs HW=262.76' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.56 cfs @ 3.38 fps)

Pond 8: CB 8

Inflow Area = 116,560 sf, Inflow Depth = 0.71" for 10 Year event
Inflow = 2.99 cfs @ 11.93 hrs, Volume= 6,914 cf
Outflow = 2.99 cfs @ 11.93 hrs, Volume= 6,914 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.99 cfs @ 11.93 hrs, Volume= 6,914 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.21' @ 11.93 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.10' S= 0.0107 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.98 cfs @ 11.93 hrs HW=266.21' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.98 cfs @ 3.06 fps)

Pond 9: CB 9

Inflow Area = 108,470 sf, Inflow Depth = 0.44" for 10 Year event
Inflow = 1.77 cfs @ 11.99 hrs, Volume= 3,941 cf
Outflow = 1.77 cfs @ 11.99 hrs, Volume= 3,941 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 11.99 hrs, Volume= 3,941 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.25' @ 11.99 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.60'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.76 cfs @ 11.99 hrs HW=266.25' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.76 cfs @ 3.57 fps)

Pond 12: CB 12

Inflow Area = 18,313 sf, Inflow Depth = 3.99" for 10 Year event
Inflow = 2.64 cfs @ 12.00 hrs, Volume= 6,085 cf
Outflow = 2.64 cfs @ 12.00 hrs, Volume= 6,085 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.64 cfs @ 12.00 hrs, Volume= 6,085 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 274.38' @ 12.00 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.25'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 273.15' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.63 cfs @ 12.00 hrs HW=274.38' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.63 cfs @ 3.71 fps)

Pond 13: CB 13

Inflow Area = 4,805 sf, Inflow Depth = 3.58" for 10 Year event
Inflow = 0.65 cfs @ 11.99 hrs, Volume= 1,433 cf
Outflow = 0.65 cfs @ 11.99 hrs, Volume= 1,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 11.99 hrs, Volume= 1,433 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 269.57' @ 11.99 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.65 cfs @ 11.99 hrs HW=269.57' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.65 cfs @ 2.63 fps)

Pond 14: CB 14

Inflow Area = 42,737 sf, Inflow Depth = 4.08" for 10 Year event
Inflow = 6.16 cfs @ 11.92 hrs, Volume= 14,537 cf
Outflow = 6.16 cfs @ 11.92 hrs, Volume= 14,537 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.16 cfs @ 11.92 hrs, Volume= 14,537 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 270.37' @ 11.92 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	**18.0" x 95.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 268.52' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.14 cfs @ 11.92 hrs HW=270.37' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.14 cfs @ 4.77 fps)

Pond 15: CB 15

Inflow Area = 35,562 sf, Inflow Depth = 4.04" for 10 Year event
Inflow = 5.14 cfs @ 11.92 hrs, Volume= 11,966 cf
Outflow = 5.14 cfs @ 11.92 hrs, Volume= 11,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.14 cfs @ 11.92 hrs, Volume= 11,966 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 274.53' @ 11.92 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.15'	**15.0" x 160.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0259 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=5.13 cfs @ 11.92 hrs HW=274.53' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.13 cfs @ 4.18 fps)

Pond MH4: MH 4

Inflow Area = 42,737 sf, Inflow Depth = 4.08" for 10 Year event
Inflow = 6.16 cfs @ 11.92 hrs, Volume= 14,537 cf
Outflow = 6.16 cfs @ 11.92 hrs, Volume= 14,537 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.88 cfs @ 11.92 hrs, Volume= 13,429 cf
Secondary = 2.28 cfs @ 11.92 hrs, Volume= 1,108 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 269.55' @ 11.92 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.80'	**12.0" x 90.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 267.35' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Secondary	268.80'	**15.0" x 135.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.00' S= 0.0281 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.88 cfs @ 11.92 hrs HW=269.55' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.88 cfs @ 4.93 fps)

Secondary OutFlow Max=2.26 cfs @ 11.92 hrs HW=269.55' (Free Discharge)
└**2=Culvert** (Inlet Controls 2.26 cfs @ 2.95 fps)

Pond WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth > 0.93" for 10 Year event
Inflow = 3.50 cfs @ 12.25 hrs, Volume= 33,923 cf
Outflow = 2.16 cfs @ 12.61 hrs, Volume= 33,888 cf, Atten= 38%, Lag= 21.6 min
Primary = 2.16 cfs @ 12.61 hrs, Volume= 33,888 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.09' @ 12.61 hrs Surf.Area= 35,256 sf Storage= 3,730 cf

Plug-Flow detention time= 40.4 min calculated for 33,888 cf (100% of inflow)
Center-of-Mass det. time= 39.3 min (1,083.6 - 1,044.3)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.13 cfs @ 12.61 hrs HW=244.09' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 2.13 cfs @ 0.82 fps)

Pond WQB 1: WQB #1

Inflow Area = 244,319 sf, Inflow Depth > 1.48" for 10 Year event
Inflow = 4.64 cfs @ 11.92 hrs, Volume= 30,083 cf
Outflow = 3.34 cfs @ 12.24 hrs, Volume= 29,904 cf, Atten= 28%, Lag= 19.4 min
Primary = 3.34 cfs @ 12.24 hrs, Volume= 29,904 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 255.50' Surf.Area= 2,716 sf Storage= 3,274 cf
Peak Elev= 257.19' @ 12.24 hrs Surf.Area= 5,353 sf Storage= 9,720 cf (6,446 cf above start)
Flood Elev= 258.00' Surf.Area= 6,916 sf Storage= 14,708 cf (11,434 cf above start)

Plug-Flow detention time= 265.5 min calculated for 26,629 cf (89% of inflow)
Center-of-Mass det. time= 150.2 min (1,047.4 - 897.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	14,708 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,650	0	0
256.00	3,071	4,721	4,721
258.00	6,916	9,987	14,708

Device	Routing	Invert	Outlet Devices
#1	Primary	255.50'	**18.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0429 '/' Cc= 0.900 n= 0.010
#2	Device 1	255.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	256.75'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	257.25'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.34 cfs @ 12.24 hrs HW=257.19' (Free Discharge)
└**1=Culvert** (Passes 3.34 cfs of 8.24 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.02 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.04 cfs @ 2.39 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=255.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WQB 2: WQB 2

Inflow Area = 183,688 sf, Inflow Depth = 1.00" for 10 Year event
Inflow = 5.56 cfs @ 11.92 hrs, Volume= 15,268 cf
Outflow = 1.66 cfs @ 12.16 hrs, Volume= 15,231 cf, Atten= 70%, Lag= 14.2 min
Primary = 1.66 cfs @ 12.16 hrs, Volume= 15,231 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 258.50' Surf.Area= 1,940 sf Storage= 2,277 cf
Peak Elev= 260.26' @ 12.16 hrs Surf.Area= 4,481 sf Storage= 8,010 cf (5,732 cf above start)
Flood Elev= 262.00' Surf.Area= 6,340 sf Storage= 17,431 cf (15,154 cf above start)

Plug-Flow detention time= 296.8 min calculated for 12,950 cf (85% of inflow)
Center-of-Mass det. time= 171.2 min (995.8 - 824.6)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	24,240 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	311	0	0
258.00	1,185	1,496	1,496
260.00	4,205	5,390	6,886
262.00	6,340	10,545	17,431
263.00	7,277	6,809	24,240

Device	Routing	Invert	Outlet Devices
#1	Primary	258.50'	**15.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.00' S= 0.0071 '/' Cc= 0.900 n= 0.010
#2	Device 1	258.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	260.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	262.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=1.65 cfs @ 12.16 hrs HW=260.26' (Free Discharge)
└**1=Culvert** (Passes 1.65 cfs of 6.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.15 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.35 cfs @ 1.77 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond WQB 3: WQB #3

Inflow Area = 97,200 sf, Inflow Depth = 2.18" for 10 Year event
Inflow = 4.46 cfs @ 11.99 hrs, Volume= 17,666 cf
Outflow = 2.55 cfs @ 12.14 hrs, Volume= 17,666 cf, Atten= 43%, Lag= 8.8 min
Discarded = 2.55 cfs @ 12.14 hrs, Volume= 17,666 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 267.85' @ 12.14 hrs Surf.Area= 3,670 sf Storage= 2,413 cf
Flood Elev= 270.00' Surf.Area= 6,585 sf Storage= 13,523 cf

Plug-Flow detention time= 4.9 min calculated for 17,661 cf (100% of inflow)
Center-of-Mass det. time= 4.9 min (836.6 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	13,523 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.00	1,993	0	0
268.00	3,961	2,977	2,977
270.00	6,585	10,546	13,523

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**30.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.63' S= 0.0050 '/' Cc= 0.900 n= 0.010
#3	Device 2	268.50'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 2	270.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=2.55 cfs @ 12.14 hrs HW=267.85' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.55 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=267.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 0.90 cfs potential flow)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10-1: 10-1 Runoff Area=4,805 sf Runoff Depth=4.02"
Flow Length=85' Slope=0.0500 '/' Tc=7.9 min CN=78 Runoff=0.73 cfs 1,611 cf

Subcatchment 10-10: 10-10 Runoff Area=7,560 sf Runoff Depth=5.33"
Flow Length=300' Tc=10.0 min CN=90 Runoff=1.32 cfs 3,360 cf

Subcatchment 10-11: 10-11 Runoff Area=20,275 sf Runoff Depth=3.41"
Flow Length=188' Tc=19.8 min CN=72 Runoff=1.78 cfs 5,756 cf

