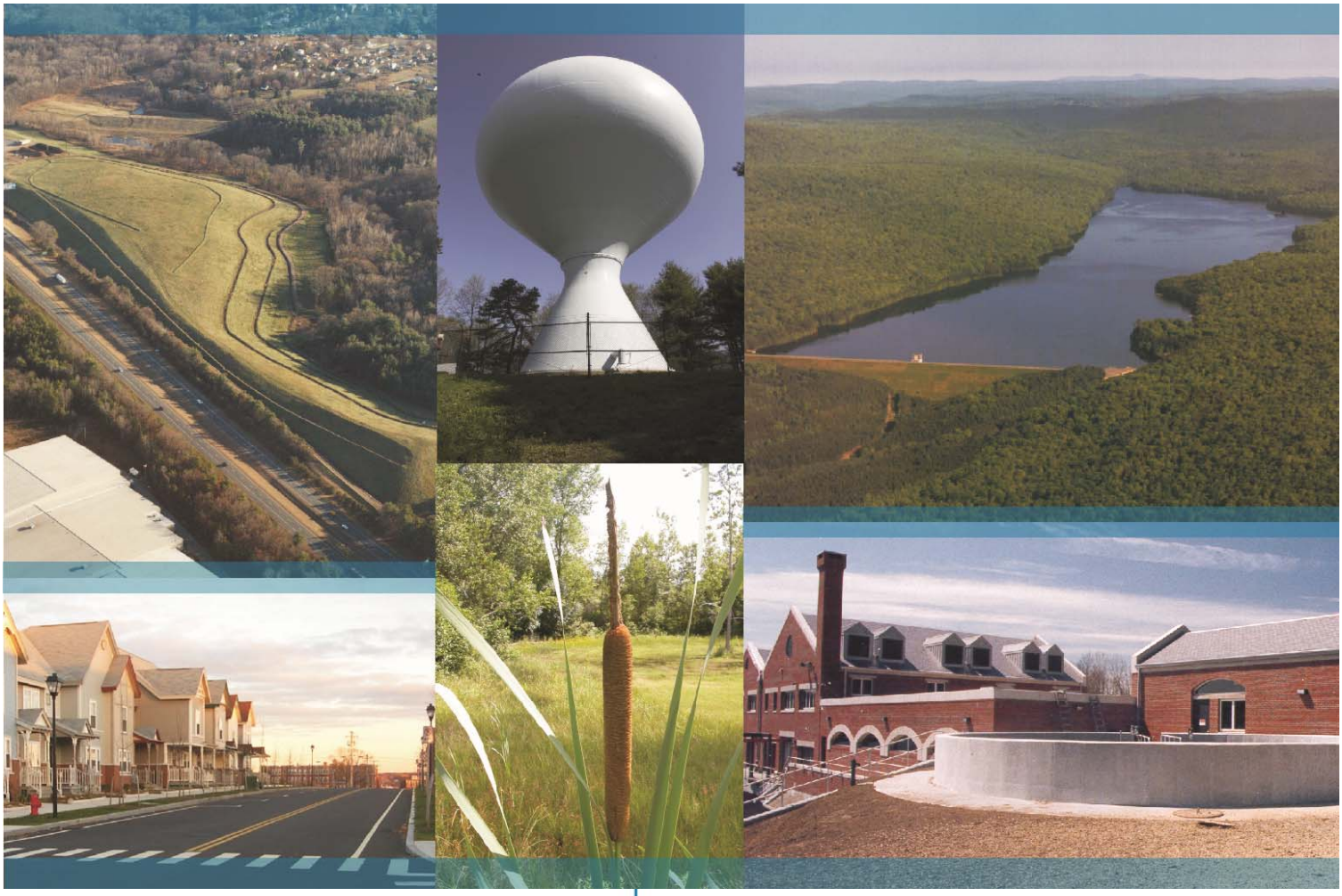


Tighe&Bond

The Street Redevelopment
27 & 55 Boylston Street

Stormwater Report

Prepared For:

Chestnut Hill Shopping Center LLC
Chestnut Hill, MA

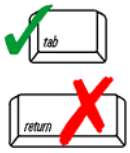
June 20, 2016

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

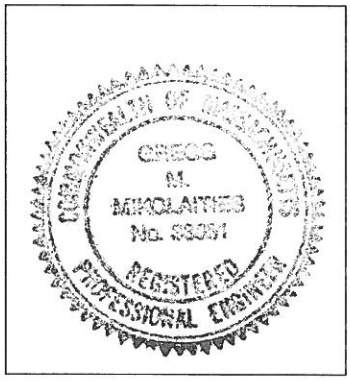
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



6/20/16

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☐ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☒ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☒ Green Roof

☐ Other (describe): _____

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☒ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☐ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☒ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☒ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☒ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Checklist for Stormwater Report

Section 1 Compliance with Stormwater Management Standards

\\SRV\Projects\W\W1743 WS Development Chestnut Hill\Permitting\Wetlands\DRAINAGE REPORT\DRAINAGE REPORT.docx

Section 1
Compliance with Stormwater Management Standards

As stated in the project narrative the project includes the disturbance of approximately 6.08 acres across the sites located at 27 and 55 Boylston Street, Chestnut Hill, Massachusetts. The proposed work at 27 Boylston Street includes the demolition of an existing building, construction of three (3) new buildings, and improvements to the existing Stormwater management system. The work proposed at 55 Boylston Street involves building infills as well as improvements to the existing Stormwater management system for that area. The proposed improvements to the existing onsite Stormwater management system include the installation of green roofs, bioretention cells (rain gardens), permeable paver filter sections as well deep sump catchbasins, in accordance with the Massachusetts Stormwater Handbook.

Standard 1: No New Untreated Discharges or Erosion to Wetlands

No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The proposed improvements will not discharge untreated Stormwater directly to wetland resource areas. This is being accomplished by installing three (3) rain gardens, seven (7) permeable paver sections, as well as deep sump catchbasins with oil/gas separator hoods. Along with the above mentioned Stormwater management devices the proposed project also includes the installation of two (2) green roofs to assist with the reduction of peak offsite flows from the pre-development conditions to help prevent erosion or scour to wetland resource areas. Supporting calculations are included in Appendix A.

Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

As stated above the proposed Stormwater management devices have been designed such that the post-development peak discharge rate is less than the pre-development rates for the 2-, 10-, 25- and 100-year type III 24 hour storm events.

Tighe & Bond utilized HydroCAD Version 10.00, developed by HydroCAD Software Solutions LLC, to estimate the peak flow volume and downstream impacts during the 2-, 10-, 25-, 50- and 100-year 24 hour, Type III storm events. The total rainfall for each of the storm events was based upon data from the Northeast Regional Climate Center Extreme Precipitation Estimates. The rainfall values used in the hydrologic model for each storm event are shown the table below. Note that these values are more conservative than NRCS TR 20 and 55 and TP-40. Copies of the HydroCAD drainage calculations are presented in Appendix B.

Storm Event	24 Hour Rainfall (inches)
2-year	3.23
10-year	4.88
25-year	6.19
50-year	7.41
100-year	8.87

For the pre-construction analysis, the site is divided into two (2) drainage areas which both ultimately drain to point of analysis 1, Hammond Pond. A copy of the pre-construction drainage area map is included in Appendix C.

For the post-construction analysis, the site is divided into the individual proposed BMPs to ensure the each BMP was properly sized in accordance with the Massachusetts Stormwater Handbook. A copy of the post-construction drainage area map is included Appendix C:

The CN identified for each watershed is a function of the soil type and ground cover, based on data provided by the Natural Resources Conservation Service (NRCS) and the Hydrologic Soil Group (see Appendix D for a copy of the Web Soil Survey report). The Tc was determined using a combination of the TR-55 Sheet Flow procedure, the TR-55 Shallow Concentrated Flow procedure, and Channel Flow procedure , with a minimum Tc of 5 minutes.

The proposed rain gardens and permeable paver sections have been designed to attenuate peak discharges by detaining, as well as infiltrating, runoff from the proposed site improvements. The HydroCAD model demonstrates that the not only are the peak post-development discharge rates less than that of the pre-development conditions, also the overall runoff volumes are reduced. The table below summarized the peak flow rates and runoff volumes between the pre-development conditions and the post-development conditions.

Storm Event	Pre-Development (cfs)	Post-Development (cfs)	Pre-Development (CF)	Post-Development (CF)
2-year	20.13	13.00	56,812	53,986
10-year	31.86	21.09	92,508	88,976
25-year	41.07	27.33	121,107	117,252
50-year	49.59	32.71	147,838	143,728
100-year	59.74	38.96	179,898	175,543

The reduction in the runoff volumes can be attributed to the groundwater recharge provided from the rain gardens and permeable paver sections.

Standard 3: Stormwater Recharge

Loss of annual recharge to groundwater shall be eliminated and at a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions.

Stormwater recharge is provided on site via the three (3) proposed rain gardens and the seven (7) proposed permeable paver sections. The required groundwater recharge is calculated using the formula below.

Rv = F x Impervious Area

Rv = Required Recharge Volume, expressed in CF, cubic yards, or acre-feet
F = Target Depth Factor associated with each Hydrologic Soil Group
Impervious Area = additional pavement and rooftop area on site

Based on the NRCS Soil Map the soils on site are urban land with an unknown hydrologic soil group rating. However based on surrounding soil types it has been modeled assuming a hydrologic soil type B. Per the Massachusetts Stormwater Handbook, a soil type B results with a Target Depth Factor (F) of 0.35-inches. Conservatively treating the ±7,360 SF of green roof as impervious area, there is a net increase of approximately 5,573 SF of impervious area in the post-development condition. Applying the above mentioned formula this results in a required groundwater recharge volume of approximately 163 CF. The table below summarizes the available Stormwater recharge volumes for each of the proposed BMP's

BMP	Available Recharge Volume (CF)
Rain Garden #1	87
Rain Garden #2	231
Rain Garden #3	120
Permeable paver #1	678
Permeable paver #2	981
Permeable paver #3	981
Permeable paver #4	553
Permeable paver #5	712
Permeable paver #6	335
Permeable paver #7	182
Total	4860

Copies of the HydroCAD drainage calculations are presented in Appendix B.

Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of total suspended solids.

The Stormwater management systems are designed to remove 80% of the average annual post-construction load of TSS. This Standard is being met by the following three practices:

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
- Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and

- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

The runoff from the majority of the project site will be treated as in the existing condition through water quality units that were previously constructed. The proposed project will not increase runoff directed though the existing water quality units as part of the proposed work.

The required water quality volume for the new impervious areas is provided on site via the three (3) proposed rain gardens and seven (7) proposed permeable paver sections. The required water quality volume is calculated using the formula below.

Vwq = (Dwq/12 inches/foot) * (A(imp) * 43,560 square feet/arce)

Vwq = Required Water Quality Volume (in cubic feet)
Dwq = Water Quality Depth: one-inch for discharges within a Zone II or Interim Wellhead Protection Area, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.4 inches/hour or greater; ½-inch for discharges near or to other areas.
(1 inch for runoff from a LUHPPL)
Aimp = Impervious Area (in acres)

The proposed project site results with impervious areas, which will not be treated via the existing water quality units, of approximately 38,100 sf. As the proposed green roof sections are capable of retaining the required water quality volume the green roof area may be deducted from the impervious area used to calculate the water quality volume. Subtracting the approximate 7,360 sf of green roof results with approximately 38,100sf (0.87 acres) used to calculate the required water quality volume. Applying the above water quality volume formula, the required water quality volume is approximately 3,160cf. The three (3) proposed rain garden and seven (7) proposed permeable paver sections which provide treatment via their filter media course to the new impervious areas, provide 4,860 cubic feet of applicable storage which is greater than the required 3,160cf of water quality volume.

Standard 5: Land Uses with Higher Potential Pollutant Loading (LUHPPL)

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented and use specific structural stormwater best management practices.

The land uses are not changing as part of this project. As part of the project pollution prevention during and after construction are proposed. Good housekeeping practices regarding spill prevention and clean up, regular inspection of the project area and good housekeeping practices such as sweeping, trash monitoring and system observations are proposed. In addition to these good housekeeping practices the permeable paver sections and deep sump catchbasins with oil grit separators are designed to treat potential pollutants associated with parking lots. This standard has been meet to the extent practicable.

Standard 6: Critical Areas

Stormwater discharges within or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices.

The project site is not located within any identified critical areas and therefore this standard does not apply.

Standard 7: Redevelopment and Other Projects Subject to the Standards only to the Maximum Extent Practicable

A redevelopment project is required to meet Stormwater Management Standards 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6 only to the maximum extent practicable.

This site is a mix redevelopment and new development area since it is a development on a previously developed site.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities shall be developed and implemented.

This proposed project will result in a disturbance of greater than one area of land, and therefore will be required to obtain coverage under EPA's NPDES General Permit for Discharges from Construction Activities (CGP). A Stormwater Pollution Prevention Plan (SWPPP), will be prepared prior to the start of construction.

Standard 9: Operation and Maintenance Plan

A Long -Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The Long-Term Operation and Maintenance Plan consists of the following:

- Stormwater management system(s) owners;
- The party or parties responsible for operation and maintenance, including how future property owners will be notified of the presence of the Stormwater management system and the requirement for proper operation and maintenance;
- The routine and non-routine maintenance tasks to be undertaken after construction is complete and a schedule for implementing those tasks;

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

There are no known or suspected illicit discharges to the stormwater management system at the redevelopment project site. The project has been designed so there is no connection between sewer and drainage systems.

Illicit Discharge Compliance Statement: Based on visual observations prior to construction no illicit discharges to the stormwater management system exist within the project area.