Subcatchment 10-12: 10-12 Runoff Area=11,460 sf Runoff Depth=3.92"
Flow Length=200' Tc=10.9 min CN=77 Runoff=1.53 cfs 3,743 cf

Subcatchment 10-13: 10-13 Runoff Area=6,520 sf Runoff Depth=6.26"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.60 cfs 3,402 cf

Subcatchment 10-14: 10-14 Runoff Area=6,595 sf Runoff Depth=6.26"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.62 cfs 3,441 cf

Subcatchment 10-15: 10-15 Runoff Area=15,781 sf Runoff Depth=0.22"
Flow Length=113' Slope=0.1400 '/' Tc=8.9 min CN=32 Runoff=0.01 cfs 283 cf

Subcatchment 10-17: 10-17 Runoff Area=192,532 sf Runoff Depth=0.36"
Flow Length=314' Tc=15.9 min CN=35 Runoff=0.44 cfs 5,830 cf

Subcatchment 10-2: 10-2 Runoff Area=2,370 sf Runoff Depth=6.26"
Flow Length=130' Slope=0.0130 '/' Tc=1.5 min CN=98 Runoff=0.58 cfs 1,237 cf

Subcatchment 10-3: 10-3 Runoff Area=18,313 sf Runoff Depth=4.45"
Flow Length=170' Tc=8.8 min CN=82 Runoff=2.93 cfs 6,790 cf

Subcatchment 10-4: 10-4 Runoff Area=17,249 sf Runoff Depth=4.56"
Flow Length=160' Slope=0.0250 '/' Tc=1.3 min CN=83 Runoff=3.61 cfs 6,551 cf

Subcatchment 10-5: 10-5 Runoff Area=54,463 sf Runoff Depth=1.16"
Flow Length=188' Tc=11.4 min CN=47 Runoff=1.76 cfs 5,268 cf

Subcatchment 10-6: 10-6 Runoff Area=11,270 sf Runoff Depth=4.67"
Flow Length=180' Tc=7.5 min CN=84 Runoff=1.95 cfs 4,383 cf

Subcatchment 10-7: 10-7 Runoff Area=8,090 sf Runoff Depth=4.89"
Flow Length=200' Slope=0.0300 '/' Tc=1.4 min CN=86 Runoff=1.77 cfs 3,294 cf

Subcatchment 10-8: 10-8 Runoff Area=46,708 sf Runoff Depth=0.80"
Flow Length=175' Tc=16.3 min CN=42 Runoff=0.66 cfs 3,100 cf

Subcatchment 10-9: 10-9 Runoff Area=12,860 sf Runoff Depth=3.11"
Flow Length=248' Slope=0.0550 '/' Tc=1.2 min CN=69 Runoff=1.95 cfs 3,331 cf

Pond 1: CB 1 Peak Elev=266.09' Inflow=1.32 cfs 3,360 cf
12.0" x 35.0' Culvert Outflow=1.32 cfs 3,360 cf

Pond 2: CB 2 Peak Elev=266.07' Inflow=2.88 cfs 6,691 cf
15.0" x 80.0' Culvert Outflow=2.88 cfs 6,691 cf

Pond 3: CB 3 Peak Elev=260.11' Inflow=3.28 cfs 12,901 cf
15.0" x 20.0' Culvert Outflow=3.28 cfs 12,901 cf

Pond 4: CB 4 Peak Elev=260.31' Inflow=4.85 cfs 16,342 cf
15.0" x 50.0' Culvert Outflow=4.85 cfs 16,342 cf

Pond 6: CB 6 Peak Elev=262.69' Inflow=3.02 cfs 9,499 cf
15.0" x 200.0' Culvert Outflow=3.02 cfs 9,499 cf

Pond 7: CB 7 Peak Elev=262.83' Inflow=1.78 cfs 5,756 cf
12.0" x 35.0' Culvert Outflow=1.78 cfs 5,756 cf

Pond 8: CB 8 Peak Elev=266.26' Inflow=3.30 cfs 7,677 cf
18.0" x 215.0' Culvert Outflow=3.30 cfs 7,677 cf

Pond 9: CB 9 Peak Elev=266.29' Inflow=1.95 cfs 4,383 cf
18.0" x 20.0' Culvert Outflow=1.95 cfs 4,383 cf

Pond 12: CB 12 Peak Elev=274.50' Inflow=2.93 cfs 6,790 cf
12.0" x 20.0' Culvert Outflow=2.93 cfs 6,790 cf

Pond 13: CB 13 Peak Elev=269.60' Inflow=0.73 cfs 1,611 cf
12.0" x 20.0' Culvert Outflow=0.73 cfs 1,611 cf

Pond 14: CB 14 Peak Elev=270.48' Inflow=6.83 cfs 16,189 cf
18.0" x 95.0' Culvert Outflow=6.83 cfs 16,189 cf

Pond 15: CB 15 Peak Elev=274.71' Inflow=5.71 cfs 13,342 cf
15.0" x 160.0' Culvert Outflow=5.71 cfs 13,342 cf

Pond MH4: MH 4 Peak Elev=269.65' Inflow=6.83 cfs 16,189 cf
Primary=4.04 cfs 14,716 cf Secondary=2.80 cfs 1,473 cf Outflow=6.83 cfs 16,189 cf

Pond WL-3: WL-3 Peak Elev=244.12' Storage=4,698 cf Inflow=4.94 cfs 39,690 cf
Outflow=3.02 cfs 39,650 cf

Pond WQB 1: WQB #1 Peak Elev=257.28' Storage=10,223 cf Inflow=5.64 cfs 34,055 cf
Primary=4.42 cfs 33,829 cf Secondary=0.08 cfs 32 cf Outflow=4.50 cfs 33,861 cf

Pond WQB 2: WQB 2 Peak Elev=260.34' Storage=8,392 cf Inflow=6.22 cfs 17,468 cf
Outflow=2.40 cfs 17,429 cf

Pond WQB 3: WQB #3 Peak Elev=267.98' Storage=2,911 cf Inflow=5.01 cfs 19,985 cf
Discarded=2.73 cfs 19,985 cf Primary=0.00 cfs 0 cf Outflow=2.73 cfs 19,985 cf

Total Runoff Area = 436,851 sf Runoff Volume = 61,381 cf Average Runoff Depth = 1.69"
71.60% Pervious Area = 312,797 sf 28.40% Impervious Area = 124,054 sf

Subcatchment 10-1: 10-1

Runoff = 0.73 cfs @ 11.99 hrs, Volume= 1,611 cf, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
1,460	32	Woods/grass comb., Good, HSG A
3,345	98	Paved parking & roofs
4,805	78	Weighted Average
1,460		Pervious Area
3,345		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	40	0.0500	0.16		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.2	15	0.0500	1.52		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
3.4	30	0.0500	0.15		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
7.9	85	Total			

Subcatchment 10-10: 10-10

Runoff = 1.32 cfs @ 12.01 hrs, Volume= 3,360 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,660	98	Paved parking & roofs
900	32	Woods/grass comb., Good, HSG A
7,560	90	Weighted Average
900		Pervious Area
6,660		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	45	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.4	55	0.0550	2.05		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	200	0.0550	4.76		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.0	300	Total			

Subcatchment 10-11: 10-11

Runoff = 1.78 cfs @ 12.12 hrs, Volume= 5,756 cf, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
12,240	98	Paved parking & roofs
8,035	32	Woods/grass comb., Good, HSG A
20,275	72	Weighted Average
8,035		Pervious Area
12,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	88	0.1300	2.52		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
19.8	188	Total			

Subcatchment 10-12: 10-12

Runoff = 1.53 cfs @ 12.03 hrs, Volume= 3,743 cf, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,792	98	Paved roads w/curbs & sewers
3,668	32	Woods/grass comb., Good, HSG A
11,460	77	Weighted Average
3,668		Pervious Area
7,792		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	30	0.0100	0.05		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	70	0.0320	1.73		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0320	3.63		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.9	200	Total			

Subcatchment 10-13: 10-13

Runoff = 1.60 cfs @ 11.91 hrs, Volume= 3,402 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,520	98	Paved parking & roofs
6,520		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-14: 10-14

Runoff = 1.62 cfs @ 11.91 hrs, Volume= 3,441 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,595	98	Paved parking & roofs
6,595		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-15: 10-15

Runoff = 0.01 cfs @ 12.49 hrs, Volume= 283 cf, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
15,781	32	Woods/grass comb., Good, HSG A
15,781		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.1400	0.19		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	13	0.1400	1.87		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.9	113	Total			

Subcatchment 10-17: 10-17

Runoff = 0.44 cfs @ 12.21 hrs, Volume= 5,830 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
182,870	32	Woods/grass comb., Good, HSG A
9,662	98	Paved roads w/curbs & sewers
192,532	35	Weighted Average
182,870		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	75	0.0910	1.51		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.9	64	0.0625	1.25		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
0.9	75	0.0800	1.41		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
15.9	314	Total			

Subcatchment 10-2: 10-2

Runoff = 0.58 cfs @ 11.92 hrs, Volume= 1,237 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
2,370	98	Paved parking & roofs
2,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	30	0.0130	2.31		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	130	Total			

Subcatchment 10-3: 10-3

Runoff = 2.93 cfs @ 12.00 hrs, Volume= 6,790 cf, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
4,563	32	Woods/grass comb., Good, HSG A
13,750	98	Paved parking & roofs
18,313	82	Weighted Average
4,563		Pervious Area
13,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.6	70	0.0100	2.03		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
8.8	170	Total			

Subcatchment 10-4: 10-4

Runoff = 3.61 cfs @ 11.92 hrs, Volume= 6,551 cf, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
3,909	32	Woods/grass comb., Good, HSG A
13,340	98	Paved parking & roofs
17,249	83	Weighted Average
3,909		Pervious Area
13,340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0250	1.68		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	60	0.0250	3.21		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	160	Total			

Subcatchment 10-5: 10-5

Runoff = 1.76 cfs @ 12.05 hrs, Volume= 5,268 cf, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
12,225	98	Paved parking & roofs
42,238	32	Woods/grass comb., Good, HSG A
54,463	47	Weighted Average
42,238		Pervious Area
12,225		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
11.4	188	Total			

Subcatchment 10-6: 10-6

Runoff = 1.95 cfs @ 11.99 hrs, Volume= 4,383 cf, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
8,870	98	Paved parking & roofs
2,400	32	Woods/grass comb., Good, HSG A
11,270	84	Weighted Average
2,400		Pervious Area
8,870		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.7	70	0.0300	1.68		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.4	80	0.0300	3.52		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
7.5	180	Total			

Subcatchment 10-7: 10-7

Runoff = 1.77 cfs @ 11.92 hrs, Volume= 3,294 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,615	98	Paved roads w/curbs & sewers
1,475	32	Woods/grass comb., Good, HSG A
8,090	86	Weighted Average
1,475		Pervious Area
6,615		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	200	Total			

Subcatchment 10-8: 10-8

Runoff = 0.66 cfs @ 12.13 hrs, Volume= 3,100 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
6,800	98	Paved roads w/curbs & sewers
39,908	32	Woods/grass comb., Good, HSG A
46,708	42	Weighted Average
39,908		Pervious Area
6,800		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	90	0.0440	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	10	0.0470	0.08		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	75	0.0470	1.08		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.3	175	Total			

Subcatchment 10-9: 10-9

Runoff = 1.95 cfs @ 11.92 hrs, Volume= 3,331 cf, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
7,270	98	Paved parking & roofs
5,590	32	Woods/grass comb., Good, HSG A
12,860	69	Weighted Average
5,590		Pervious Area
7,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0550	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	148	0.0550	4.76		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.2	248	Total			

Pond 1: CB 1

Inflow Area = 7,560 sf, Inflow Depth = 5.33" for 25 Year event
Inflow = 1.32 cfs @ 12.01 hrs, Volume= 3,360 cf
Outflow = 1.32 cfs @ 12.01 hrs, Volume= 3,360 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.01 hrs, Volume= 3,360 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.09' @ 12.01 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.22' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.32 cfs @ 12.01 hrs HW=266.09' (Free Discharge)
1=Culvert (Barrel Controls 1.32 cfs @ 3.26 fps)

Pond 2: CB 2

Inflow Area = 20,420 sf, Inflow Depth = 3.93" for 25 Year event
Inflow = 2.88 cfs @ 11.92 hrs, Volume= 6,691 cf
Outflow = 2.88 cfs @ 11.92 hrs, Volume= 6,691 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 11.92 hrs, Volume= 6,691 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.07' @ 11.92 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.88 cfs @ 11.92 hrs HW=266.07' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.88 cfs @ 3.17 fps)

Pond 3: CB 3

Inflow Area = 38,255 sf, Inflow Depth = 4.05" for 25 Year event
Inflow = 3.28 cfs @ 11.93 hrs, Volume= 12,901 cf
Outflow = 3.28 cfs @ 11.93 hrs, Volume= 12,901 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.28 cfs @ 11.93 hrs, Volume= 12,901 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.11' @ 11.93 hrs
Flood Elev= 261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.90' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.27 cfs @ 11.93 hrs HW=260.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.27 cfs @ 3.76 fps)

Pond 4: CB 4

Inflow Area = 44,850 sf, Inflow Depth = 4.37" for 25 Year event
Inflow = 4.85 cfs @ 11.92 hrs, Volume= 16,342 cf
Outflow = 4.85 cfs @ 11.92 hrs, Volume= 16,342 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.85 cfs @ 11.92 hrs, Volume= 16,342 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.31' @ 11.92 hrs
Flood Elev= 261.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	258.90'	**15.0" x 50.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.65' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.85 cfs @ 11.92 hrs HW=260.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.85 cfs @ 4.37 fps)

Pond 6: CB 6

Inflow Area = 31,735 sf, Inflow Depth = 3.59" for 25 Year event
Inflow = 3.02 cfs @ 12.06 hrs, Volume= 9,499 cf
Outflow = 3.02 cfs @ 12.06 hrs, Volume= 9,499 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.06 hrs, Volume= 9,499 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.69' @ 12.06 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.80'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0140 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.02 cfs @ 12.06 hrs HW=262.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.02 cfs @ 3.22 fps)

Pond 7: CB 7

Inflow Area = 20,275 sf, Inflow Depth = 3.41" for 25 Year event
Inflow = 1.78 cfs @ 12.12 hrs, Volume= 5,756 cf
Outflow = 1.78 cfs @ 12.12 hrs, Volume= 5,756 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.12 hrs, Volume= 5,756 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.83' @ 12.12 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	262.00'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.82' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.77 cfs @ 12.12 hrs HW=262.82' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.77 cfs @ 3.48 fps)

Pond 8: CB 8

Inflow Area = 116,560 sf, Inflow Depth = 0.79" for 25 Year event
Inflow = 3.30 cfs @ 11.93 hrs, Volume= 7,677 cf
Outflow = 3.30 cfs @ 11.93 hrs, Volume= 7,677 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.30 cfs @ 11.93 hrs, Volume= 7,677 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.26' @ 11.93 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.10' S= 0.0107 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.29 cfs @ 11.93 hrs HW=266.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.29 cfs @ 3.15 fps)

Pond 9: CB 9

Inflow Area = 108,470 sf, Inflow Depth = 0.48" for 25 Year event
Inflow = 1.95 cfs @ 11.99 hrs, Volume= 4,383 cf
Outflow = 1.95 cfs @ 11.99 hrs, Volume= 4,383 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.95 cfs @ 11.99 hrs, Volume= 4,383 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.29' @ 11.99 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.60'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.95 cfs @ 11.99 hrs HW=266.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.95 cfs @ 3.63 fps)

Pond 12: CB 12

Inflow Area = 18,313 sf, Inflow Depth = 4.45" for 25 Year event
Inflow = 2.93 cfs @ 12.00 hrs, Volume= 6,790 cf
Outflow = 2.93 cfs @ 12.00 hrs, Volume= 6,790 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 12.00 hrs, Volume= 6,790 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 274.50' @ 12.00 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.25'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 273.15' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.93 cfs @ 12.00 hrs HW=274.50' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.93 cfs @ 3.83 fps)

Pond 13: CB 13

Inflow Area = 4,805 sf, Inflow Depth = 4.02" for 25 Year event
Inflow = 0.73 cfs @ 11.99 hrs, Volume= 1,611 cf
Outflow = 0.73 cfs @ 11.99 hrs, Volume= 1,611 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 11.99 hrs, Volume= 1,611 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 269.60' @ 11.99 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.73 cfs @ 11.99 hrs HW=269.60' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.73 cfs @ 2.70 fps)

Pond 14: CB 14

Inflow Area = 42,737 sf, Inflow Depth = 4.55" for 25 Year event
Inflow = 6.83 cfs @ 11.92 hrs, Volume= 16,189 cf
Outflow = 6.83 cfs @ 11.92 hrs, Volume= 16,189 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.83 cfs @ 11.92 hrs, Volume= 16,189 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 270.48' @ 11.92 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	**18.0" x 95.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 268.52' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.81 cfs @ 11.92 hrs HW=270.48' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.81 cfs @ 4.87 fps)

Pond 15: CB 15

Inflow Area = 35,562 sf, Inflow Depth = 4.50" for 25 Year event
Inflow = 5.71 cfs @ 11.92 hrs, Volume= 13,342 cf
Outflow = 5.71 cfs @ 11.92 hrs, Volume= 13,342 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.71 cfs @ 11.92 hrs, Volume= 13,342 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 274.71' @ 11.92 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.15'	**15.0" x 160.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0259 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=5.69 cfs @ 11.92 hrs HW=274.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.69 cfs @ 4.64 fps)

Pond MH4: MH 4

Inflow Area = 42,737 sf, Inflow Depth = 4.55" for 25 Year event
Inflow = 6.83 cfs @ 11.92 hrs, Volume= 16,189 cf
Outflow = 6.83 cfs @ 11.92 hrs, Volume= 16,189 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.04 cfs @ 11.92 hrs, Volume= 14,716 cf
Secondary = 2.80 cfs @ 11.92 hrs, Volume= 1,473 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 269.65' @ 11.92 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.80'	**12.0" x 90.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 267.35' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Secondary	268.80'	**15.0" x 135.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.00' S= 0.0281 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.03 cfs @ 11.92 hrs HW=269.65' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.03 cfs @ 5.13 fps)

Secondary OutFlow Max=2.78 cfs @ 11.92 hrs HW=269.65' (Free Discharge)
└**2=Culvert** (Inlet Controls 2.78 cfs @ 3.13 fps)