Tighe&Bond

Engineers | Environmental Specialists

Project: The Street Redevelopent
Location: 27 Boylston Street
T&B #: W1743-6A
Calculations By: CML
Checked By: JMP
Date: 6/14/2016

APRON DESIGN

Terms: Rip Rap Apron #1

length of apron (ft.)	L_a	
discharge from pipe (cfs)	Q	(25 YR STORM EVENT)
pipe dia. or channel width (ft.)	Do	
tailwater depth (ft.)	T_w	
width of apron (at outlet)(ft)	W1	
width of apron (downstream)(ft)	W2	
median stone diameter (ft.)	d_{50}	

Equations Used:

Length of Apron (L_a)

when Tw < .5*Do $L_a = \frac{1.8(Q)}{Do^{(3/2)}} + 7Do$

when Tw >= .5*Do $L_a = \frac{3(Q)}{Do^{(3/2)}} + 7Do$

Width of Apron (W1)

$W1 = 3Do$

Width of Apron (W2)

when Tw < .5*Do $W2 = 3Do + La$

when Tw >= .5*Do $W2 = 3Do + 0.4La$

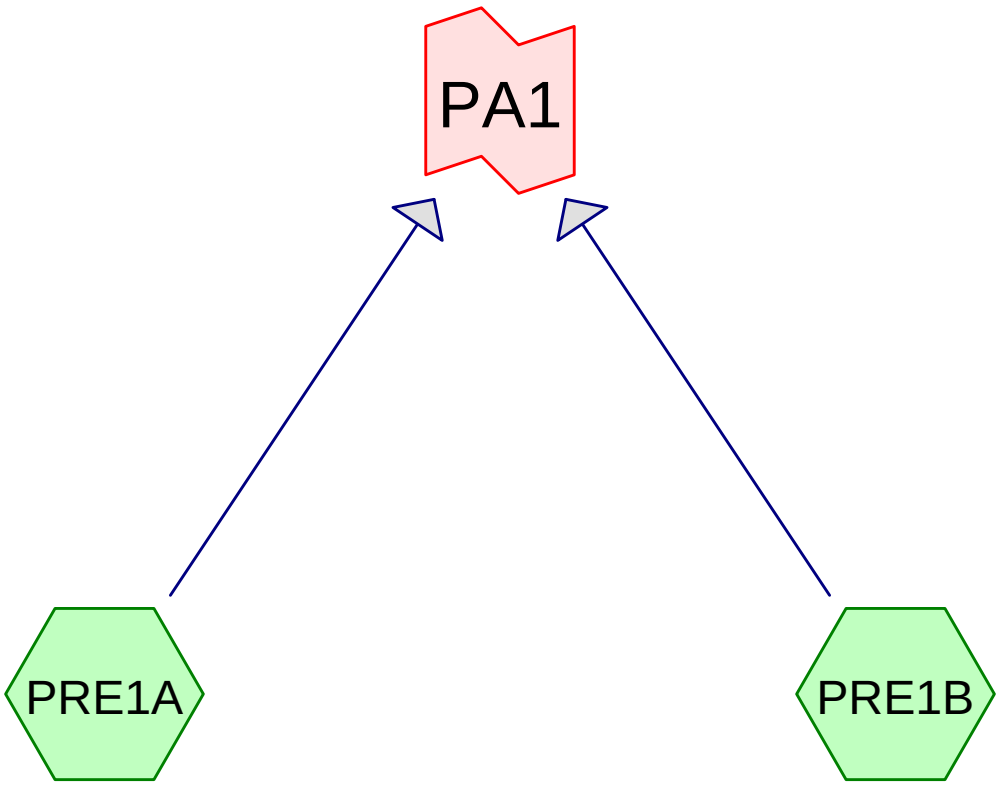
Median Diameter $d_{50} = \frac{0.02 * Q^{(1.3)}}{(Tw * Do)}$

Input:

Q (cfs)	0.59	cfs
Do (ft.)	0.50	ft
T_w (ft.)	1.00	ft

Output:

Width of Apron (W1)	2	ft.
Width of Apron (W2)	5	ft.
Length of Apron (L_a)	9	ft.
Median Diameter	0.50	ft.
Riprap min. depth	1.13	ft.



Subcat Reach Pond Link

Routing Diagram for W1743-6A-PRE
Prepared by Tighe & Bond, Printed 6/13/2016

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
41,436	98	27 ROOFS (PRE1A)
43,052	98	55 ROOF (PRE1B)
28,959	61	>75% Grass cover, Good, HSG B (PRE1A, PRE1B)
151,516	98	Paved parking, HSG B (PRE1A, PRE1B)
264,963	**94**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
180,475	HSG B	PRE1A, PRE1B
0	HSG C	
0	HSG D	
84,488	Other	PRE1A, PRE1B
264,963		**TOTAL AREA**

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE1A: Runoff Area=78,662 sf 90.15% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=94 Runoff=5.25 cfs 16,866 cf

Subcatchment PRE1B: Runoff Area=186,301 sf 88.62% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=94 Runoff=12.42 cfs 39,945 cf

Link PA1: Inflow=17.67 cfs 56,812 cf
Primary=17.67 cfs 56,812 cf

Total Runoff Area = 264,963 sf Runoff Volume = 56,812 cf Average Runoff Depth = 2.57"
10.93% Pervious = 28,959 sf 89.07% Impervious = 236,004 sf

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE1A: Runoff Area=78,662 sf 90.15% Impervious Runoff Depth=4.19"
Tc=5.0 min CN=94 Runoff=8.31 cfs 27,464 cf

Subcatchment PRE1B: Runoff Area=186,301 sf 88.62% Impervious Runoff Depth=4.19"
Tc=5.0 min CN=94 Runoff=19.68 cfs 65,044 cf

Link PA1: Inflow=27.99 cfs 92,508 cf
Primary=27.99 cfs 92,508 cf

Total Runoff Area = 264,963 sf Runoff Volume = 92,508 cf Average Runoff Depth = 4.19"
10.93% Pervious = 28,959 sf 89.07% Impervious = 236,004 sf

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE1A: Runoff Area=78,662 sf 90.15% Impervious Runoff Depth=5.48"
Tc=5.0 min CN=94 Runoff=10.72 cfs 35,954 cf

Subcatchment PRE1B: Runoff Area=186,301 sf 88.62% Impervious Runoff Depth=5.48"
Tc=5.0 min CN=94 Runoff=25.38 cfs 85,153 cf

Link PA1: Inflow=36.10 cfs 121,107 cf
Primary=36.10 cfs 121,107 cf

Total Runoff Area = 264,963 sf Runoff Volume = 121,107 cf Average Runoff Depth = 5.48"
10.93% Pervious = 28,959 sf 89.07% Impervious = 236,004 sf

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE1A: Runoff Area=78,662 sf 90.15% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=94 Runoff=12.94 cfs 43,890 cf

Subcatchment PRE1B: Runoff Area=186,301 sf 88.62% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=94 Runoff=30.65 cfs 103,948 cf

Link PA1: Inflow=43.60 cfs 147,838 cf
Primary=43.60 cfs 147,838 cf

Total Runoff Area = 264,963 sf Runoff Volume = 147,838 cf Average Runoff Depth = 6.70"
10.93% Pervious = 28,959 sf 89.07% Impervious = 236,004 sf

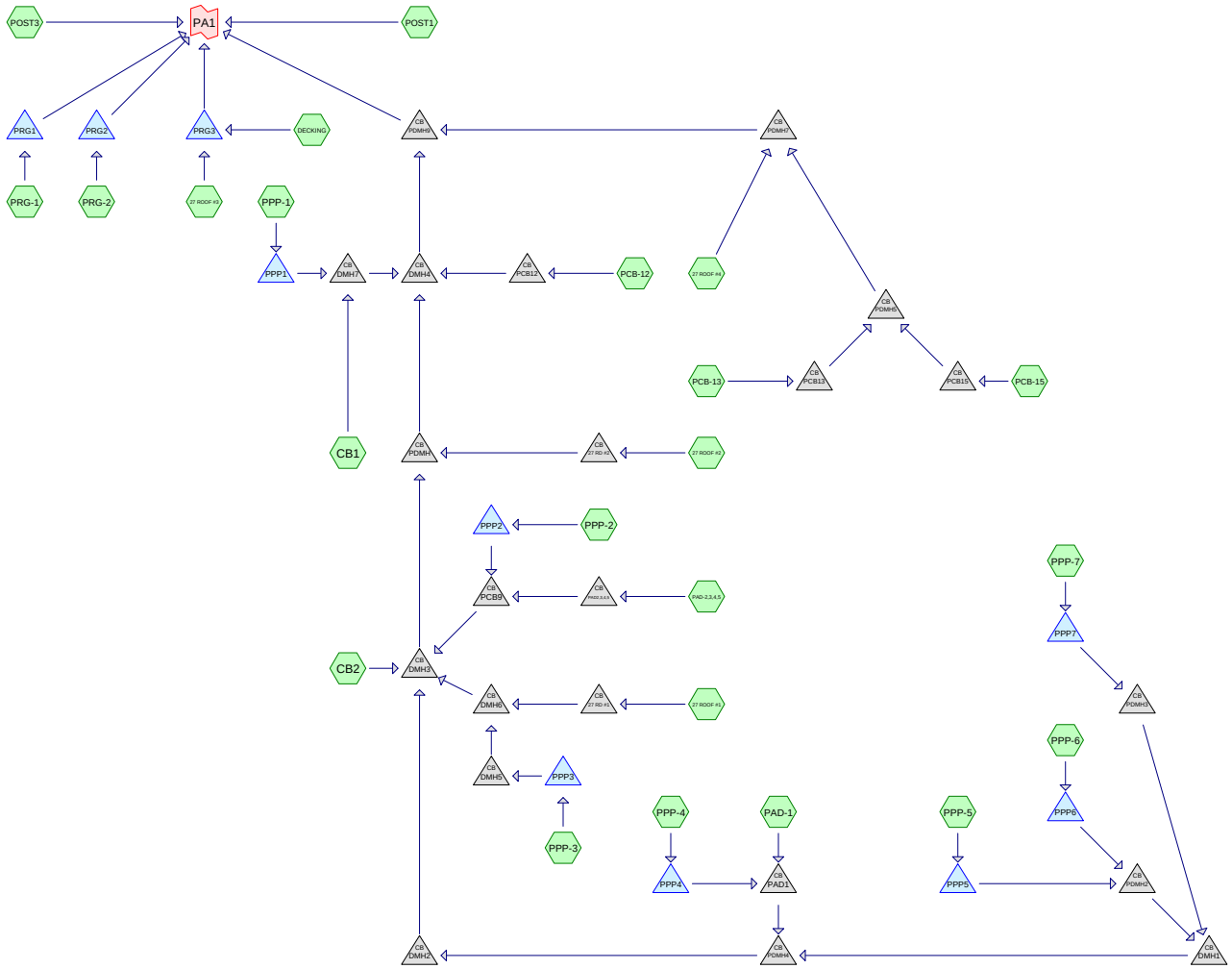
Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE1A: Runoff Area=78,662 sf 90.15% Impervious Runoff Depth=8.15"
Tc=5.0 min CN=94 Runoff=15.60 cfs 53,408 cf

Subcatchment PRE1B: Runoff Area=186,301 sf 88.62% Impervious Runoff Depth=8.15"
Tc=5.0 min CN=94 Runoff=36.94 cfs 126,490 cf

Link PA1: Inflow=52.53 cfs 179,898 cf
Primary=52.53 cfs 179,898 cf

Total Runoff Area = 264,963 sf Runoff Volume = 179,898 cf Average Runoff Depth = 8.15"
10.93% Pervious = 28,959 sf 89.07% Impervious = 236,004 sf



Subcat Reach Pond Link

Routing Diagram for W1743-6A-POST

Prepared by Tighe & Bond, Printed 6/20/2016

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,359	75	27 GREEN ROOFS (27 ROOF #3, 27 ROOF #4)
68,856	98	27 ROOFS (27 ROOF #1, 27 ROOF #2, 27 ROOF #3, 27 ROOF #4)
56,728	98	55 ROOFS/IMPERVIOUS (POST3)
23,333	61	>75% Grass cover, Good, HSG B (CB1, PCB-12, PCB-13, POST1, POST3, PPP-2, PPP-3, PPP-4, PPP-5, PRG-1, PRG-2)
3,966	98	DECKING (DECKING, PRG-2)
10,893	98	PERVIOUS PAVERS (PPP-1, PPP-2, PPP-3, PPP-4, PPP-5, PPP-6, PPP-7)
93,828	98	Paved parking, HSG B (CB1, CB2, PAD-1, PAD-2,3,4,5, PCB-12, PCB-13, PPP-2, PPP-3, PPP-4, PPP-5, PPP-6, PPP-7, PRG-1, PRG-2)
264,963	**94**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.10 hrs, 361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 27 ROOF #1: Runoff Area=32,429 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=2.17 cfs 8,100 cf

Subcatchment 27 ROOF #2: Runoff Area=27,837 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=1.86 cfs 6,953 cf

Subcatchment 27 ROOF #3: Runoff Area=5,896 sf 60.43% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=89 Runoff=0.31 cfs 1,036 cf

Subcatchment 27 ROOF #4: Runoff Area=10,053 sf 50.00% Impervious Runoff Depth=1.94"
Tc=5.0 min CN=87 Runoff=0.49 cfs 1,626 cf

Subcatchment CB1: Runoff Area=15,268 sf 87.90% Impervious Runoff Depth=2.57"
Tc=0.0 min CN=94 Runoff=1.06 cfs 3,274 cf

Subcatchment CB2: Runoff Area=8,340 sf 100.00% Impervious Runoff Depth=3.00"
Tc=0.0 min CN=98 Runoff=0.63 cfs 2,083 cf

Subcatchment DECKING: Runoff Area=3,245 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.22 cfs 811 cf

Subcatchment PAD-1: Runoff Area=1,271 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.09 cfs 317 cf

Subcatchment PAD-2,3,4,5: Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,215 cf

Subcatchment PCB-12: Runoff Area=5,807 sf 93.46% Impervious Runoff Depth=2.78"
Tc=0.0 min CN=96 Runoff=0.42 cfs 1,345 cf

Subcatchment PCB-13: Runoff Area=13,405 sf 74.23% Impervious Runoff Depth=2.02"
Tc=0.0 min CN=88 Runoff=0.77 cfs 2,261 cf

Subcatchment PCB-15: Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=0 Runoff=0.00 cfs 0 cf

Subcatchment POST1: Runoff Area=8,773 sf 0.00% Impervious Runoff Depth=0.46"
Tc=5.0 min CN=61 Runoff=0.07 cfs 334 cf

Subcatchment POST3: Runoff Area=57,000 sf 99.52% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=3.82 cfs 14,238 cf

Subcatchment PPP-1: Runoff Area=1,993 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.13 cfs 498 cf

Subcatchment PPP-2: Runoff Area=7,377 sf 98.75% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.49 cfs 1,843 cf

Subcatchment PPP-3: Runoff Area=6,382 sf 98.35% Impervious Runoff Depth=2.89"
Tc=5.0 min CN=97 Runoff=0.42 cfs 1,535 cf

Subcatchment PPP-4: Runoff Area=7,896 sf 82.86% Impervious Runoff Depth=2.38"
Tc=5.0 min CN=92 Runoff=0.46 cfs 1,565 cf

Subcatchment PPP-5: Runoff Area=11,184 sf 86.34% Impervious Runoff Depth=2.47"
Tc=5.0 min CN=93 Runoff=0.67 cfs 2,306 cf

Subcatchment PPP-6: Runoff Area=5,574 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,392 cf

Subcatchment PPP-7: Runoff Area=7,345 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.49 cfs 1,835 cf

Subcatchment PRG-1: Runoff Area=8,222 sf 82.69% Impervious Runoff Depth=2.38"
Tc=5.0 min CN=92 Runoff=0.48 cfs 1,630 cf

Subcatchment PRG-2: Runoff Area=14,801 sf 72.27% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=88 Runoff=0.75 cfs 2,496 cf

Pond 27 RD #1: Peak Elev=168.43' Inflow=2.17 cfs 8,100 cf
10.0" Round Culvert n=0.013 L=55.0' S=0.0100 '/' Outflow=2.17 cfs 8,100 cf

Pond 27 RD #2: Peak Elev=168.01' Inflow=1.86 cfs 6,953 cf
10.0" Round Culvert n=0.013 L=72.0' S=0.0111 '/' Outflow=1.86 cfs 6,953 cf

Pond DMH1: Peak Elev=167.42' Inflow=1.05 cfs 4,300 cf
30.0" Round Culvert n=0.013 L=175.0' S=-0.0006 '/' Outflow=1.03 cfs 4,298 cf

Pond DMH2: Peak Elev=167.41' Inflow=1.26 cfs 5,620 cf
30.0" Round Culvert n=0.013 L=215.0' S=0.0028 '/' Outflow=1.26 cfs 5,620 cf

Pond DMH3: Peak Elev=167.39' Inflow=3.94 cfs 18,425 cf
30.0" Round Culvert n=0.013 L=70.0' S=-0.0100 '/' Outflow=3.94 cfs 18,425 cf

Pond DMH4: Peak Elev=166.54' Inflow=6.71 cfs 29,997 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=6.71 cfs 29,997 cf

Pond DMH5: Peak Elev=167.70' Inflow=0.04 cfs 551 cf
8.0" Round Culvert n=0.013 L=29.0' S=0.0310 '/' Outflow=0.04 cfs 551 cf

Pond DMH6: Peak Elev=167.48' Inflow=2.17 cfs 8,651 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.17 cfs 8,651 cf

Pond DMH7: Peak Elev=166.90' Inflow=1.06 cfs 3,274 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0118 '/' Outflow=1.06 cfs 3,274 cf

Pond PAD1: Peak Elev=167.42' Inflow=0.26 cfs 1,328 cf
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.26 cfs 1,325 cf

Pond PAD2,3,4,5: Peak Elev=169.25' Inflow=0.33 cfs 1,215 cf
10.0" Round Culvert n=0.013 L=83.0' S=0.0054 '/' Outflow=0.33 cfs 1,215 cf

Pond PCB12: Peak Elev=167.53' Inflow=0.42 cfs 1,345 cf
12.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=0.42 cfs 1,345 cf

Pond PCB13: Peak Elev=167.46' Inflow=0.77 cfs 2,261 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=0.77 cfs 2,261 cf

Pond PCB15: Peak Elev=169.25' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0500 '/' Outflow=0.00 cfs 0 cf

Pond PCB9: Peak Elev=168.68' Inflow=0.33 cfs 2,071 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0056 '/' Outflow=0.33 cfs 2,071 cf

Pond PDMH: Peak Elev=167.30' Inflow=5.80 cfs 25,378 cf
30.0" Round Culvert n=0.013 L=70.0' S=0.0143 '/' Outflow=5.80 cfs 25,378 cf

Pond PDMH2: Peak Elev=170.17' Inflow=0.66 cfs 2,647 cf
10.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=0.66 cfs 2,647 cf

Pond PDMH3: Peak Elev=169.21' Inflow=0.45 cfs 1,652 cf
15.0" Round Culvert n=0.013 L=136.0' S=0.0132 '/' Outflow=0.45 cfs 1,652 cf

Pond PDMH4: Peak Elev=167.42' Inflow=1.26 cfs 5,623 cf
30.0" Round Culvert n=0.013 L=170.0' S=-0.0035 '/' Outflow=1.26 cfs 5,620 cf

Pond PDMH5: Peak Elev=166.78' Inflow=0.77 cfs 2,261 cf
30.0" Round Culvert n=0.013 L=198.0' S=0.0051 '/' Outflow=0.77 cfs 2,261 cf

Pond PDMH7: Peak Elev=165.98' Inflow=1.14 cfs 3,887 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=1.14 cfs 3,887 cf

Pond PDMH9: Peak Elev=165.92' Inflow=7.71 cfs 33,884 cf
30.0" Round Culvert n=0.013 L=30.0' S=0.0200 '/' Outflow=7.71 cfs 33,884 cf

Pond PPP1: Peak Elev=167.82' Storage=498 cf Inflow=0.13 cfs 498 cf
Outflow=0.00 cfs 0 cf

Pond PPP2: Peak Elev=171.63' Storage=1,161 cf Inflow=0.49 cfs 1,843 cf
Outflow=0.10 cfs 856 cf

Pond PPP3: Peak Elev=171.63' Storage=1,056 cf Inflow=0.42 cfs 1,535 cf
Outflow=0.04 cfs 551 cf

Pond PPP4: Peak Elev=172.04' Storage=714 cf Inflow=0.46 cfs 1,565 cf
Outflow=0.22 cfs 1,011 cf

Pond PPP5: Peak Elev=172.17' Storage=1,008 cf Inflow=0.67 cfs 2,306 cf
Outflow=0.38 cfs 1,591 cf

Pond PPP6: Peak Elev=172.11' Storage=457 cf Inflow=0.37 cfs 1,392 cf
Outflow=0.32 cfs 1,057 cf

Pond PPP7: Peak Elev=172.22' Storage=268 cf Inflow=0.49 cfs 1,835 cf
Outflow=0.45 cfs 1,652 cf

Pond PRG1: Peak Elev=166.88' Storage=142 cf Inflow=0.48 cfs 1,630 cf
Outflow=0.47 cfs 1,542 cf

Pond PRG2: Peak Elev=166.99' Storage=416 cf Inflow=0.75 cfs 2,496 cf
Outflow=0.55 cfs 2,263 cf

Pond PRG3: Peak Elev=166.76' Storage=209 cf Inflow=0.53 cfs 1,847 cf
Outflow=0.48 cfs 1,725 cf

Link PA1: Inflow=13.00 cfs 53,986 cf
Primary=13.00 cfs 53,986 cf

Total Runoff Area = 264,963 sf Runoff Volume = 58,694 cf Average Runoff Depth = 2.66"
11.58% Pervious = 30,692 sf 88.42% Impervious = 234,271 sf

Time span=0.00-36.00 hrs, dt=0.10 hrs, 361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 27 ROOF #1: Runoff Area=32,429 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=3.30 cfs 12,548 cf

Subcatchment 27 ROOF #2: Runoff Area=27,837 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=2.84 cfs 10,771 cf

Subcatchment 27 ROOF #3: Runoff Area=5,896 sf 60.43% Impervious Runoff Depth=3.66"
Tc=5.0 min CN=89 Runoff=0.53 cfs 1,797 cf

Subcatchment 27 ROOF #4: Runoff Area=10,053 sf 50.00% Impervious Runoff Depth=3.45"
Tc=5.0 min CN=87 Runoff=0.86 cfs 2,894 cf

Subcatchment CB1: Runoff Area=15,268 sf 87.90% Impervious Runoff Depth=4.19"
Tc=0.0 min CN=94 Runoff=1.68 cfs 5,331 cf

Subcatchment CB2: Runoff Area=8,340 sf 100.00% Impervious Runoff Depth=4.64"
Tc=0.0 min CN=98 Runoff=0.96 cfs 3,227 cf

Subcatchment DECKING: Runoff Area=3,245 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,256 cf

Subcatchment PAD-1: Runoff Area=1,271 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.13 cfs 492 cf

Subcatchment PAD-2,3,4,5: Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.50 cfs 1,882 cf

Subcatchment PCB-12: Runoff Area=5,807 sf 93.46% Impervious Runoff Depth=4.41"
Tc=0.0 min CN=96 Runoff=0.66 cfs 2,136 cf

Subcatchment PCB-13: Runoff Area=13,405 sf 74.23% Impervious Runoff Depth=3.56"
Tc=0.0 min CN=88 Runoff=1.32 cfs 3,971 cf

Subcatchment PCB-15: Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=0 Runoff=0.00 cfs 0 cf

Subcatchment POST1: Runoff Area=8,773 sf 0.00% Impervious Runoff Depth=1.30"
Tc=5.0 min CN=61 Runoff=0.27 cfs 949 cf

Subcatchment POST3: Runoff Area=57,000 sf 99.52% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=5.81 cfs 22,056 cf

Subcatchment PPP-1: Runoff Area=1,993 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.20 cfs 771 cf

Subcatchment PPP-2: Runoff Area=7,377 sf 98.75% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.75 cfs 2,855 cf

Subcatchment PPP-3: Runoff Area=6,382 sf 98.35% Impervious Runoff Depth=4.53"
Tc=5.0 min CN=97 Runoff=0.65 cfs 2,408 cf

Subcatchment PPP-4: Runoff Area=7,896 sf 82.86% Impervious Runoff Depth=3.97"
Tc=5.0 min CN=92 Runoff=0.75 cfs 2,614 cf

Subcatchment PPP-5: Runoff Area=11,184 sf 86.34% Impervious Runoff Depth=4.08"
Tc=5.0 min CN=93 Runoff=1.08 cfs 3,803 cf

Subcatchment PPP-6: Runoff Area=5,574 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.57 cfs 2,157 cf

Subcatchment PPP-7: Runoff Area=7,345 sf 100.00% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=98 Runoff=0.75 cfs 2,842 cf

Subcatchment PRG-1: Runoff Area=8,222 sf 82.69% Impervious Runoff Depth=3.97"
Tc=5.0 min CN=92 Runoff=0.78 cfs 2,722 cf

Subcatchment PRG-2: Runoff Area=14,801 sf 72.27% Impervious Runoff Depth=3.56"
Tc=5.0 min CN=88 Runoff=1.30 cfs 4,385 cf

Pond 27 RD #1: Peak Elev=169.64' Inflow=3.30 cfs 12,548 cf
10.0" Round Culvert n=0.013 L=55.0' S=0.0100 '/' Outflow=3.30 cfs 12,548 cf

Pond 27 RD #2: Peak Elev=169.25' Inflow=2.84 cfs 10,771 cf
10.0" Round Culvert n=0.013 L=72.0' S=0.0111 '/' Outflow=2.84 cfs 10,771 cf

Pond DMH1: Peak Elev=167.87' Inflow=1.78 cfs 7,568 cf
30.0" Round Culvert n=0.013 L=175.0' S=-0.0006 '/' Outflow=1.79 cfs 7,565 cf

Pond DMH2: Peak Elev=167.86' Inflow=2.45 cfs 10,112 cf
30.0" Round Culvert n=0.013 L=215.0' S=0.0028 '/' Outflow=2.45 cfs 10,112 cf

Pond DMH3: Peak Elev=167.83' Inflow=7.13 cfs 31,062 cf
30.0" Round Culvert n=0.013 L=70.0' S=-0.0100 '/' Outflow=7.13 cfs 31,062 cf

Pond DMH4: Peak Elev=166.99' Inflow=11.34 cfs 49,390 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=11.34 cfs 49,390 cf

Pond DMH5: Peak Elev=168.04' Inflow=0.36 cfs 1,424 cf
8.0" Round Culvert n=0.013 L=29.0' S=0.0310 '/' Outflow=0.36 cfs 1,424 cf