Pond WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth > 1.09" for 25 Year event
Inflow = 4.94 cfs @ 12.21 hrs, Volume= 39,690 cf
Outflow = 3.02 cfs @ 12.53 hrs, Volume= 39,650 cf, Atten= 39%, Lag= 19.4 min
Primary = 3.02 cfs @ 12.53 hrs, Volume= 39,650 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.12' @ 12.53 hrs Surf.Area= 35,384 sf Storage= 4,698 cf

Plug-Flow detention time= 38.8 min calculated for 39,650 cf (100% of inflow)
Center-of-Mass det. time= 37.6 min (1,062.5 - 1,024.9)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.02 cfs @ 12.53 hrs HW=244.12' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 3.02 cfs @ 0.92 fps)

Pond WQB 1: WQB #1

Inflow Area = 244,319 sf, Inflow Depth > 1.67" for 25 Year event
Inflow = 5.64 cfs @ 12.08 hrs, Volume= 34,055 cf
Outflow = 4.50 cfs @ 12.21 hrs, Volume= 33,861 cf, Atten= 20%, Lag= 7.5 min
Primary = 4.42 cfs @ 12.21 hrs, Volume= 33,829 cf
Secondary = 0.08 cfs @ 12.21 hrs, Volume= 32 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 255.50' Surf.Area= 2,716 sf Storage= 3,274 cf
Peak Elev= 257.28' @ 12.21 hrs Surf.Area= 5,531 sf Storage= 10,223 cf (6,949 cf above start)
Flood Elev= 258.00' Surf.Area= 6,916 sf Storage= 14,708 cf (11,434 cf above start)

Plug-Flow detention time= 241.0 min calculated for 30,578 cf (90% of inflow)
Center-of-Mass det. time= 137.6 min (1,030.1 - 892.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	14,708 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,650	0	0
256.00	3,071	4,721	4,721
258.00	6,916	9,987	14,708

Device	Routing	Invert	Outlet Devices
#1	Primary	255.50'	**18.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0429 '/' Cc= 0.900 n= 0.010
#2	Device 1	255.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	256.75'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	257.25'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.42 cfs @ 12.21 hrs HW=257.28' (Free Discharge)
└**1=Culvert** (Passes 4.42 cfs of 8.63 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.19 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.12 cfs @ 2.69 fps)

Secondary OutFlow Max=0.08 cfs @ 12.21 hrs HW=257.28' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.44 fps)

Pond WQB 2: WQB 2

Inflow Area = 183,688 sf, Inflow Depth = 1.14" for 25 Year event
Inflow = 6.22 cfs @ 11.92 hrs, Volume= 17,468 cf
Outflow = 2.40 cfs @ 12.12 hrs, Volume= 17,429 cf, Atten= 61%, Lag= 12.0 min
Primary = 2.40 cfs @ 12.12 hrs, Volume= 17,429 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 258.50' Surf.Area= 1,940 sf Storage= 2,277 cf
Peak Elev= 260.34' @ 12.12 hrs Surf.Area= 4,571 sf Storage= 8,392 cf (6,115 cf above start)
Flood Elev= 262.00' Surf.Area= 6,340 sf Storage= 17,431 cf (15,154 cf above start)

Plug-Flow detention time= 273.1 min calculated for 15,148 cf (87% of inflow)
Center-of-Mass det. time= 162.0 min (984.9 - 822.9)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	24,240 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	311	0	0
258.00	1,185	1,496	1,496
260.00	4,205	5,390	6,886
262.00	6,340	10,545	17,431
263.00	7,277	6,809	24,240

Device	Routing	Invert	Outlet Devices
#1	Primary	258.50'	**15.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.00' S= 0.0071 '/' Cc= 0.900 n= 0.010
#2	Device 1	258.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	260.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	262.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=2.40 cfs @ 12.12 hrs HW=260.34' (Free Discharge)
└**1=Culvert** (Passes 2.40 cfs of 6.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.31 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.09 cfs @ 2.08 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond WQB 3: WQB #3

Inflow Area = 97,200 sf, Inflow Depth = 2.47" for 25 Year event
Inflow = 5.01 cfs @ 12.00 hrs, Volume= 19,985 cf
Outflow = 2.73 cfs @ 12.15 hrs, Volume= 19,985 cf, Atten= 46%, Lag= 9.1 min
Discarded = 2.73 cfs @ 12.15 hrs, Volume= 19,985 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 267.98' @ 12.15 hrs Surf.Area= 3,928 sf Storage= 2,911 cf
Flood Elev= 270.00' Surf.Area= 6,585 sf Storage= 13,523 cf

Plug-Flow detention time= 5.7 min calculated for 19,979 cf (100% of inflow)
Center-of-Mass det. time= 5.7 min (836.2 - 830.5)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	13,523 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.00	1,993	0	0
268.00	3,961	2,977	2,977
270.00	6,585	10,546	13,523

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**30.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.63' S= 0.0050 '/' Cc= 0.900 n= 0.010
#3	Device 2	268.50'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 2	270.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=2.73 cfs @ 12.15 hrs HW=267.98' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.73 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=267.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 0.90 cfs potential flow)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10-1: 10-1 Runoff Area=4,805 sf Runoff Depth=5.39"
Flow Length=85' Slope=0.0500 '/' Tc=7.9 min CN=78 Runoff=0.96 cfs 2,159 cf

Subcatchment 10-10: 10-10 Runoff Area=7,560 sf Runoff Depth=6.81"
Flow Length=300' Tc=10.0 min CN=90 Runoff=1.66 cfs 4,288 cf

Subcatchment 10-11: 10-11 Runoff Area=20,275 sf Runoff Depth=4.69"
Flow Length=188' Tc=19.8 min CN=72 Runoff=2.45 cfs 7,932 cf

Subcatchment 10-12: 10-12 Runoff Area=11,460 sf Runoff Depth=5.27"
Flow Length=200' Tc=10.9 min CN=77 Runoff=2.03 cfs 5,037 cf

Subcatchment 10-13: 10-13 Runoff Area=6,520 sf Runoff Depth=7.76"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.97 cfs 4,216 cf

Subcatchment 10-14: 10-14 Runoff Area=6,595 sf Runoff Depth=7.76"
Flow Length=283' Slope=0.0600 '/' Tc=1.3 min CN=98 Runoff=1.99 cfs 4,265 cf

Subcatchment 10-15: 10-15 Runoff Area=15,781 sf Runoff Depth=0.56"
Flow Length=113' Slope=0.1400 '/' Tc=8.9 min CN=32 Runoff=0.12 cfs 740 cf

Subcatchment 10-17: 10-17 Runoff Area=192,532 sf Runoff Depth=0.80"
Flow Length=314' Tc=15.9 min CN=35 Runoff=2.32 cfs 12,893 cf

Subcatchment 10-2: 10-2 Runoff Area=2,370 sf Runoff Depth=7.76"
Flow Length=130' Slope=0.0130 '/' Tc=1.5 min CN=98 Runoff=0.71 cfs 1,533 cf

Subcatchment 10-3: 10-3 Runoff Area=18,313 sf Runoff Depth=5.86"
Flow Length=170' Tc=8.8 min CN=82 Runoff=3.80 cfs 8,942 cf

Subcatchment 10-4: 10-4 Runoff Area=17,249 sf Runoff Depth=5.98"
Flow Length=160' Slope=0.0250 '/' Tc=1.3 min CN=83 Runoff=4.64 cfs 8,592 cf

Subcatchment 10-5: 10-5 Runoff Area=54,463 sf Runoff Depth=1.94"
Flow Length=188' Tc=11.4 min CN=47 Runoff=3.27 cfs 8,800 cf

Subcatchment 10-6: 10-6 Runoff Area=11,270 sf Runoff Depth=6.10"
Flow Length=180' Tc=7.5 min CN=84 Runoff=2.51 cfs 5,724 cf

Subcatchment 10-7: 10-7 Runoff Area=8,090 sf Runoff Depth=6.33"
Flow Length=200' Slope=0.0300 '/' Tc=1.4 min CN=86 Runoff=2.25 cfs 4,268 cf

Subcatchment 10-8: 10-8 Runoff Area=46,708 sf Runoff Depth=1.44"
Flow Length=175' Tc=16.3 min CN=42 Runoff=1.53 cfs 5,607 cf

Subcatchment 10-9: 10-9 Runoff Area=12,860 sf Runoff Depth=4.35"
Flow Length=248' Slope=0.0550 '/' Tc=1.2 min CN=69 Runoff=2.70 cfs 4,661 cf

Pond 1: CB 1 Peak Elev=266.19' Inflow=1.66 cfs 4,288 cf
12.0" x 35.0' Culvert Outflow=1.66 cfs 4,288 cf

Pond 2: CB 2 Peak Elev=266.26' Inflow=3.87 cfs 8,949 cf
15.0" x 80.0' Culvert Outflow=3.87 cfs 8,949 cf

Pond 3: CB 3 Peak Elev=260.35' Inflow=4.34 cfs 17,185 cf
15.0" x 20.0' Culvert Outflow=4.34 cfs 17,185 cf

Pond 4: CB 4 Peak Elev=260.78' Inflow=6.26 cfs 21,450 cf
15.0" x 50.0' Culvert Outflow=6.26 cfs 21,450 cf

Pond 6: CB 6 Peak Elev=262.90' Inflow=4.11 cfs 12,969 cf
15.0" x 200.0' Culvert Outflow=4.11 cfs 12,969 cf