Pond DMH6: Peak Elev=167.92' Inflow=3.44 cfs 13,972 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.44 cfs 13,972 cf

Pond DMH7: Peak Elev=167.09' Inflow=1.68 cfs 5,422 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0118 '/' Outflow=1.68 cfs 5,422 cf

Pond PAD1: Peak Elev=167.87' Inflow=0.65 cfs 2,551 cf
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.66 cfs 2,546 cf

Pond PAD2,3,4,5: Peak Elev=169.33' Inflow=0.50 cfs 1,882 cf
10.0" Round Culvert n=0.013 L=83.0' S=0.0054 '/' Outflow=0.50 cfs 1,882 cf

Pond PCB12: Peak Elev=167.63' Inflow=0.66 cfs 2,136 cf
12.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=0.66 cfs 2,136 cf

Pond PCB13: Peak Elev=167.65' Inflow=1.32 cfs 3,971 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=1.32 cfs 3,971 cf

Pond PCB15: Peak Elev=169.25' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0500 '/' Outflow=0.00 cfs 0 cf

Pond PCB9: Peak Elev=168.89' Inflow=0.81 cfs 3,750 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0056 '/' Outflow=0.81 cfs 3,750 cf

Pond PDMH: Peak Elev=167.71' Inflow=9.95 cfs 41,833 cf
30.0" Round Culvert n=0.013 L=70.0' S=0.0143 '/' Outflow=9.95 cfs 41,833 cf

Pond PDMH2: Peak Elev=170.38' Inflow=1.15 cfs 4,908 cf
10.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=1.15 cfs 4,908 cf

Pond PDMH3: Peak Elev=169.28' Inflow=0.65 cfs 2,660 cf
15.0" Round Culvert n=0.013 L=136.0' S=0.0132 '/' Outflow=0.65 cfs 2,660 cf

Pond PDMH4: Peak Elev=167.87' Inflow=2.45 cfs 10,112 cf
30.0" Round Culvert n=0.013 L=170.0' S=-0.0035 '/' Outflow=2.45 cfs 10,112 cf

Pond PDMH5: Peak Elev=166.91' Inflow=1.32 cfs 3,971 cf
30.0" Round Culvert n=0.013 L=198.0' S=0.0051 '/' Outflow=1.32 cfs 3,971 cf

Pond PDMH7: Peak Elev=166.37' Inflow=1.99 cfs 6,865 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=1.99 cfs 6,865 cf

Pond PDMH9: Peak Elev=166.33' Inflow=13.06 cfs 56,256 cf
30.0" Round Culvert n=0.013 L=30.0' S=0.0200 '/' Outflow=13.06 cfs 56,256 cf

Pond PPP1: Peak Elev=168.08' Storage=698 cf Inflow=0.20 cfs 771 cf
Outflow=0.00 cfs 91 cf

Pond PPP2: Peak Elev=171.89' Storage=1,416 cf Inflow=0.75 cfs 2,855 cf
Outflow=0.42 cfs 1,868 cf

Pond PPP3: Peak Elev=171.81' Storage=1,240 cf Inflow=0.65 cfs 2,408 cf
Outflow=0.36 cfs 1,424 cf

Pond PPP4: Peak Elev=172.33' Storage=871 cf Inflow=0.75 cfs 2,614 cf
Outflow=0.54 cfs 2,059 cf

Pond PPP5: Peak Elev=172.53' Storage=1,268 cf Inflow=1.08 cfs 3,803 cf
Outflow=0.69 cfs 3,087 cf

Pond PPP6: Peak Elev=172.25' Storage=501 cf Inflow=0.57 cfs 2,157 cf
Outflow=0.47 cfs 1,821 cf

Pond PPP7: Peak Elev=172.46' Storage=312 cf Inflow=0.75 cfs 2,842 cf
Outflow=0.65 cfs 2,660 cf

Pond PRG1: Peak Elev=167.16' Storage=195 cf Inflow=0.78 cfs 2,722 cf
Outflow=0.65 cfs 2,634 cf

Pond PRG2: Peak Elev=167.52' Storage=680 cf Inflow=1.30 cfs 4,385 cf
Outflow=0.82 cfs 4,151 cf

Pond PRG3: Peak Elev=167.04' Storage=281 cf Inflow=0.86 cfs 3,053 cf
Outflow=0.70 cfs 2,931 cf

Link PA1: Inflow=21.09 cfs 88,976 cf
Primary=21.09 cfs 88,976 cf

Total Runoff Area = 264,963 sf Runoff Volume = 93,865 cf Average Runoff Depth = 4.25"
11.58% Pervious = 30,692 sf 88.42% Impervious = 234,271 sf

Time span=0.00-36.00 hrs, dt=0.10 hrs, 361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 27 ROOF #1: Runoff Area=32,429 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=4.20 cfs 16,084 cf

Subcatchment 27 ROOF #2: Runoff Area=27,837 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=3.61 cfs 13,806 cf

Subcatchment 27 ROOF #3: Runoff Area=5,896 sf 60.43% Impervious Runoff Depth=4.92"
Tc=5.0 min CN=89 Runoff=0.70 cfs 2,417 cf

Subcatchment 27 ROOF #4: Runoff Area=10,053 sf 50.00% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=87 Runoff=1.15 cfs 3,937 cf

Subcatchment CB1: Runoff Area=15,268 sf 87.90% Impervious Runoff Depth=5.48"
Tc=0.0 min CN=94 Runoff=2.17 cfs 6,979 cf

Subcatchment CB2: Runoff Area=8,340 sf 100.00% Impervious Runoff Depth=5.95"
Tc=0.0 min CN=98 Runoff=1.22 cfs 4,136 cf

Subcatchment DECKING: Runoff Area=3,245 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.42 cfs 1,609 cf

Subcatchment PAD-1: Runoff Area=1,271 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.16 cfs 630 cf

Subcatchment PAD-2,3,4,5: Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.63 cfs 2,413 cf

Subcatchment PCB-12: Runoff Area=5,807 sf 93.46% Impervious Runoff Depth=5.72"
Tc=0.0 min CN=96 Runoff=0.84 cfs 2,766 cf

Subcatchment PCB-13: Runoff Area=13,405 sf 74.23% Impervious Runoff Depth=4.81"
Tc=0.0 min CN=88 Runoff=1.76 cfs 5,372 cf

Subcatchment PCB-15: Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=0 Runoff=0.00 cfs 0 cf

Subcatchment POST1: Runoff Area=8,773 sf 0.00% Impervious Runoff Depth=2.13"
Tc=5.0 min CN=61 Runoff=0.46 cfs 1,560 cf

Subcatchment POST3: Runoff Area=57,000 sf 99.52% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=7.38 cfs 28,270 cf

Subcatchment PPP-1: Runoff Area=1,993 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.26 cfs 988 cf

Subcatchment PPP-2: Runoff Area=7,377 sf 98.75% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.96 cfs 3,659 cf

Subcatchment PPP-3: Runoff Area=6,382 sf 98.35% Impervious Runoff Depth=5.83"
Tc=5.0 min CN=97 Runoff=0.82 cfs 3,103 cf

Subcatchment PPP-4: Runoff Area=7,896 sf 82.86% Impervious Runoff Depth=5.26"
Tc=5.0 min CN=92 Runoff=0.97 cfs 3,459 cf

Subcatchment PPP-5: Runoff Area=11,184 sf 86.34% Impervious Runoff Depth=5.37"
Tc=5.0 min CN=93 Runoff=1.40 cfs 5,005 cf

Subcatchment PPP-6: Runoff Area=5,574 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.72 cfs 2,765 cf

Subcatchment PPP-7: Runoff Area=7,345 sf 100.00% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=98 Runoff=0.95 cfs 3,643 cf

Subcatchment PRG-1: Runoff Area=8,222 sf 82.69% Impervious Runoff Depth=5.26"
Tc=5.0 min CN=92 Runoff=1.01 cfs 3,601 cf

Subcatchment PRG-2: Runoff Area=14,801 sf 72.27% Impervious Runoff Depth=4.81"
Tc=5.0 min CN=88 Runoff=1.72 cfs 5,932 cf

Pond 27 RD #1: Peak Elev=171.15' Inflow=4.20 cfs 16,084 cf
10.0" Round Culvert n=0.013 L=55.0' S=0.0100 '/' Outflow=4.20 cfs 16,084 cf

Pond 27 RD #2: Peak Elev=170.59' Inflow=3.61 cfs 13,806 cf
10.0" Round Culvert n=0.013 L=72.0' S=0.0111 '/' Outflow=3.61 cfs 13,806 cf

Pond DMH1: Peak Elev=168.17' Inflow=2.19 cfs 10,179 cf
30.0" Round Culvert n=0.013 L=175.0' S=-0.0006 '/' Outflow=2.20 cfs 10,179 cf

Pond DMH2: Peak Elev=168.16' Inflow=3.01 cfs 13,714 cf
30.0" Round Culvert n=0.013 L=215.0' S=0.0028 '/' Outflow=3.01 cfs 13,713 cf

Pond DMH3: Peak Elev=168.13' Inflow=9.43 cfs 41,137 cf
30.0" Round Culvert n=0.013 L=70.0' S=-0.0100 '/' Outflow=9.43 cfs 41,137 cf

Pond DMH4: Peak Elev=167.32' Inflow=14.85 cfs 64,996 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=14.85 cfs 64,996 cf

Pond DMH5: Peak Elev=168.45' Inflow=0.61 cfs 2,119 cf
8.0" Round Culvert n=0.013 L=29.0' S=0.0310 '/' Outflow=0.61 cfs 2,119 cf

Pond DMH6: Peak Elev=168.30' Inflow=4.73 cfs 18,202 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=4.73 cfs 18,202 cf

Pond DMH7: Peak Elev=167.37' Inflow=2.17 cfs 7,287 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0118 '/' Outflow=2.17 cfs 7,287 cf

Pond PAD1: Peak Elev=168.18' Inflow=0.81 cfs 3,534 cf
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.81 cfs 3,535 cf

Pond PAD2,3,4,5: Peak Elev=169.41' Inflow=0.63 cfs 2,413 cf
10.0" Round Culvert n=0.013 L=83.0' S=0.0054 '/' Outflow=0.63 cfs 2,413 cf

Pond PCB12: Peak Elev=167.71' Inflow=0.84 cfs 2,766 cf
12.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=0.84 cfs 2,766 cf

Pond PCB13: Peak Elev=167.79' Inflow=1.76 cfs 5,372 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=1.76 cfs 5,372 cf

Pond PCB15: Peak Elev=169.25' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0500 '/' Outflow=0.00 cfs 0 cf

Pond PCB9: Peak Elev=169.01' Inflow=1.13 cfs 5,085 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0056 '/' Outflow=1.13 cfs 5,085 cf

Pond PDMH: Peak Elev=167.99' Inflow=13.03 cfs 54,943 cf
30.0" Round Culvert n=0.013 L=70.0' S=0.0143 '/' Outflow=13.03 cfs 54,943 cf

Pond PDMH2: Peak Elev=170.49' Inflow=1.41 cfs 6,718 cf
10.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=1.41 cfs 6,718 cf

Pond PDMH3: Peak Elev=169.32' Inflow=0.80 cfs 3,461 cf
15.0" Round Culvert n=0.013 L=136.0' S=0.0132 '/' Outflow=0.80 cfs 3,461 cf

Pond PDMH4: Peak Elev=168.17' Inflow=3.01 cfs 13,714 cf
30.0" Round Culvert n=0.013 L=170.0' S=-0.0035 '/' Outflow=3.01 cfs 13,714 cf

Pond PDMH5: Peak Elev=166.99' Inflow=1.76 cfs 5,372 cf
30.0" Round Culvert n=0.013 L=198.0' S=0.0051 '/' Outflow=1.76 cfs 5,372 cf

Pond PDMH7: Peak Elev=166.66' Inflow=2.66 cfs 9,309 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=2.66 cfs 9,309 cf

Pond PDMH9: Peak Elev=166.63' Inflow=17.16 cfs 74,305 cf
30.0" Round Culvert n=0.013 L=30.0' S=0.0200 '/' Outflow=17.16 cfs 74,305 cf

Pond PPP1: Peak Elev=168.11' Storage=725 cf Inflow=0.26 cfs 988 cf
Outflow=0.02 cfs 308 cf

Pond PPP2: Peak Elev=172.06' Storage=1,583 cf Inflow=0.96 cfs 3,659 cf
Outflow=0.57 cfs 2,672 cf

Pond PPP3: Peak Elev=171.91' Storage=1,333 cf Inflow=0.82 cfs 3,103 cf
Outflow=0.61 cfs 2,119 cf

Pond PPP4: Peak Elev=172.51' Storage=973 cf Inflow=0.97 cfs 3,459 cf
Outflow=0.68 cfs 2,904 cf

Pond PPP5: Peak Elev=172.80' Storage=1,458 cf Inflow=1.40 cfs 5,005 cf
Outflow=0.84 cfs 4,289 cf

Pond PPP6: Peak Elev=172.37' Storage=542 cf Inflow=0.72 cfs 2,765 cf
Outflow=0.58 cfs 2,429 cf

Pond PPP7: Peak Elev=172.71' Storage=356 cf Inflow=0.95 cfs 3,643 cf
Outflow=0.80 cfs 3,461 cf

Pond PRG1: Peak Elev=167.43' Storage=280 cf Inflow=1.01 cfs 3,601 cf
Outflow=0.78 cfs 3,514 cf

Pond PRG2: Peak Elev=168.02' Storage=951 cf Inflow=1.72 cfs 5,932 cf
Outflow=1.02 cfs 5,698 cf