Pond 7: CB 7 Peak Elev=263.03' Inflow=2.45 cfs 7,932 cf
12.0" x 35.0' Culvert Outflow=2.45 cfs 7,932 cf

Pond 8: CB 8 Peak Elev=266.40' Inflow=4.23 cfs 9,993 cf
18.0" x 215.0' Culvert Outflow=4.23 cfs 9,993 cf

Pond 9: CB 9 Peak Elev=266.40' Inflow=2.51 cfs 5,724 cf
18.0" x 20.0' Culvert Outflow=2.51 cfs 5,724 cf

Pond 12: CB 12 Peak Elev=274.83' Inflow=3.80 cfs 8,942 cf
12.0" x 20.0' Culvert Outflow=3.80 cfs 8,942 cf

Pond 13: CB 13 Peak Elev=269.69' Inflow=0.96 cfs 2,159 cf
12.0" x 20.0' Culvert Outflow=0.96 cfs 2,159 cf

Pond 14: CB 14 Peak Elev=270.89' Inflow=8.84 cfs 21,226 cf
18.0" x 95.0' Culvert Outflow=8.84 cfs 21,226 cf

Pond 15: CB 15 Peak Elev=275.34' Inflow=7.40 cfs 17,535 cf
15.0" x 160.0' Culvert Outflow=7.40 cfs 17,535 cf

Pond MH4: MH 4 Peak Elev=269.96' Inflow=8.84 cfs 21,226 cf
Primary=4.49 cfs 18,504 cf Secondary=4.35 cfs 2,722 cf Outflow=8.84 cfs 21,226 cf

Pond WL-3: WL-3 Peak Elev=244.20' Storage=8,002 cf Inflow=11.02 cfs 59,347 cf
Outflow=6.70 cfs 59,285 cf

Pond WQB 1: WQB #1 Peak Elev=257.47' Storage=11,334 cf Inflow=9.55 cfs 46,695 cf
Primary=7.09 cfs 44,957 cf Secondary=1.62 cfs 1,498 cf Outflow=8.71 cfs 46,455 cf

Pond WQB 2: WQB 2 Peak Elev=260.56' Storage=9,419 cf Inflow=8.36 cfs 24,549 cf
Outflow=4.86 cfs 24,505 cf

Pond WQB 3: WQB #3 Peak Elev=268.41' Storage=4,698 cf Inflow=6.85 cfs 27,304 cf
Discarded=3.12 cfs 27,304 cf Primary=0.00 cfs 0 cf Outflow=3.12 cfs 27,304 cf

Total Runoff Area = 436,851 sf Runoff Volume = 89,656 cf Average Runoff Depth = 2.46"
71.60% Pervious Area = 312,797 sf 28.40% Impervious Area = 124,054 sf

Subcatchment 10-1: 10-1

Runoff = 0.96 cfs @ 11.99 hrs, Volume= 2,159 cf, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
1,460	32	Woods/grass comb., Good, HSG A
3,345	98	Paved parking & roofs
4,805	78	Weighted Average
1,460		Pervious Area
3,345		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	40	0.0500	0.16		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.2	15	0.0500	1.52		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
3.4	30	0.0500	0.15		**Sheet Flow, 3** Grass: Dense n= 0.240 P2= 4.00"
7.9	85	Total			

Subcatchment 10-10: 10-10

Runoff = 1.66 cfs @ 12.01 hrs, Volume= 4,288 cf, Depth= 6.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,660	98	Paved parking & roofs
900	32	Woods/grass comb., Good, HSG A
7,560	90	Weighted Average
900		Pervious Area
6,660		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	45	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.4	55	0.0550	2.05		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.7	200	0.0550	4.76		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.0	300	Total			

Subcatchment 10-11: 10-11

Runoff = 2.45 cfs @ 12.12 hrs, Volume= 7,932 cf, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
12,240	98	Paved parking & roofs
8,035	32	Woods/grass comb., Good, HSG A
20,275	72	Weighted Average
8,035		Pervious Area
12,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	88	0.1300	2.52		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
19.8	188	Total			

Subcatchment 10-12: 10-12

Runoff = 2.03 cfs @ 12.02 hrs, Volume= 5,037 cf, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,792	98	Paved roads w/curbs & sewers
3,668	32	Woods/grass comb., Good, HSG A
11,460	77	Weighted Average
3,668		Pervious Area
7,792		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	30	0.0100	0.05		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	70	0.0320	1.73		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0320	3.63		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
10.9	200	Total			

Subcatchment 10-13: 10-13

Runoff = 1.97 cfs @ 11.91 hrs, Volume= 4,216 cf, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,520	98	Paved parking & roofs
6,520		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-14: 10-14

Runoff = 1.99 cfs @ 11.91 hrs, Volume= 4,265 cf, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,595	98	Paved parking & roofs
6,595		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0600	2.39		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.6	183	0.0600	4.97		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.3	283	Total			

Subcatchment 10-15: 10-15

Runoff = 0.12 cfs @ 12.06 hrs, Volume= 740 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
15,781	32	Woods/grass comb., Good, HSG A
15,781		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.1400	0.19		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	13	0.1400	1.87		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
8.9	113	Total			

Subcatchment 10-17: 10-17

Runoff = 2.32 cfs @ 12.14 hrs, Volume= 12,893 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
182,870	32	Woods/grass comb., Good, HSG A
9,662	98	Paved roads w/curbs & sewers
192,532	35	Weighted Average
182,870		Pervious Area
9,662		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	75	0.0910	1.51		**Shallow Concentrated Flow, 2** Woodland Kv= 5.0 fps
0.9	64	0.0625	1.25		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
0.9	75	0.0800	1.41		**Shallow Concentrated Flow, 4** Woodland Kv= 5.0 fps
15.9	314	Total			

Subcatchment 10-2: 10-2

Runoff = 0.71 cfs @ 11.92 hrs, Volume= 1,533 cf, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
2,370	98	Paved parking & roofs
2,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.2	30	0.0130	2.31		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.5	130	Total			

Subcatchment 10-3: 10-3

Runoff = 3.80 cfs @ 12.00 hrs, Volume= 8,942 cf, Depth= 5.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
4,563	32	Woods/grass comb., Good, HSG A
13,750	98	Paved parking & roofs
18,313	82	Weighted Average
4,563		Pervious Area
13,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.6	70	0.0100	2.03		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
8.8	170	Total			

Subcatchment 10-4: 10-4

Runoff = 4.64 cfs @ 11.92 hrs, Volume= 8,592 cf, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
3,909	32	Woods/grass comb., Good, HSG A
13,340	98	Paved parking & roofs
17,249	83	Weighted Average
3,909		Pervious Area
13,340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0250	1.68		**Sheet Flow, 1**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	60	0.0250	3.21		**Shallow Concentrated Flow, 2**
					Paved Kv= 20.3 fps
1.3	160	Total			

Subcatchment 10-5: 10-5

Runoff = 3.27 cfs @ 12.05 hrs, Volume= 8,800 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
12,225	98	Paved parking & roofs
42,238	32	Woods/grass comb., Good, HSG A
54,463	47	Weighted Average
42,238		Pervious Area
12,225		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, 1**
					Woods: Light underbrush n= 0.400 P2= 4.00"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow, 2**
					Woodland Kv= 5.0 fps
11.4	188	Total			

Subcatchment 10-6: 10-6

Runoff = 2.51 cfs @ 11.99 hrs, Volume= 5,724 cf, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
8,870	98	Paved parking & roofs
2,400	32	Woods/grass comb., Good, HSG A
11,270	84	Weighted Average
2,400		Pervious Area
8,870		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	30	0.0100	0.08		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 4.00"
0.7	70	0.0300	1.68		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 4.00"
0.4	80	0.0300	3.52		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
7.5	180	Total			

Subcatchment 10-7: 10-7

Runoff = 2.25 cfs @ 11.92 hrs, Volume= 4,268 cf, Depth= 6.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,615	98	Paved roads w/curbs & sewers
1,475	32	Woods/grass comb., Good, HSG A
8,090	86	Weighted Average
1,475		Pervious Area
6,615		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	100	0.0300	3.52		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.4	200	Total			

Subcatchment 10-8: 10-8

Runoff = 1.53 cfs @ 12.12 hrs, Volume= 5,607 cf, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
6,800	98	Paved roads w/curbs & sewers
39,908	32	Woods/grass comb., Good, HSG A
46,708	42	Weighted Average
39,908		Pervious Area
6,800		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	90	0.0440	0.12		**Sheet Flow, 1** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	10	0.0470	0.08		**Sheet Flow, 2** Woods: Light underbrush n= 0.400 P2= 4.00"
1.2	75	0.0470	1.08		**Shallow Concentrated Flow, 3** Woodland Kv= 5.0 fps
16.3	175	Total			

Subcatchment 10-9: 10-9

Runoff = 2.70 cfs @ 11.92 hrs, Volume= 4,661 cf, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
7,270	98	Paved parking & roofs
5,590	32	Woods/grass comb., Good, HSG A
12,860	69	Weighted Average
5,590		Pervious Area
7,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0550	2.30		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 4.00"
0.5	148	0.0550	4.76		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
1.2	248	Total			

Pond 1: CB 1

Inflow Area = 7,560 sf, Inflow Depth = 6.81" for 100 Year event
Inflow = 1.66 cfs @ 12.01 hrs, Volume= 4,288 cf
Outflow = 1.66 cfs @ 12.01 hrs, Volume= 4,288 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.66 cfs @ 12.01 hrs, Volume= 4,288 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.19' @ 12.01 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.22' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=1.66 cfs @ 12.01 hrs HW=266.19' (Free Discharge)
1=Culvert (Barrel Controls 1.66 cfs @ 3.43 fps)