Pond PRG3: Peak Elev=167.34' Storage=359 cf Inflow=1.12 cfs 4,027 cf
Outflow=0.87 cfs 3,905 cf

Link PA1: Inflow=27.33 cfs 117,252 cf
Primary=27.33 cfs 117,252 cf

Total Runoff Area = 264,963 sf Runoff Volume = 122,135 cf Average Runoff Depth = 5.53"
11.58% Pervious = 30,692 sf 88.42% Impervious = 234,271 sf

Stage-Area-Storage for Pond PPP1:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
167.20	**1,993**	0
167.25	1,993	40
167.30	1,993	80
167.35	1,993	120
167.40	1,993	159
167.45	1,993	199
167.50	1,993	239
167.55	1,993	279
167.60	1,993	319
167.65	1,993	359
167.70	1,993	399
167.75	1,993	438
167.80	1,993	478
167.85	1,993	518
167.90	1,993	558
167.95	1,993	598
168.00	1,993	638
168.05	1,993	678
168.10	1,993	717
168.15	1,993	757
168.20	1,993	797
168.25	1,993	837
168.30	1,993	877
168.35	1,993	917
168.40	1,993	957
168.45	1,993	997
168.50	1,993	1,036
168.55	1,993	1,076
168.60	1,993	1,116
168.65	1,993	1,156
168.70	1,993	1,196
168.75	1,993	1,236
168.80	1,993	1,276
168.85	1,993	1,315
168.90	1,993	1,355
168.95	1,993	1,395
169.00	1,993	1,435
169.05	1,993	1,475
169.10	1,993	1,515
169.15	1,993	1,555
169.20	1,993	**1,594**
169.25	1,993	1,594
169.30	1,993	1,594
169.35	1,993	1,594
169.40	1,993	1,594
169.45	1,993	1,594
169.50	1,993	1,594
169.55	1,993	1,594
169.60	1,993	1,594
169.65	1,993	1,594
169.70	1,993	1,594
169.75	1,993	1,594
169.80	1,993	1,594
169.85	1,993	1,594
169.90	1,993	1,594
169.95	1,993	1,594
170.00	1,993	1,594
170.05	1,993	1,594

Stage-Area-Storage for Pond PPP2:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.45	**2,452**	0
170.50	2,452	49
170.55	2,452	98
170.60	2,452	147
170.65	2,452	196
170.70	2,452	245
170.75	2,452	294
170.80	2,452	343
170.85	2,452	392
170.90	2,452	441
170.95	2,452	490
171.00	2,452	539
171.05	2,452	588
171.10	2,452	638
171.15	2,452	687
171.20	2,452	736
171.25	2,452	785
171.30	2,452	834
171.35	2,452	883
171.40	2,452	932
171.45	2,452	981
171.50	2,452	1,030
171.55	2,452	1,079
171.60	2,452	1,128
171.65	2,452	1,177
171.70	2,452	1,226
171.75	2,452	1,275
171.80	2,452	1,324
171.85	2,452	1,373
171.90	2,452	1,422
171.95	2,452	1,471
172.00	2,452	1,520
172.05	2,452	1,569
172.10	2,452	1,618
172.15	2,452	1,667
172.20	2,452	1,716
172.25	2,452	1,765
172.30	2,452	1,814
172.35	2,452	1,864
172.40	2,452	1,913
172.45	2,452	1,962
172.50	2,452	2,011
172.55	2,452	2,060
172.60	2,452	2,109
172.65	2,452	2,158
172.70	2,452	2,207
172.75	2,452	2,256
172.80	2,452	2,305
172.85	2,452	2,354
172.90	2,452	2,403
172.95	2,452	**2,452**
173.00	2,452	2,452
173.05	2,452	2,452
173.10	2,452	2,452
173.15	2,452	2,452
173.20	2,452	2,452
173.25	2,452	2,452
173.30	2,452	2,452
173.35	2,452	2,452
173.40	2,452	2,452
173.45	2,452	2,452
173.50	2,452	2,452
173.55	2,452	2,452
173.60	2,452	2,452
173.65	2,452	2,452
173.70	2,452	2,452
173.75	2,452	2,452
173.80	2,452	2,452

Stage-Area-Storage for Pond PPP3:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.55	**2,452**	0
170.60	2,452	49
170.65	2,452	98
170.70	2,452	147
170.75	2,452	196
170.80	2,452	245
170.85	2,452	294
170.90	2,452	343
170.95	2,452	392
171.00	2,452	441
171.05	2,452	490
171.10	2,452	539
171.15	2,452	588
171.20	2,452	638
171.25	2,452	687
171.30	2,452	736
171.35	2,452	785
171.40	2,452	834
171.45	2,452	883
171.50	2,452	932
171.55	2,452	981
171.60	2,452	1,030
171.65	2,452	1,079
171.70	2,452	1,128
171.75	2,452	1,177
171.80	2,452	1,226
171.85	2,452	1,275
171.90	2,452	1,324
171.95	2,452	1,373
172.00	2,452	1,422
172.05	2,452	1,471
172.10	2,452	1,520
172.15	2,452	1,569
172.20	2,452	1,618
172.25	2,452	1,667
172.30	2,452	1,716
172.35	2,452	1,765
172.40	2,452	1,814
172.45	2,452	1,864
172.50	2,452	1,913
172.55	2,452	1,962
172.60	2,452	2,011
172.65	2,452	2,060
172.70	2,452	2,109
172.75	2,452	2,158
172.80	2,452	2,207
172.85	2,452	2,256
172.90	2,452	2,305
172.95	2,452	2,354
173.00	2,452	2,403
173.05	2,452	**2,452**
173.10	2,452	2,452
173.15	2,452	2,452
173.20	2,452	2,452
173.25	2,452	2,452
173.30	2,452	2,452
173.35	2,452	2,452
173.40	2,452	2,452
173.45	2,452	2,452
173.50	2,452	2,452
173.55	2,452	2,452
173.60	2,452	2,452
173.65	2,452	2,452
173.70	2,452	2,452
173.75	2,452	2,452
173.80	2,452	2,452
173.85	2,452	2,452
173.90	2,452	2,452
173.95	2,452	2,452
174.00	2,452	2,452
174.05	2,452	2,452
174.10	2,452	2,452

Stage-Area-Storage for Pond PPP4:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.75	**1,382**	0
170.80	1,382	28
170.85	1,382	55
170.90	1,382	83
170.95	1,382	111
171.00	1,382	138
171.05	1,382	166
171.10	1,382	193
171.15	1,382	221
171.20	1,382	249
171.25	1,382	276
171.30	1,382	304
171.35	1,382	332
171.40	1,382	359
171.45	1,382	387
171.50	1,382	415
171.55	1,382	442
171.60	1,382	470
171.65	1,382	498
171.70	1,382	525
171.75	1,382	553
171.80	1,382	580
171.85	1,382	608
171.90	1,382	636
171.95	1,382	663
172.00	1,382	691
172.05	1,382	719
172.10	1,382	746
172.15	1,382	774
172.20	1,382	802
172.25	1,382	829
172.30	1,382	857
172.35	1,382	884
172.40	1,382	912
172.45	1,382	940
172.50	1,382	967
172.55	1,382	995
172.60	1,382	1,023
172.65	1,382	1,050
172.70	1,382	1,078
172.75	1,382	1,106
172.80	1,382	1,133
172.85	1,382	1,161
172.90	1,382	1,189
172.95	1,382	1,216
173.00	1,382	1,244
173.05	1,382	1,271
173.10	1,382	1,299
173.15	1,382	1,327
173.20	1,382	1,354
173.25	1,382	**1,382**
173.30	1,382	1,382
173.35	1,382	1,382
173.40	1,382	1,382
173.45	1,382	1,382
173.50	1,382	1,382
173.55	1,382	1,382
173.60	1,382	1,382
173.65	1,382	1,382
173.70	1,382	1,382
173.75	1,382	1,382
173.80	1,382	1,382
173.85	1,382	1,382
173.90	1,382	1,382
173.95	1,382	1,382
174.00	1,382	1,382
174.05	1,382	1,382
174.10	1,382	1,382

Stage-Area-Storage for Pond PPP5:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.75	1,781	0
170.80	1,781	36
170.85	1,781	71
170.90	1,781	107
170.95	1,781	142
171.00	1,781	178
171.05	1,781	214
171.10	1,781	249
171.15	1,781	285
171.20	1,781	321
171.25	1,781	356
171.30	1,781	392
171.35	1,781	427
171.40	1,781	463
171.45	1,781	499
171.50	1,781	534
171.55	1,781	570
171.60	1,781	606
171.65	1,781	641
171.70	1,781	677
171.75	1,781	712
171.80	1,781	748
171.85	1,781	784
171.90	1,781	819
171.95	1,781	855
172.00	1,781	891
172.05	1,781	926
172.10	1,781	962
172.15	1,781	997
172.20	1,781	1,033
172.25	1,781	1,069
172.30	1,781	1,104
172.35	1,781	1,140
172.40	1,781	1,175
172.45	1,781	1,211
172.50	1,781	1,247
172.55	1,781	1,282
172.60	1,781	1,318
172.65	1,781	1,354
172.70	1,781	1,389
172.75	1,781	1,425
172.80	1,781	1,460
172.85	1,781	1,496
172.90	1,781	1,532
172.95	1,781	1,567
173.00	1,781	1,603
173.05	1,781	1,639
173.10	1,781	1,674
173.15	1,781	1,710
173.20	1,781	1,745
173.25	**1,781**	**1,781**
173.30	1,781	1,781
173.35	1,781	1,781
173.40	1,781	1,781
173.45	1,781	1,781
173.50	1,781	1,781
173.55	1,781	1,781
173.60	1,781	1,781
173.65	1,781	1,781
173.70	1,781	1,781
173.75	1,781	1,781
173.80	1,781	1,781
173.85	1,781	1,781
173.90	1,781	1,781
173.95	1,781	1,781
174.00	1,781	1,781
174.05	1,781	1,781
174.10	1,781	1,781

Stage-Area-Storage for Pond PPP6:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.75	**837**	0
170.80	837	17
170.85	837	33
170.90	837	50
170.95	837	67
171.00	837	84
171.05	837	100
171.10	837	117
171.15	837	134
171.20	837	151
171.25	837	167
171.30	837	184
171.35	837	201
171.40	837	218
171.45	837	234
171.50	837	251
171.55	837	268
171.60	837	285
171.65	837	301
171.70	837	318
171.75	837	335
171.80	837	352
171.85	837	368
171.90	837	385
171.95	837	402
172.00	837	419
172.05	837	435
172.10	837	452
172.15	837	469
172.20	837	485
172.25	837	502
172.30	837	519
172.35	837	536
172.40	837	552
172.45	837	569
172.50	837	586
172.55	837	603
172.60	837	619
172.65	837	636
172.70	837	653
172.75	837	670
172.80	837	686
172.85	837	703
172.90	837	720
172.95	837	737
173.00	837	753
173.05	837	770
173.10	837	787
173.15	837	804
173.20	837	820
173.25	837	**837**
173.30	837	837
173.35	837	837
173.40	837	837
173.45	837	837
173.50	837	837
173.55	837	837
173.60	837	837
173.65	837	837
173.70	837	837
173.75	837	837
173.80	837	837
173.85	837	837
173.90	837	837
173.95	837	837
174.00	837	837
174.05	837	837
174.10	837	837

Stage-Area-Storage for Pond PPP7:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.75	**455**	0
170.80	455	9
170.85	455	18
170.90	455	27
170.95	455	36
171.00	455	46
171.05	455	55
171.10	455	64
171.15	455	73
171.20	455	82
171.25	455	91
171.30	455	100
171.35	455	109
171.40	455	118
171.45	455	127
171.50	455	137
171.55	455	146
171.60	455	155
171.65	455	164
171.70	455	173
171.75	455	182
171.80	455	191
171.85	455	200
171.90	455	209
171.95	455	218
172.00	455	228
172.05	455	237
172.10	455	246
172.15	455	255
172.20	455	264
172.25	455	273
172.30	455	282
172.35	455	291
172.40	455	300
172.45	455	309
172.50	455	319
172.55	455	328
172.60	455	337
172.65	455	346
172.70	455	355
172.75	455	364
172.80	455	373
172.85	455	382
172.90	455	391
172.95	455	400
173.00	455	410
173.05	455	419
173.10	455	428
173.15	455	437
173.20	455	446
173.25	455	**455**
173.30	455	455
173.35	455	455
173.40	455	455
173.45	455	455
173.50	455	455
173.55	455	455
173.60	455	455
173.65	455	455
173.70	455	455
173.75	455	455
173.80	455	455
173.85	455	455
173.90	455	455
173.95	455	455
174.00	455	455
174.05	455	455
174.10	455	455

Stage-Area-Storage for Pond PRG1:

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
166.05	0	167.11	186
166.07	5	167.13	189
166.09	10	167.15	193
166.11	15	167.17	197
166.13	20	167.19	201
166.15	25	167.21	204
166.17	30	167.23	208
166.19	35	167.25	212
166.21	40	167.27	216
166.23	45	167.29	219
166.25	50	167.31	223
166.27	55	167.33	227
166.29	60	167.35	231
166.31	65	167.37	243
166.33	70	167.39	256
166.35	75	167.41	269
166.37	80	167.43	282
166.39	85	167.45	296
166.41	90	167.47	309
166.43	95	167.49	323
166.45	100	167.51	337
166.47	105	167.53	352
166.49	110	167.55	366
166.51	115	167.57	381
166.53	120	167.59	396
166.55	125	167.61	411
166.57	130	167.63	427
166.59	135	167.65	443
166.61	137	167.67	459
166.63	137	167.69	475
166.65	137	167.71	492
166.67	137	167.73	508
166.69	137	167.75	525
166.71	137	167.77	543
166.73	137	167.79	560
166.75	137	167.81	578
166.77	137	167.83	596
166.79	137	167.85	**614**
166.81	137		
166.83	137		
166.85	137		
166.87	141		
166.89	145		
166.91	148		
166.93	152		
166.95	156		
166.97	159		
166.99	163		
167.01	167		
167.03	171		
167.05	174		
167.07	178		
167.09	182		

Stage-Area-Storage for Pond PRG2:

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
166.05	0	167.11	475	168.17	1,214
166.07	13	167.13	485	168.19	1,252
166.09	26	167.15	495	168.21	1,290
166.11	40	167.17	505	168.23	1,328
166.13	53	167.19	514	168.25	1,368
166.15	66	167.21	524	168.27	1,407
166.17	79	167.23	534	168.29	1,448
166.19	92	167.25	544	168.31	1,489
166.21	106	167.27	554	168.33	1,530
166.23	119	167.29	564	168.35	1,572
166.25	132	167.31	574	168.37	1,615
166.27	145	167.33	584	168.39	1,658
166.29	158	167.35	594	168.41	1,701
166.31	171	167.37	604	168.43	1,746
166.33	185	167.39	613	168.45	1,791
166.35	198	167.41	623	168.47	1,836
166.37	211	167.43	633	168.49	**1,882**
166.39	224	167.45	643		
166.41	237	167.47	653		
166.43	251	167.49	663		
166.45	264	167.51	673		
166.47	277	167.53	683		
166.49	290	167.55	693		
166.51	297	167.57	702		
166.53	297	167.59	712		
166.55	297	167.61	722		
166.57	297	167.63	732		
166.59	297	167.65	742		
166.61	297	167.67	752		
166.63	297	167.69	762		
166.65	297	167.71	772		
166.67	297	167.73	782		
166.69	297	167.75	792		
166.71	297	167.77	801		
166.73	297	167.79	811		
166.75	297	167.81	821		
166.77	307	167.83	831		
166.79	317	167.85	841		
166.81	327	167.87	851		
166.83	336	167.89	861		
166.85	346	167.91	871		
166.87	356	167.93	881		
166.89	366	167.95	890		
166.91	376	167.97	900		
166.93	386	167.99	910		
166.95	396	168.01	932		
166.97	406	168.03	965		
166.99	416	168.05	999		
167.01	425	168.07	1,034		
167.03	435	168.09	1,069		
167.05	445	168.11	1,104		
167.07	455	168.13	1,140		
167.09	465	168.15	1,177		

Stage-Area-Storage for Pond PRG3:

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
165.90	0	166.96	260	168.02	546
165.92	7	166.98	265	168.04	563
165.94	14	167.00	271	168.06	581
165.96	21	167.02	276	168.08	599
165.98	27	167.04	281	168.10	617
166.00	34	167.06	286	168.12	635
166.02	41	167.08	291	168.14	654
166.04	48	167.10	296	168.16	673
166.06	55	167.12	302	168.18	692
166.08	62	167.14	307	168.20	711
166.10	69	167.16	312	168.22	730
166.12	76	167.18	317	168.24	750
166.14	82	167.20	322	168.26	770
166.16	89	167.22	327	168.28	790
166.18	96	167.24	332	168.30	811
166.20	103	167.26	338	168.32	831
166.22	110	167.28	343	168.34	852
166.24	117	167.30	348	168.36	873
166.26	124	167.32	353	168.38	894
166.28	131	167.34	358	168.40	916
166.30	137	167.36	363	168.42	938
166.32	144	167.38	369	168.44	960
166.34	151	167.40	374	168.46	982
166.36	158	167.42	379	168.48	1,005
166.38	165	167.44	384	168.50	**1,027**
166.40	172	167.46	389		
166.42	179	167.48	394		
166.44	186	167.50	399		
166.46	192	167.52	405		
166.48	199	167.54	410		
166.50	206	167.56	415		
166.52	206	167.58	420		
166.54	206	167.60	425		
166.56	206	167.62	430		
166.58	206	167.64	436		
166.60	206	167.66	441		
166.62	206	167.68	446		
166.64	206	167.70	451		
166.66	206	167.72	456		
166.68	206	167.74	461		
166.70	206	167.76	466		
166.72	206	167.78	472		
166.74	206	167.80	477		
166.76	209	167.82	482		
166.78	214	167.84	487		
166.80	219	167.86	492		
166.82	224	167.88	497		
166.84	229	167.90	503		
166.86	235	167.92	508		
166.88	240	167.94	513		
166.90	245	167.96	518		
166.92	250	167.98	523		
166.94	255	168.00	528		

Time span=0.00-36.00 hrs, dt=0.10 hrs, 361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment27 ROOF #1: Runoff Area=32,429 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=5.03 cfs 19,378 cf

Subcatchment27 ROOF #2: Runoff Area=27,837 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=4.32 cfs 16,634 cf

Subcatchment27 ROOF #3: Runoff Area=5,896 sf 60.43% Impervious Runoff Depth=6.11"
Tc=5.0 min CN=89 Runoff=0.86 cfs 3,001 cf

Subcatchment27 ROOF #4: Runoff Area=10,053 sf 50.00% Impervious Runoff Depth=5.88"
Tc=5.0 min CN=87 Runoff=1.42 cfs 4,923 cf

SubcatchmentCB1: Runoff Area=15,268 sf 87.90% Impervious Runoff Depth=6.70"
Tc=0.0 min CN=94 Runoff=2.62 cfs 8,519 cf

SubcatchmentCB2: Runoff Area=8,340 sf 100.00% Impervious Runoff Depth=7.17"
Tc=0.0 min CN=98 Runoff=1.46 cfs 4,984 cf

SubcatchmentDECKING: Runoff Area=3,245 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=0.50 cfs 1,939 cf

SubcatchmentPAD-1: Runoff Area=1,271 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=0.20 cfs 759 cf

SubcatchmentPAD-2,3,4,5: Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=0.76 cfs 2,907 cf

SubcatchmentPCB-12: Runoff Area=5,807 sf 93.46% Impervious Runoff Depth=6.93"
Tc=0.0 min CN=96 Runoff=1.01 cfs 3,355 cf

SubcatchmentPCB-13: Runoff Area=13,405 sf 74.23% Impervious Runoff Depth=5.99"
Tc=0.0 min CN=88 Runoff=2.16 cfs 6,694 cf

SubcatchmentPCB-15: Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=0 Runoff=0.00 cfs 0 cf

SubcatchmentPOST1: Runoff Area=8,773 sf 0.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=61 Runoff=0.66 cfs 2,194 cf

SubcatchmentPOST3: Runoff Area=57,000 sf 99.52% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=8.85 cfs 34,060 cf

SubcatchmentPPP-1: Runoff Area=1,993 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=0.31 cfs 1,191 cf

SubcatchmentPPP-2: Runoff Area=7,377 sf 98.75% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=1.15 cfs 4,408 cf

Subcatchment PPP-3: Runoff Area=6,382 sf 98.35% Impervious Runoff Depth=7.05"
Tc=5.0 min CN=97 Runoff=0.99 cfs 3,750 cf

Subcatchment PPP-4: Runoff Area=7,896 sf 82.86% Impervious Runoff Depth=6.46"
Tc=5.0 min CN=92 Runoff=1.18 cfs 4,251 cf

Subcatchment PPP-5: Runoff Area=11,184 sf 86.34% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=93 Runoff=1.69 cfs 6,130 cf

Subcatchment PPP-6: Runoff Area=5,574 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=0.87 cfs 3,331 cf

Subcatchment PPP-7: Runoff Area=7,345 sf 100.00% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=98 Runoff=1.14 cfs 4,389 cf

Subcatchment PRG-1: Runoff Area=8,222 sf 82.69% Impervious Runoff Depth=6.46"
Tc=5.0 min CN=92 Runoff=1.23 cfs 4,426 cf

Subcatchment PRG-2: Runoff Area=14,801 sf 72.27% Impervious Runoff Depth=5.99"
Tc=5.0 min CN=88 Runoff=2.12 cfs 7,391 cf

Pond 27 RD #1: Peak Elev=172.88' Inflow=5.03 cfs 19,378 cf
10.0" Round Culvert n=0.013 L=55.0' S=0.0100 '/' Outflow=5.03 cfs 19,378 cf

Pond 27 RD #2: Peak Elev=172.06' Inflow=4.32 cfs 16,634 cf
10.0" Round Culvert n=0.013 L=72.0' S=0.0111 '/' Outflow=4.32 cfs 16,634 cf

Pond DMH1: Peak Elev=168.42' Inflow=2.55 cfs 12,616 cf
30.0" Round Culvert n=0.013 L=175.0' S=-0.0006 '/' Outflow=2.57 cfs 12,615 cf

Pond DMH2: Peak Elev=168.41' Inflow=3.49 cfs 17,070 cf
30.0" Round Culvert n=0.013 L=215.0' S=0.0028 '/' Outflow=3.49 cfs 17,068 cf

Pond DMH3: Peak Elev=168.38' Inflow=11.20 cfs 50,523 cf
30.0" Round Culvert n=0.013 L=70.0' S=-0.0100 '/' Outflow=11.20 cfs 50,523 cf

Pond DMH4: Peak Elev=167.60' Inflow=17.75 cfs 79,542 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=17.75 cfs 79,542 cf

Pond DMH5: Peak Elev=169.02' Inflow=0.77 cfs 2,766 cf
8.0" Round Culvert n=0.013 L=29.0' S=0.0310 '/' Outflow=0.77 cfs 2,766 cf

Pond DMH6: Peak Elev=168.81' Inflow=5.75 cfs 22,144 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=5.75 cfs 22,144 cf

Pond DMH7: Peak Elev=167.63' Inflow=2.62 cfs 9,030 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0118 '/' Outflow=2.62 cfs 9,030 cf

Pond PAD1: Peak Elev=168.44' Inflow=0.94 cfs 4,455 cf
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.94 cfs 4,455 cf

Pond PAD2,3,4,5: Peak Elev=169.48' Inflow=0.76 cfs 2,907 cf
10.0" Round Culvert n=0.013 L=83.0' S=0.0054 '/' Outflow=0.76 cfs 2,907 cf

Pond PCB12: Peak Elev=167.77' Inflow=1.01 cfs 3,355 cf
12.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=1.01 cfs 3,355 cf

Pond PCB13: Peak Elev=167.91' Inflow=2.16 cfs 6,694 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=2.16 cfs 6,694 cf

Pond PCB15: Peak Elev=169.25' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0500 '/' Outflow=0.00 cfs 0 cf

Pond PCB9: Peak Elev=169.08' Inflow=1.35 cfs 6,328 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0056 '/' Outflow=1.35 cfs 6,328 cf

Pond PDMH: Peak Elev=168.23' Inflow=15.52 cfs 67,157 cf
30.0" Round Culvert n=0.013 L=70.0' S=0.0143 '/' Outflow=15.52 cfs 67,157 cf

Pond PDMH2: Peak Elev=170.59' Inflow=1.63 cfs 8,410 cf
10.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=1.63 cfs 8,410 cf

Pond PDMH3: Peak Elev=169.36' Inflow=0.93 cfs 4,207 cf
15.0" Round Culvert n=0.013 L=136.0' S=0.0132 '/' Outflow=0.93 cfs 4,207 cf

Pond PDMH4: Peak Elev=168.42' Inflow=3.49 cfs 17,070 cf
30.0" Round Culvert n=0.013 L=170.0' S=-0.0035 '/' Outflow=3.49 cfs 17,070 cf

Pond PDMH5: Peak Elev=167.07' Inflow=2.16 cfs 6,694 cf
30.0" Round Culvert n=0.013 L=198.0' S=0.0051 '/' Outflow=2.16 cfs 6,694 cf

Pond PDMH7: Peak Elev=166.90' Inflow=3.28 cfs 11,617 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=3.28 cfs 11,617 cf

Pond PDMH9: Peak Elev=166.87' Inflow=20.62 cfs 91,159 cf
30.0" Round Culvert n=0.013 L=30.0' S=0.0200 '/' Outflow=20.62 cfs 91,159 cf

Pond PPP1: Peak Elev=168.17' Storage=769 cf Inflow=0.31 cfs 1,191 cf
Outflow=0.06 cfs 511 cf

Pond PPP2: Peak Elev=172.20' Storage=1,716 cf Inflow=1.15 cfs 4,408 cf
Outflow=0.67 cfs 3,421 cf

Pond PPP3: Peak Elev=171.97' Storage=1,391 cf Inflow=0.99 cfs 3,750 cf
Outflow=0.77 cfs 2,766 cf

Pond PPP4: Peak Elev=172.70' Storage=1,076 cf Inflow=1.18 cfs 4,251 cf
Outflow=0.79 cfs 3,696 cf

Pond PPP5: Peak Elev=173.06' Storage=1,646 cf Inflow=1.69 cfs 6,130 cf
Outflow=0.97 cfs 5,414 cf

Pond PPP6: Peak Elev=172.51' Storage=588 cf Inflow=0.87 cfs 3,331 cf
Outflow=0.67 cfs 2,995 cf

Pond PPP7: Peak Elev=172.97' Storage=403 cf Inflow=1.14 cfs 4,389 cf
Outflow=0.93 cfs 4,207 cf

Pond PRG1: Peak Elev=167.56' Storage=376 cf Inflow=1.23 cfs 4,426 cf
Outflow=0.84 cfs 4,338 cf