Pond 2: CB 2

Inflow Area = 20,420 sf, Inflow Depth = 5.26" for 100 Year event
Inflow = 3.87 cfs @ 11.92 hrs, Volume= 8,949 cf
Outflow = 3.87 cfs @ 11.92 hrs, Volume= 8,949 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.87 cfs @ 11.92 hrs, Volume= 8,949 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.26' @ 11.92 hrs
Flood Elev= 267.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.20'	**15.0" x 80.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 264.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.87 cfs @ 11.92 hrs HW=266.26' (Free Discharge)
1=Culvert (Inlet Controls 3.87 cfs @ 3.50 fps)

Pond 3: CB 3

Inflow Area = 38,255 sf, Inflow Depth = 5.39" for 100 Year event
Inflow = 4.34 cfs @ 12.06 hrs, Volume= 17,185 cf
Outflow = 4.34 cfs @ 12.06 hrs, Volume= 17,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.34 cfs @ 12.06 hrs, Volume= 17,185 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.35' @ 12.06 hrs
Flood Elev= 261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.90' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.34 cfs @ 12.06 hrs HW=260.35' (Free Discharge)
1=Culvert (Barrel Controls 4.34 cfs @ 4.06 fps)

Pond 4: CB 4

Inflow Area = 44,850 sf, Inflow Depth = 5.74" for 100 Year event
Inflow = 6.26 cfs @ 11.92 hrs, Volume= 21,450 cf
Outflow = 6.26 cfs @ 11.92 hrs, Volume= 21,450 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.26 cfs @ 11.92 hrs, Volume= 21,450 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 260.78' @ 11.92 hrs
Flood Elev= 261.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	258.90'	**15.0" x 50.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.65' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=6.25 cfs @ 11.92 hrs HW=260.78' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.25 cfs @ 5.09 fps)

Pond 6: CB 6

Inflow Area = 31,735 sf, Inflow Depth = 4.90" for 100 Year event
Inflow = 4.11 cfs @ 12.06 hrs, Volume= 12,969 cf
Outflow = 4.11 cfs @ 12.06 hrs, Volume= 12,969 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.11 cfs @ 12.06 hrs, Volume= 12,969 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 262.90' @ 12.06 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	261.80'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 259.00' S= 0.0140 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.11 cfs @ 12.06 hrs HW=262.90' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.11 cfs @ 3.58 fps)

Pond 7: CB 7

Inflow Area = 20,275 sf, Inflow Depth = 4.69" for 100 Year event
Inflow = 2.45 cfs @ 12.12 hrs, Volume= 7,932 cf
Outflow = 2.45 cfs @ 12.12 hrs, Volume= 7,932 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.45 cfs @ 12.12 hrs, Volume= 7,932 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 263.03' @ 12.12 hrs
Flood Elev= 264.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	262.00'	**12.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 261.82' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.45 cfs @ 12.12 hrs HW=263.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.45 cfs @ 3.75 fps)

Pond 8: CB 8

Inflow Area = 116,560 sf, Inflow Depth = 1.03" for 100 Year event
Inflow = 4.23 cfs @ 11.93 hrs, Volume= 9,993 cf
Outflow = 4.23 cfs @ 11.93 hrs, Volume= 9,993 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.23 cfs @ 11.93 hrs, Volume= 9,993 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.40' @ 11.93 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.40'	**18.0" x 215.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 263.10' S= 0.0107 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.22 cfs @ 11.93 hrs HW=266.39' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.22 cfs @ 3.40 fps)

Pond 9: CB 9

Inflow Area = 108,470 sf, Inflow Depth = 0.63" for 100 Year event
Inflow = 2.51 cfs @ 11.99 hrs, Volume= 5,724 cf
Outflow = 2.51 cfs @ 11.99 hrs, Volume= 5,724 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 11.99 hrs, Volume= 5,724 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 266.40' @ 11.99 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	265.60'	**18.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.40' S= 0.0100 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=2.51 cfs @ 11.99 hrs HW=266.40' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.51 cfs @ 3.81 fps)

Pond 12: CB 12

Inflow Area = 18,313 sf, Inflow Depth = 5.86" for 100 Year event
Inflow = 3.80 cfs @ 12.00 hrs, Volume= 8,942 cf
Outflow = 3.80 cfs @ 12.00 hrs, Volume= 8,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.80 cfs @ 12.00 hrs, Volume= 8,942 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 274.83' @ 12.00 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.25'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 273.15' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=3.80 cfs @ 12.00 hrs HW=274.83' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.80 cfs @ 4.84 fps)

Pond 13: CB 13

Inflow Area = 4,805 sf, Inflow Depth = 5.39" for 100 Year event
Inflow = 0.96 cfs @ 11.99 hrs, Volume= 2,159 cf
Outflow = 0.96 cfs @ 11.99 hrs, Volume= 2,159 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.96 cfs @ 11.99 hrs, Volume= 2,159 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 269.69' @ 11.99 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.10'	**12.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0050 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=0.96 cfs @ 11.99 hrs HW=269.69' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.96 cfs @ 2.88 fps)

Pond 14: CB 14

Inflow Area = 42,737 sf, Inflow Depth = 5.96" for 100 Year event
Inflow = 8.84 cfs @ 11.92 hrs, Volume= 21,226 cf
Outflow = 8.84 cfs @ 11.92 hrs, Volume= 21,226 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.84 cfs @ 11.92 hrs, Volume= 21,226 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 270.89' @ 11.92 hrs
Flood Elev= 271.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	**18.0" x 95.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 268.52' S= 0.0051 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=8.82 cfs @ 11.92 hrs HW=270.88' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.82 cfs @ 5.11 fps)

Pond 15: CB 15

Inflow Area = 35,562 sf, Inflow Depth = 5.92" for 100 Year event
Inflow = 7.40 cfs @ 11.92 hrs, Volume= 17,535 cf
Outflow = 7.40 cfs @ 11.92 hrs, Volume= 17,535 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.40 cfs @ 11.92 hrs, Volume= 17,535 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 275.34' @ 11.92 hrs
Flood Elev= 275.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	273.15'	**15.0" x 160.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.00' S= 0.0259 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=7.38 cfs @ 11.92 hrs HW=275.33' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.38 cfs @ 6.01 fps)

Pond MH4: MH 4

Inflow Area = 42,737 sf, Inflow Depth = 5.96" for 100 Year event
Inflow = 8.84 cfs @ 11.92 hrs, Volume= 21,226 cf
Outflow = 8.84 cfs @ 11.92 hrs, Volume= 21,226 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.49 cfs @ 11.92 hrs, Volume= 18,504 cf
Secondary = 4.35 cfs @ 11.92 hrs, Volume= 2,722 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 269.96' @ 11.92 hrs
Flood Elev= 271.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	267.80'	**12.0" x 90.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 267.35' S= 0.0050 '/' Cc= 0.900 n= 0.010
#2	Secondary	268.80'	**15.0" x 135.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.00' S= 0.0281 '/' Cc= 0.900 n= 0.010

Primary OutFlow Max=4.48 cfs @ 11.92 hrs HW=269.95' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.48 cfs @ 5.71 fps)

Secondary OutFlow Max=4.33 cfs @ 11.92 hrs HW=269.95' (Free Discharge)
└**2=Culvert** (Inlet Controls 4.33 cfs @ 3.66 fps)

Pond WL-3: WL-3

Inflow Area = 436,851 sf, Inflow Depth > 1.63" for 100 Year event
Inflow = 11.02 cfs @ 12.13 hrs, Volume= 59,347 cf
Outflow = 6.70 cfs @ 12.35 hrs, Volume= 59,285 cf, Atten= 39%, Lag= 13.2 min
Primary = 6.70 cfs @ 12.35 hrs, Volume= 59,285 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 244.20' @ 12.35 hrs Surf.Area= 35,819 sf Storage= 8,002 cf

Plug-Flow detention time= 34.2 min calculated for 59,285 cf (100% of inflow)
Center-of-Mass det. time= 33.0 min (1,012.5 - 979.5)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	183,393 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	34,764	0	0
246.00	45,327	80,091	80,091
248.00	57,975	103,302	183,393

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**28.0' long x 92.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.70 cfs @ 12.35 hrs HW=244.20' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 6.70 cfs @ 1.20 fps)

Pond WQB 1: WQB #1

Inflow Area = 244,319 sf, Inflow Depth > 2.29" for 100 Year event
Inflow = 9.55 cfs @ 12.06 hrs, Volume= 46,695 cf
Outflow = 8.71 cfs @ 12.13 hrs, Volume= 46,455 cf, Atten= 9%, Lag= 4.0 min
Primary = 7.09 cfs @ 12.13 hrs, Volume= 44,957 cf
Secondary = 1.62 cfs @ 12.13 hrs, Volume= 1,498 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 255.50' Surf.Area= 2,716 sf Storage= 3,274 cf
Peak Elev= 257.47' @ 12.13 hrs Surf.Area= 5,904 sf Storage= 11,334 cf (8,060 cf above start)
Flood Elev= 258.00' Surf.Area= 6,916 sf Storage= 14,708 cf (11,434 cf above start)

Plug-Flow detention time= 188.9 min calculated for 43,180 cf (92% of inflow)
Center-of-Mass det. time= 109.1 min (988.8 - 879.7)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	14,708 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
254.00	1,650	0	0
256.00	3,071	4,721	4,721
258.00	6,916	9,987	14,708

Device	Routing	Invert	Outlet Devices
#1	Primary	255.50'	**18.0" x 35.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 254.00' S= 0.0429 '/' Cc= 0.900 n= 0.010
#2	Device 1	255.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	256.75'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	257.25'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=7.09 cfs @ 12.13 hrs HW=257.47' (Free Discharge)
└**1=Culvert** (Passes 7.09 cfs of 9.41 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.55 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 6.76 cfs @ 3.27 fps)

Secondary OutFlow Max=1.62 cfs @ 12.13 hrs HW=257.47' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 1.21 fps)

Pond WQB 2: WQB 2

Inflow Area = 183,688 sf, Inflow Depth = 1.60" for 100 Year event
Inflow = 8.36 cfs @ 11.92 hrs, Volume= 24,549 cf
Outflow = 4.86 cfs @ 12.07 hrs, Volume= 24,505 cf, Atten= 42%, Lag= 8.7 min
Primary = 4.86 cfs @ 12.07 hrs, Volume= 24,505 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 258.50' Surf.Area= 1,940 sf Storage= 2,277 cf
Peak Elev= 260.56' @ 12.07 hrs Surf.Area= 4,805 sf Storage= 9,419 cf (7,141 cf above start)
Flood Elev= 262.00' Surf.Area= 6,340 sf Storage= 17,431 cf (15,154 cf above start)

Plug-Flow detention time= 221.6 min calculated for 22,222 cf (91% of inflow)
Center-of-Mass det. time= 139.9 min (957.9 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	24,240 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
256.00	311	0	0
258.00	1,185	1,496	1,496
260.00	4,205	5,390	6,886
262.00	6,340	10,545	17,431
263.00	7,277	6,809	24,240

Device	Routing	Invert	Outlet Devices
#1	Primary	258.50'	**15.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 258.00' S= 0.0071 '/' Cc= 0.900 n= 0.010
#2	Device 1	258.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	260.00'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Device 1	262.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=4.86 cfs @ 12.07 hrs HW=260.56' (Free Discharge)
└**1=Culvert** (Passes 4.86 cfs of 7.08 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.70 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.53 cfs @ 2.79 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond WQB 3: WQB #3

Inflow Area = 97,200 sf, Inflow Depth = 3.37" for 100 Year event
Inflow = 6.85 cfs @ 12.02 hrs, Volume= 27,304 cf
Outflow = 3.12 cfs @ 12.19 hrs, Volume= 27,304 cf, Atten= 54%, Lag= 10.0 min
Discarded = 3.12 cfs @ 12.19 hrs, Volume= 27,304 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 268.41' @ 12.19 hrs Surf.Area= 4,495 sf Storage= 4,698 cf
Flood Elev= 270.00' Surf.Area= 6,585 sf Storage= 13,523 cf

Plug-Flow detention time= 8.4 min calculated for 27,296 cf (100% of inflow)
Center-of-Mass det. time= 8.4 min (835.3 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	13,523 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.00	1,993	0	0
268.00	3,961	2,977	2,977
270.00	6,585	10,546	13,523

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**30.000 in/hr Exfiltration over Surface area**
#2	Primary	266.50'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.63' S= 0.0050 '/' Cc= 0.900 n= 0.010
#3	Device 2	268.50'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height
#4	Device 2	270.00'	**4.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=3.12 cfs @ 12.19 hrs HW=268.41' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 3.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=267.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 0.90 cfs potential flow)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Appendix B

Water Quality Volume Calculations

Required Water Quality Volume (WQV) WQB#1

Total Drainage Area =	60,621	
Total Impervious Area =	33,148	
Impervious Cover (I) =	54.68%	
90% Rainfall Event (P) =	1.3	
Rv =	0.542	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.08	
Water Quality Volume (WQv) Cubic-Ft=	3,560	

Required Water Quality Volume (WQV) WQB#2

Total Drainage Area =	86,494	
Total Impervious Area =	36,215	
Impervious Cover (I) =	41.87%	
90% Rainfall Event (P) =	1.3	
Rv =	0.427	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.09	
Water Quality Volume (WQv) Cubic-Ft=	3,999	

Required Water Quality Volume (WQV) WQB#3

Total Drainage Area =	97,208	
Total Impervious Area =	45,030	
Impervious Cover (I) =	46.32%	
90% Rainfall Event (P) =	1.3	
Rv =	0.467	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.11	
Water Quality Volume (WQv) Cubic-Ft=	4,917	

Required Water Quality Volume (WQV) WQB#4

Total Drainage Area =	182,619	
Total Impervious Area =	89,990	
Impervious Cover (I) =	49.28%	
90% Rainfall Event (P) =	1.3	
Rv =	0.493	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.22	
Water Quality Volume (WQv) Cubic-Ft=	9,763	

Required Water Quality Volume (WQV) WQB#5

Total Drainage Area =	178,755	
Total Impervious Area =	68,616	
Impervious Cover (I) =	38.39%	
90% Rainfall Event (P) =	1.3	
Rv =	0.395	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.18	
Water Quality Volume (WQv) Cubic-Ft=	7,658	

Required Water Quality Volume (WQV) Bio Zone #1

Total Drainage Area =	34,177	
Total Impervious Area =	10,138	
Impervious Cover (I) =	29.66%	
90% Rainfall Event (P) =	1.3	
Rv =	0.317	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.03	
Water Quality Volume (WQv) Cubic-Ft=	1,174	

Required Water Quality Volume (WQV) Bio Zone #2

Total Drainage Area =	43,800	
Total Impervious Area =	7,339	
Impervious Cover (I) =	16.76%	
90% Rainfall Event (P) =	1.3	
Rv =	0.201	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.02	
Water Quality Volume (WQv) Cubic-Ft=	953	

Required Water Quality Volume (WQV) Bio Zone #3

Total Drainage Area =	23,495	
Total Impervious Area =	4,670	
Impervious Cover (I) =	19.88%	
90% Rainfall Event (P) =	1.3	
Rv =	0.229	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.01	
Water Quality Volume (WQv) Cubic-Ft=	583	

Required Water Quality Volume (WQV) Bio Zone #4

Total Drainage Area =	14,812	
Total Impervious Area =	8,275	
Impervious Cover (I) =	55.87%	
90% Rainfall Event (P) =	1.3	
Rv =	0.553	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.02	
Water Quality Volume (WQv) Cubic-Ft=	887	

Required Water Quality Volume (WQV) Bio Zone #5

Total Drainage Area =	7,323	
Total Impervious Area =	3,586	
Impervious Cover (I) =	48.97%	
90% Rainfall Event (P) =	1.3	
Rv =	0.491	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.01	
Water Quality Volume (WQv) Cubic-Ft=	389	

Required Water Quality Volume (WQV) Bio Zone #6

Total Drainage Area =	6,322	
Total Impervious Area =	3,076	
Impervious Cover (I) =	48.66%	
90% Rainfall Event (P) =	1.3	
Rv =	0.488	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.01	
Water Quality Volume (WQv) Cubic-Ft=	334	

Required Water Quality Volume (WQV) Bio Zone #7

Total Drainage Area =	26,130	
Total Impervious Area =	5,550	
Impervious Cover (I) =	21.24%	
90% Rainfall Event (P) =	1.3	
Rv =	0.241	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.02	
Water Quality Volume (WQv) Cubic-Ft=	683	

Required Water Quality Volume (WQV) Bio Zone #8

Total Drainage Area =	21,690	
Total Impervious Area =	16,090	
Impervious Cover (I) =	74.18%	
90% Rainfall Event (P) =	1.3	
Rv =	0.718	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.04	
Water Quality Volume (WQv) Cubic-Ft=	1,686	

Required Water Quality Volume (WQV) Bio Zone #9

Total Drainage Area =	22,183	
Total Impervious Area =	15,013	
Impervious Cover (I) =	67.68%	
90% Rainfall Event (P) =	1.3	
Rv =	0.659	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.04	
Water Quality Volume (WQv) Cubic-Ft=	1,584	

Required Water Quality Volume (WQV) WS #1

Total Drainage Area =	161,904	
Total Impervious Area =	9,960	
Impervious Cover (I) =	6.15%	
90% Rainfall Event (P) =	1.3	
Rv =	0.105	(0.20 Min Value)
Water Quality Volume (WQv) Acre-Ft=	0.08	
Water Quality Volume (WQv) Cubic-Ft=	3,508	

Appendix C

Construction Inspection Logs

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS
Project Name

_____
Permit No. _____Date of Authorization_____
Name of Operator

_____
Prime Contractor

_____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the

direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).
2 “Commencement of construction” means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 “Final stabilization” means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

" I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Contractors Certification

" I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards"

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

e. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where?
_____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next
14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

CONSTRUCTION DURATION INSPECTIONS **Page 1 of _____**

SITE PLAN/SKETCH

_____

_____

Inspector (print name) **Date of Inspection**

_____

_____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

CONSTRUCTION DURATION INSPECTIONS **Page 2 of _____**

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?

[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ] [ ] [ ] All disturbance is within the limits of the approved plans.

[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?

[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

[ ] [ ] [ ] Is construction impacting the adjacent property?

[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.

[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?

[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.

[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.

[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.

[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.