Pond PRG2: Peak Elev=168.18' Storage=1,234 cf Inflow=2.12 cfs 7,391 cf
Outflow=1.09 cfs 7,157 cf

Pond PRG3: Peak Elev=167.67' Storage=444 cf Inflow=1.36 cfs 4,940 cf
Outflow=1.03 cfs 4,819 cf

Link PA1: Inflow=32.71 cfs 143,728 cf
Primary=32.71 cfs 143,728 cf

Total Runoff Area = 264,963 sf Runoff Volume = 148,615 cf Average Runoff Depth = 6.73"
11.58% Pervious = 30,692 sf 88.42% Impervious = 234,271 sf

Time span=0.00-36.00 hrs, dt=0.10 hrs, 361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 27 ROOF #1: Runoff Area=32,429 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=6.03 cfs 23,321 cf

Subcatchment 27 ROOF #2: Runoff Area=27,837 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=5.18 cfs 20,019 cf

Subcatchment 27 ROOF #3: Runoff Area=5,896 sf 60.43% Impervious Runoff Depth=7.54"
Tc=5.0 min CN=89 Runoff=1.04 cfs 3,706 cf

Subcatchment 27 ROOF #4: Runoff Area=10,053 sf 50.00% Impervious Runoff Depth=7.30"
Tc=5.0 min CN=87 Runoff=1.74 cfs 6,115 cf

Subcatchment CB1: Runoff Area=15,268 sf 87.90% Impervious Runoff Depth=8.15"
Tc=0.0 min CN=94 Runoff=3.16 cfs 10,366 cf

Subcatchment CB2: Runoff Area=8,340 sf 100.00% Impervious Runoff Depth=8.63"
Tc=0.0 min CN=98 Runoff=1.75 cfs 5,998 cf

Subcatchment DECKING: Runoff Area=3,245 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=0.60 cfs 2,334 cf

Subcatchment PAD-1: Runoff Area=1,271 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=0.24 cfs 914 cf

Subcatchment PAD-2,3,4,5: Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=0.90 cfs 3,499 cf

Subcatchment PCB-12: Runoff Area=5,807 sf 93.46% Impervious Runoff Depth=8.39"
Tc=0.0 min CN=96 Runoff=1.21 cfs 4,060 cf

Subcatchment PCB-13: Runoff Area=13,405 sf 74.23% Impervious Runoff Depth=7.42"
Tc=0.0 min CN=88 Runoff=2.65 cfs 8,289 cf

Subcatchment PCB-15: Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=0 Runoff=0.00 cfs 0 cf

Subcatchment POST1: Runoff Area=8,773 sf 0.00% Impervious Runoff Depth=4.12"
Tc=5.0 min CN=61 Runoff=0.92 cfs 3,013 cf

Subcatchment POST3: Runoff Area=57,000 sf 99.52% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=10.60 cfs 40,991 cf

Subcatchment PPP-1: Runoff Area=1,993 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,433 cf

Subcatchment PPP-2: Runoff Area=7,377 sf 98.75% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=1.37 cfs 5,305 cf

Subcatchment PPP-3: Runoff Area=6,382 sf 98.35% Impervious Runoff Depth=8.51"
Tc=5.0 min CN=97 Runoff=1.18 cfs 4,526 cf

Subcatchment PPP-4: Runoff Area=7,896 sf 82.86% Impervious Runoff Depth=7.91"
Tc=5.0 min CN=92 Runoff=1.43 cfs 5,202 cf

Subcatchment PPP-5: Runoff Area=11,184 sf 86.34% Impervious Runoff Depth=8.03"
Tc=5.0 min CN=93 Runoff=2.04 cfs 7,481 cf

Subcatchment PPP-6: Runoff Area=5,574 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=1.04 cfs 4,009 cf

Subcatchment PPP-7: Runoff Area=7,345 sf 100.00% Impervious Runoff Depth=8.63"
Tc=5.0 min CN=98 Runoff=1.37 cfs 5,282 cf

Subcatchment PRG-1: Runoff Area=8,222 sf 82.69% Impervious Runoff Depth=7.91"
Tc=5.0 min CN=92 Runoff=1.49 cfs 5,417 cf

Subcatchment PRG-2: Runoff Area=14,801 sf 72.27% Impervious Runoff Depth=7.42"
Tc=5.0 min CN=88 Runoff=2.59 cfs 9,152 cf

Pond 27 RD #1: Peak Elev=175.37' Inflow=6.03 cfs 23,321 cf
10.0" Round Culvert n=0.013 L=55.0' S=0.0100 '/' Outflow=6.03 cfs 23,321 cf

Pond 27 RD #2: Peak Elev=174.09' Inflow=5.18 cfs 20,019 cf
10.0" Round Culvert n=0.013 L=72.0' S=0.0111 '/' Outflow=5.18 cfs 20,019 cf

Pond DMH1: Peak Elev=168.74' Inflow=3.47 cfs 15,538 cf
30.0" Round Culvert n=0.013 L=175.0' S=-0.0006 '/' Outflow=3.46 cfs 15,536 cf

Pond DMH2: Peak Elev=168.72' Inflow=4.52 cfs 21,097 cf
30.0" Round Culvert n=0.013 L=215.0' S=0.0028 '/' Outflow=4.52 cfs 21,096 cf

Pond DMH3: Peak Elev=168.69' Inflow=13.27 cfs 61,773 cf
30.0" Round Culvert n=0.013 L=70.0' S=-0.0100 '/' Outflow=13.27 cfs 61,773 cf

Pond DMH4: Peak Elev=167.92' Inflow=21.09 cfs 96,971 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=21.09 cfs 96,971 cf

Pond DMH5: Peak Elev=169.70' Inflow=0.92 cfs 3,542 cf
8.0" Round Culvert n=0.013 L=29.0' S=0.0310 '/' Outflow=0.92 cfs 3,542 cf

Pond DMH6: Peak Elev=169.40' Inflow=6.89 cfs 26,863 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=6.89 cfs 26,863 cf

Pond DMH7: Peak Elev=167.95' Inflow=3.16 cfs 11,119 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0118 '/' Outflow=3.16 cfs 11,119 cf

Pond PAD1: Peak Elev=168.76' Inflow=1.10 cfs 5,561 cf
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=1.10 cfs 5,561 cf

Pond PAD2,3,4,5: Peak Elev=169.55' Inflow=0.90 cfs 3,499 cf
10.0" Round Culvert n=0.013 L=83.0' S=0.0054 '/' Outflow=0.90 cfs 3,499 cf

Pond PCB12: Peak Elev=167.95' Inflow=1.21 cfs 4,060 cf
12.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=1.21 cfs 4,060 cf

Pond PCB13: Peak Elev=168.08' Inflow=2.65 cfs 8,289 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=2.65 cfs 8,289 cf

Pond PCB15: Peak Elev=169.25' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0500 '/' Outflow=0.00 cfs 0 cf

Pond PCB9: Peak Elev=169.16' Inflow=1.58 cfs 7,817 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0056 '/' Outflow=1.58 cfs 7,817 cf

Pond PDMH: Peak Elev=168.52' Inflow=18.43 cfs 81,792 cf
30.0" Round Culvert n=0.013 L=70.0' S=0.0143 '/' Outflow=18.43 cfs 81,792 cf

Pond PDMH2: Peak Elev=171.09' Inflow=2.41 cfs 10,438 cf
10.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=2.41 cfs 10,438 cf

Pond PDMH3: Peak Elev=169.40' Inflow=1.09 cfs 5,100 cf
15.0" Round Culvert n=0.013 L=136.0' S=0.0132 '/' Outflow=1.09 cfs 5,100 cf

Pond PDMH4: Peak Elev=168.73' Inflow=4.51 cfs 21,097 cf
30.0" Round Culvert n=0.013 L=170.0' S=-0.0035 '/' Outflow=4.52 cfs 21,097 cf

Pond PDMH5: Peak Elev=167.22' Inflow=2.65 cfs 8,289 cf
30.0" Round Culvert n=0.013 L=198.0' S=0.0051 '/' Outflow=2.65 cfs 8,289 cf

Pond PDMH7: Peak Elev=167.17' Inflow=4.02 cfs 14,404 cf
30.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=4.02 cfs 14,404 cf

Pond PDMH9: Peak Elev=167.15' Inflow=24.60 cfs 111,375 cf
30.0" Round Culvert n=0.013 L=30.0' S=0.0200 '/' Outflow=24.60 cfs 111,375 cf

Pond PPP1: Peak Elev=168.23' Storage=824 cf Inflow=0.37 cfs 1,433 cf
Outflow=0.14 cfs 753 cf

Pond PPP2: Peak Elev=172.36' Storage=1,872 cf Inflow=1.37 cfs 5,305 cf
Outflow=0.77 cfs 4,318 cf

Pond PPP3: Peak Elev=172.03' Storage=1,453 cf Inflow=1.18 cfs 4,526 cf
Outflow=0.92 cfs 3,542 cf

Pond PPP4: Peak Elev=172.94' Storage=1,209 cf Inflow=1.43 cfs 5,202 cf
Outflow=0.92 cfs 4,647 cf

Pond PPP5: Peak Elev=175.05' Storage=1,781 cf Inflow=2.04 cfs 7,481 cf
Outflow=1.63 cfs 6,765 cf

Pond PPP6: Peak Elev=172.69' Storage=648 cf Inflow=1.04 cfs 4,009 cf
Outflow=0.78 cfs 3,673 cf

Pond PPP7: Peak Elev=173.32' Storage=455 cf Inflow=1.37 cfs 5,282 cf
Outflow=1.09 cfs 5,100 cf

Pond PRG1: Peak Elev=167.75' Storage=527 cf Inflow=1.49 cfs 5,417 cf
Outflow=0.91 cfs 5,329 cf

Pond PRG2: Peak Elev=168.38' Storage=1,628 cf Inflow=2.59 cfs 9,152 cf
Outflow=1.17 cfs 8,919 cf

Pond PRG3: Peak Elev=168.05' Storage=570 cf Inflow=1.65 cfs 6,039 cf
Outflow=1.18 cfs 5,918 cf

Link PA1: Inflow=38.96 cfs 175,543 cf
Primary=38.96 cfs 175,543 cf

Total Runoff Area = 264,963 sf Runoff Volume = 180,429 cf Average Runoff Depth = 8.17"
11.58% Pervious = 30,692 sf 88.42% Impervious = 234,271 sf

Hydrograph for Pond PPP1:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	167.20	0.00	0.00	**0.00**
2.00	0.00	0	167.20	0.00	0.00	0.00
4.00	0.00	0	167.20	0.00	0.00	0.00
6.00	0.00	0	167.20	0.00	0.00	0.00
8.00	0.01	0	167.20	0.01	0.01	0.00
10.00	0.01	0	167.20	**0.01**	**0.01**	0.00
12.00	**0.16**	120	167.35	**0.01**	**0.01**	0.00
14.00	**0.01**	**334**	**167.62**	0.01	0.01	0.00
16.00	0.01	313	167.59	0.01	0.01	0.00
18.00	0.00	264	167.53	0.01	0.01	0.00
20.00	0.00	205	167.46	0.01	0.01	0.00
22.00	0.00	141	167.38	0.01	0.01	0.00
24.00	0.00	74	167.29	0.01	0.01	0.00
26.00	0.00	0	167.20	0.00	0.00	0.00
28.00	0.00	0	167.20	0.00	0.00	0.00
30.00	0.00	0	167.20	0.00	0.00	0.00
32.00	0.00	0	167.20	0.00	0.00	0.00
34.00	0.00	0	167.20	0.00	0.00	0.00
36.00	0.00	0	167.20	0.00	0.00	0.00
38.00	0.00	0	167.20	0.00	0.00	0.00
40.00	0.00	0	167.20	0.00	0.00	0.00
42.00	0.00	0	167.20	0.00	0.00	0.00
44.00	0.00	0	167.20	0.00	0.00	0.00
46.00	0.00	0	167.20	0.00	0.00	0.00
48.00	0.00	0	167.20	0.00	0.00	0.00
50.00	0.00	0	167.20	0.00	0.00	0.00
52.00	0.00	0	167.20	0.00	0.00	0.00
54.00	0.00	0	167.20	0.00	0.00	0.00
56.00	0.00	0	167.20	0.00	0.00	0.00
58.00	0.00	0	167.20	0.00	0.00	0.00
60.00	0.00	0	167.20	0.00	0.00	0.00
62.00	0.00	0	167.20	0.00	0.00	0.00
64.00	0.00	0	167.20	0.00	0.00	0.00
66.00	0.00	0	167.20	0.00	0.00	0.00
68.00	0.00	0	167.20	0.00	0.00	0.00
70.00	0.00	0	167.20	0.00	0.00	0.00
72.00	0.00	0	167.20	0.00	0.00	0.00