[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

CONSTRUCTION DURATION INSPECTIONS **Page 3 of _____**
Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

CONSTRUCTION DURATION INSPECTIONS **Page 4 of _____**

Sediment Control (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS
b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	**Today's Date:**	**Reporting Month:**
Location:	**Permit Identification #:**	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

_____

_____

Signature of Permittee or Duly Authorized Representative date

Name of Permittee or Duly Authorized Representative

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Appendix D

Notice of Intent

1752059166

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-02-01

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required. To properly complete this form, please refer to the Instruction Manual which can be accessed at www.dec.state.ny.us/website/dow/toolbox/instr_man.pdf

-IMPORTANT-
THIS FORM FOR MACHINE PRINT ONLY
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State Zip -

Phone (Owner/Operator) - - Fax (Owner/Operator) - -

Email (Owner/Operator)

Location Information

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State: N Y

Zip: ____ - ____

County

DEC Region (if known)

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Direction to Nearest Cross Street

○ **North** ○ **South** ○ **East** ○ **West**

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.state.ny.us/website/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site go to the dropdown menu on the left and choose "Get Coordinates". Click on the center of your site and a small window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 44

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

Project Site Information

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ SUBSURFACE UTILITY
- ○ PARKING LOT
- ○ OTHER

OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION

Number of Lots

- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ OTHER

OTHER

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ○ **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ○ **Yes** ○ **No**

6. Is this property owned by a state authority, state agency or local government? ○ **Yes** ○ **No**

7. In accordance with the larger common plan of development or sale; enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
.	.	.	.

8. Will there be more than 5 acres disturbed at any given time? ○ **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	%	%

10. Is this a phased project? (**if yes, The SWPPP must address all planned phases)** * ○ Yes ○ No

11. Enter the planned start and end dates of the disturbance activities

Start Date __/__/____ - **End Date** __/__/____

Receiving System(s)

12. Provide the name of the nearest, natural, classified surface waterbody(ies) into which construction site runoff has the potential to discharge.

For Questions 13 and 14 refer to the Instruction Manual for a subset of 303(d) segments and TMDL watersheds subject to Condition A of the permit. These waterbodies and watersheds have been identified for regulation within the stormwater program due to some level of impairment by nutrients, silt or sediment. The Instruction Manual can be accessed at www.dec.state.ny.us/website/dow/toolbox/instr_man.pdf

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment? * ○ Yes ○ No

14. Is this project located in a TMDL Watershed? * ○ Yes ○ No

***NOTE:** **If you answered Yes to either question 13 or 14, Pursuant to Part I.D.3.(b) of the permit, you must have your SWPPP prepared and certified by a licensed/certified professional and the SWPPP is subject to a 60-business day review.**

15. Does the site runoff enter a separate storm sewer system- including roadside drains, swales, ditches, culverts, etc? (**if no, skip question 16)** ○ Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ○ No ○ Unknown

Stormwater Pollution Prevention Plan (SWPPP)

18. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ○ Yes ○ No *

19. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) **If no, Skip question 20** ○ Yes ○ No

20. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ○ Yes ○ No *

NOTE: If you answered no to question 18 or 20, Pursuant to Part I.D.3.(b) of the permit, you must have your SWPPP prepared and certified by a licensed/certified professional and the SWPPP is subject to a 60-business day review. Please provide further details in the details/comment section on the last page of this form.

21. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer Information (if different from Owner/Operator info)

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - Fax - -

Email

Stormwater Pollution Prevention Plan (SWPPP)

Erosion and Sediment Control Practices

22. Has a construction sequence schedule for the planned management practices been prepared?

○ Yes ○ No

23. Select **all** of the erosion and sediment control practices that will be employed on the project site.

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Stormwater Pollution Prevention Plan (SWPPP)

Water Quality and Quantity Control

Important:Completion of Questions 24-30 is not required if the project:

Disturbs less than 5 acres and is planned for single-family residential homes(including subdivisions) or construction on agricultural property and does not have a discharge to a 303(d) water or is not located within a TMDL watershed.

Additionally, sites where there will be no future impervious area within the disturbed area and that do not have a change(pre to post development)in hydrology do not need to complete questions 24-30.

24. Indicate **all** the permanent Stormwater Management Practice(s) that will be installed on this site

Post Construction Stormwater Management Practices

Ponds

- ○ **Micropool Extended Detention (P-1)**
- ○ **Wet Pond (P-2)**
- ○ **Wet Extended Detention (P-3)**
- ○ **Multiple Pond System (P-4)**
- ○ **Pocket Pond (P-5)**

Filtering

- ○ **Surface Sand Filter (F-1)**
- ○ **Underground Sand Filter (F-2)**
- ○ **Perimeter Sand Filter (F-3)**
- ○ **Organic Filter (F-4)**
- ○ **Bioretention (F-5)**

Wetlands

- ○ **Shallow Wetland (W-1)**
- ○ **Extended Detention Wetland (W-2)**
- ○ **Pond/Wetland System (W-3)**
- ○ **Pocket Wetland (W-4)**

Infiltration

- ○ **Infiltration Trench (I-1)**
- ○ **Infiltration Basin (I-2)**
- ○ **Dry Well (I-3)**

Open Channels

- ○ **Dry Swale (O-1)**
- ○ **Wet Swale (O-2)**

○ **Other**

Describe other stormwater management practices not listed above or explain any deviations from the technicial standards. If the SWPPP does not conform to the technicial standards, the SWPPP must be prepared and certified by a licensed/certified professional and is subject to a 60-business day review.

Has a long term Operation and Maintenance plan for the post construction management practices been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Stormwater Pollution Prevention Plan (SWPPP)
Water Quality and Quantity Control

25. Provide the total water quality volume required and the total provided for the site.

Total Water Quality Volume (WQv)

WQv Required ☐☐☐.☐☐☐ **acre-feet**

WQv Provided ☐☐☐.☐☐☐ **acre-feet**

26. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

The need to provide for channel protection has been waived because

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

The need to provide for flood control has been waived because

○ **Site discharges directly to fourth order stream or larger**

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 27 and 28 impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s) (Total Drainage Area = Project Site + Offsite areas)

27. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. ☐☐☐%

28. Post-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. ☐☐☐%

29. Indicate the total number of permanent stormwater management practices to be installed ☐☐

30. Provide the total number of stormwater discharge points from the site (include discharges to either surface waters or to seperate storm sewer systems) ☐☐

Other Permits

31. Select any other DEC permits that are required for this project or ○ None

DEC Permits

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Other SPDES
- ○ Solid Waste
- ○ Stream Protection/Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers

Other

32. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.

N Y R

Details/Comments

Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I also certify under penalty of law that this document and the corresponding documents were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction. and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name

MI

Print Last Name

Owner/Operator Signature

Date

/ /

Appendix E

BMP Construction/Installation Guidelines

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Infiltration Basin Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Runoff diverted		
Soil permeability tested		
Groundwater / bedrock depth		
2. Excavation		
Size and location		
Side slopes stable		
Excavation does not compact subsoils		
3. Embankment		
Barrel		
Anti-seep collar or Filter diaphragm		
Fill material		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Final Excavation		
Drainage area stabilized		
Sediment removed from facility		
Basin floor tilled		
Facility stabilized		
5. Final Inspection		
Pretreatment facility in place		
Inlets / outlets		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility location staked out		
2. Excavation		
Size and location		
Side slope stable		
Soil permeability		
Groundwater / bedrock		
Lateral slopes completely level		
Longitudinal slopes within design range		
Excavation does not compact subsoils		
3. Check dams		
Dimensions		
Spacing		
Materials		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Structural Components		
Underdrain installed correctly		
Inflow installed correctly		
Pretreatment devices installed		
5. Vegetation		
Complies with planting specifications		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
6. Final inspection		
Dimensions		
Check dams		
Proper outlet		
Effective stand of vegetation and stabilization		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Appendix F

BMP Long-Term Maintenance and Operation Guidelines

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Appendix G

Notice of Termination

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NOTICE OF TERMINATION for Storm Water Discharges Associated with Construction Activity UNDER SPDES GENERAL PERMIT: ☐ #GP-93-06 or ☐ #GP-02-01

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Permittee Information

1. Owner/Operator Name:		
2a. Mailing Address:	2b. City/State/Zip:	
3a. Contact Person:	3b. Phone:	3c. E-mail:

II. Site /Activity Information

4. Facility/Project Site Name:	
5a. Street Address:	5b. City/State/Zip:
6. County:	

III. Reason for Termination

7a. ☐ Site has been finally stabilized in accordance with permit and SWPPP. Date site stabilization completed: _____ month/year

7b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR _ _ _ _ _ _
(Note: Permit coverage can not be terminated by permittee identified in I.1. above until new owner/operator obtains coverage under GP-02-01)

IV. Final Site Information:

8a. Are there permanent stormwater management practices remaining on the site? ☐ yes ☐ no
If the answer to question 8a. is no, go to question 8e.
If the answer to question 8a. is yes, answer the following questions 8b., 8c., and 8d.:

8b. Is the design and function of each permanent practice described in the final SWPPP? ☐ yes ☐ no

8c. Who will be responsible for long-term operation and maintenance of practice(s)? _____

8d. Has the individual(s) responsible for long-term operation and maintenance been given a copy of the operation and maintenance requirements? ☐ yes ☐ no

8e. Provide the total acreage of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____

V. Certification

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name:	Title/Position:
Signature:	Date:

Reset Button

08/16/04