Hydrograph for Pond PPP2:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.45	0.00	0.00	0.00
2.00	0.00	0	170.45	0.00	0.00	0.00
4.00	0.01	0	170.45	0.01	0.01	0.00
6.00	0.01	0	170.45	0.01	0.01	0.00
8.00	0.02	12	170.46	0.01	**0.01**	0.00
10.00	0.04	118	170.57	0.01	**0.01**	0.00
12.00	**0.58**	**764**	**171.23**	**0.01**	0.01	**0.00**
14.00	**0.04**	**1,091**	**171.56**	**0.05**	0.01	**0.04**
16.00	0.02	1,047	171.52	0.03	0.01	0.01
18.00	0.01	1,015	171.48	0.02	0.01	0.00
20.00	0.01	989	171.46	0.01	0.01	0.00
22.00	0.01	958	171.43	0.01	0.01	0.00
24.00	0.01	914	171.38	0.01	0.01	0.00
26.00	0.00	814	171.28	0.01	0.01	0.00
28.00	0.00	712	171.18	0.01	0.01	0.00
30.00	0.00	610	171.07	0.01	0.01	0.00
32.00	0.00	508	170.97	0.01	0.01	0.00
34.00	0.00	405	170.86	0.01	0.01	0.00
36.00	0.00	303	170.76	0.01	0.01	0.00
38.00	0.00	201	170.66	0.01	0.01	0.00
40.00	0.00	99	170.55	0.01	0.01	0.00
42.00	0.00	0	170.45	0.00	0.00	0.00
44.00	0.00	0	170.45	0.00	0.00	0.00
46.00	0.00	0	170.45	0.00	0.00	0.00
48.00	0.00	0	170.45	0.00	0.00	0.00
50.00	0.00	0	170.45	0.00	0.00	0.00
52.00	0.00	0	170.45	0.00	0.00	0.00
54.00	0.00	0	170.45	0.00	0.00	0.00
56.00	0.00	0	170.45	0.00	0.00	0.00
58.00	0.00	0	170.45	0.00	0.00	0.00
60.00	0.00	0	170.45	0.00	0.00	0.00
62.00	0.00	0	170.45	0.00	0.00	0.00
64.00	0.00	0	170.45	0.00	0.00	0.00
66.00	0.00	0	170.45	0.00	0.00	0.00
68.00	0.00	0	170.45	0.00	0.00	0.00
70.00	0.00	0	170.45	0.00	0.00	0.00
72.00	0.00	0	170.45	0.00	0.00	0.00

Hydrograph for Pond PPP3:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.55	0.00	0.00	0.00
2.00	0.00	0	170.55	0.00	0.00	0.00
4.00	0.00	0	170.55	0.00	0.00	0.00
6.00	0.01	0	170.55	0.01	0.01	0.00
8.00	0.02	1	170.55	0.01	**0.01**	0.00
10.00	0.03	69	170.62	0.01	**0.01**	0.00
12.00	**0.50**	**603**	**171.17**	**0.01**	0.01	**0.00**
14.00	**0.04**	**1,047**	**171.62**	**0.04**	0.01	**0.03**
16.00	0.02	1,018	171.59	0.02	0.01	0.01
18.00	0.01	994	171.56	0.02	0.01	0.00
20.00	0.01	966	171.54	0.01	0.01	0.00
22.00	0.01	926	171.49	0.01	0.01	0.00
24.00	0.01	874	171.44	0.01	0.01	0.00
26.00	0.00	774	171.34	0.01	0.01	0.00
28.00	0.00	671	171.23	0.01	0.01	0.00
30.00	0.00	569	171.13	0.01	0.01	0.00
32.00	0.00	467	171.03	0.01	0.01	0.00
34.00	0.00	365	170.92	0.01	0.01	0.00
36.00	0.00	263	170.82	0.01	0.01	0.00
38.00	0.00	161	170.71	0.01	0.01	0.00
40.00	0.00	58	170.61	0.01	0.01	0.00
42.00	0.00	0	170.55	0.00	0.00	0.00
44.00	0.00	0	170.55	0.00	0.00	0.00
46.00	0.00	0	170.55	0.00	0.00	0.00
48.00	0.00	0	170.55	0.00	0.00	0.00
50.00	0.00	0	170.55	0.00	0.00	0.00
52.00	0.00	0	170.55	0.00	0.00	0.00
54.00	0.00	0	170.55	0.00	0.00	0.00
56.00	0.00	0	170.55	0.00	0.00	0.00
58.00	0.00	0	170.55	0.00	0.00	0.00
60.00	0.00	0	170.55	0.00	0.00	0.00
62.00	0.00	0	170.55	0.00	0.00	0.00
64.00	0.00	0	170.55	0.00	0.00	0.00
66.00	0.00	0	170.55	0.00	0.00	0.00
68.00	0.00	0	170.55	0.00	0.00	0.00
70.00	0.00	0	170.55	0.00	0.00	0.00
72.00	0.00	0	170.55	0.00	0.00	0.00

Hydrograph for Pond PPP4:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.75	0.00	0.00	0.00
2.00	0.00	0	170.75	0.00	0.00	0.00
4.00	0.00	0	170.75	0.00	0.00	0.00
6.00	0.00	0	170.75	0.00	0.00	0.00
8.00	0.01	6	170.76	0.01	**0.01**	0.00
10.00	0.03	94	170.92	0.01	**0.01**	0.00
12.00	**0.57**	**688**	**171.99**	**0.17**	0.01	**0.16**
14.00	**0.04**	**617**	**171.87**	**0.05**	0.01	**0.04**
16.00	0.02	596	171.83	0.03	0.01	0.02
18.00	0.01	581	171.80	0.02	0.01	0.01
20.00	0.01	573	171.79	0.01	0.01	0.00
22.00	0.01	568	171.78	0.01	0.01	0.00
24.00	0.01	561	171.76	0.01	0.01	0.00
26.00	0.00	505	171.66	0.01	0.01	0.00
28.00	0.00	447	171.56	0.01	0.01	0.00
30.00	0.00	390	171.45	0.01	0.01	0.00
32.00	0.00	332	171.35	0.01	0.01	0.00
34.00	0.00	274	171.25	0.01	0.01	0.00
36.00	0.00	217	171.14	0.01	0.01	0.00
38.00	0.00	159	171.04	0.01	0.01	0.00
40.00	0.00	102	170.93	0.01	0.01	0.00
42.00	0.00	44	170.83	0.01	0.01	0.00
44.00	0.00	0	170.75	0.00	0.00	0.00
46.00	0.00	0	170.75	0.00	0.00	0.00
48.00	0.00	0	170.75	0.00	0.00	0.00
50.00	0.00	0	170.75	0.00	0.00	0.00
52.00	0.00	0	170.75	0.00	0.00	0.00
54.00	0.00	0	170.75	0.00	0.00	0.00
56.00	0.00	0	170.75	0.00	0.00	0.00
58.00	0.00	0	170.75	0.00	0.00	0.00
60.00	0.00	0	170.75	0.00	0.00	0.00
62.00	0.00	0	170.75	0.00	0.00	0.00
64.00	0.00	0	170.75	0.00	0.00	0.00
66.00	0.00	0	170.75	0.00	0.00	0.00
68.00	0.00	0	170.75	0.00	0.00	0.00
70.00	0.00	0	170.75	0.00	0.00	0.00
72.00	0.00	0	170.75	0.00	0.00	0.00

Hydrograph for Pond PPP5:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.75	0.00	0.00	0.00
2.00	0.00	0	170.75	0.00	0.00	0.00
4.00	0.00	0	170.75	0.00	0.00	0.00
6.00	0.01	0	170.75	0.01	0.01	0.00
8.00	0.02	19	170.78	0.01	**0.01**	0.00
10.00	0.05	169	170.99	0.01	**0.01**	0.00
12.00	**0.82**	**993**	**172.14**	**0.36**	0.01	**0.35**
14.00	**0.06**	**814**	**171.89**	**0.07**	0.01	**0.06**
16.00	0.03	780	171.85	0.04	0.01	0.03
18.00	0.02	758	171.81	0.02	0.01	0.01
20.00	0.02	747	171.80	0.02	0.01	0.01
22.00	0.01	739	171.79	0.01	0.01	0.00
24.00	0.01	729	171.77	0.01	0.01	0.00
26.00	0.00	657	171.67	0.01	0.01	0.00
28.00	0.00	583	171.57	0.01	0.01	0.00
30.00	0.00	508	171.46	0.01	0.01	0.00
32.00	0.00	434	171.36	0.01	0.01	0.00
34.00	0.00	360	171.26	0.01	0.01	0.00
36.00	0.00	286	171.15	0.01	0.01	0.00
38.00	0.00	212	171.05	0.01	0.01	0.00
40.00	0.00	137	170.94	0.01	0.01	0.00
42.00	0.00	63	170.84	0.01	0.01	0.00
44.00	0.00	0	170.75	0.00	0.00	0.00
46.00	0.00	0	170.75	0.00	0.00	0.00
48.00	0.00	0	170.75	0.00	0.00	0.00
50.00	0.00	0	170.75	0.00	0.00	0.00
52.00	0.00	0	170.75	0.00	0.00	0.00
54.00	0.00	0	170.75	0.00	0.00	0.00
56.00	0.00	0	170.75	0.00	0.00	0.00
58.00	0.00	0	170.75	0.00	0.00	0.00
60.00	0.00	0	170.75	0.00	0.00	0.00
62.00	0.00	0	170.75	0.00	0.00	0.00
64.00	0.00	0	170.75	0.00	0.00	0.00
66.00	0.00	0	170.75	0.00	0.00	0.00
68.00	0.00	0	170.75	0.00	0.00	0.00
70.00	0.00	0	170.75	0.00	0.00	0.00
72.00	0.00	0	170.75	0.00	0.00	0.00

Hydrograph for Pond PPP6:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.75	0.00	0.00	0.00
2.00	0.00	0	170.75	0.00	0.00	0.00
4.00	0.01	1	170.75	0.00	**0.00**	0.00
6.00	0.01	17	170.80	0.00	**0.00**	0.00
8.00	0.01	64	170.94	0.00	0.00	0.00
10.00	0.03	186	171.31	0.00	0.00	0.00
12.00	**0.44**	**457**	**172.12**	**0.32**	0.00	**0.32**
14.00	**0.03**	**368**	**171.85**	**0.03**	0.00	**0.03**
16.00	0.02	357	171.82	0.02	0.00	0.01
18.00	0.01	350	171.80	0.01	0.00	0.01
20.00	0.01	346	171.78	0.01	0.00	0.00
22.00	0.01	344	171.78	0.01	0.00	0.00
24.00	0.01	341	171.77	0.01	0.00	0.00
26.00	0.00	307	171.67	0.00	0.00	0.00
28.00	0.00	272	171.56	0.00	0.00	0.00
30.00	0.00	237	171.46	0.00	0.00	0.00
32.00	0.00	202	171.35	0.00	0.00	0.00
34.00	0.00	167	171.25	0.00	0.00	0.00
36.00	0.00	133	171.15	0.00	0.00	0.00
38.00	0.00	98	171.04	0.00	0.00	0.00
40.00	0.00	63	170.94	0.00	0.00	0.00
42.00	0.00	28	170.83	0.00	0.00	0.00
44.00	0.00	0	170.75	0.00	0.00	0.00
46.00	0.00	0	170.75	0.00	0.00	0.00
48.00	0.00	0	170.75	0.00	0.00	0.00
50.00	0.00	0	170.75	0.00	0.00	0.00
52.00	0.00	0	170.75	0.00	0.00	0.00
54.00	0.00	0	170.75	0.00	0.00	0.00
56.00	0.00	0	170.75	0.00	0.00	0.00
58.00	0.00	0	170.75	0.00	0.00	0.00
60.00	0.00	0	170.75	0.00	0.00	0.00
62.00	0.00	0	170.75	0.00	0.00	0.00
64.00	0.00	0	170.75	0.00	0.00	0.00
66.00	0.00	0	170.75	0.00	0.00	0.00
68.00	0.00	0	170.75	0.00	0.00	0.00
70.00	0.00	0	170.75	0.00	0.00	0.00
72.00	0.00	0	170.75	0.00	0.00	0.00

Hydrograph for Pond PPP7:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	170.75	0.00	0.00	0.00
2.00	0.00	0	170.75	0.00	**0.00**	0.00
4.00	0.01	19	170.86	0.00	**0.00**	0.00
6.00	0.01	67	171.12	0.00	0.00	0.00
8.00	0.02	157	171.61	0.00	0.00	0.00
10.00	0.04	202	171.86	0.04	0.00	0.04
12.00	**0.58**	**271**	**172.24**	**0.47**	0.00	**0.46**
14.00	**0.04**	**203**	**171.87**	**0.04**	0.00	**0.04**
16.00	0.02	197	171.83	0.02	0.00	0.02
18.00	0.01	193	171.81	0.01	0.00	0.01
20.00	0.01	191	171.80	0.01	0.00	0.01
22.00	0.01	190	171.80	0.01	0.00	0.01
24.00	0.01	189	171.79	0.01	0.00	0.00
26.00	0.00	169	171.68	0.00	0.00	0.00
28.00	0.00	150	171.57	0.00	0.00	0.00
30.00	0.00	131	171.47	0.00	0.00	0.00
32.00	0.00	112	171.36	0.00	0.00	0.00
34.00	0.00	93	171.26	0.00	0.00	0.00
36.00	0.00	74	171.16	0.00	0.00	0.00
38.00	0.00	55	171.05	0.00	0.00	0.00
40.00	0.00	36	170.95	0.00	0.00	0.00
42.00	0.00	17	170.84	0.00	0.00	0.00
44.00	0.00	0	170.75	0.00	0.00	0.00
46.00	0.00	0	170.75	0.00	0.00	0.00
48.00	0.00	0	170.75	0.00	0.00	0.00
50.00	0.00	0	170.75	0.00	0.00	0.00
52.00	0.00	0	170.75	0.00	0.00	0.00
54.00	0.00	0	170.75	0.00	0.00	0.00
56.00	0.00	0	170.75	0.00	0.00	0.00
58.00	0.00	0	170.75	0.00	0.00	0.00
60.00	0.00	0	170.75	0.00	0.00	0.00
62.00	0.00	0	170.75	0.00	0.00	0.00
64.00	0.00	0	170.75	0.00	0.00	0.00
66.00	0.00	0	170.75	0.00	0.00	0.00
68.00	0.00	0	170.75	0.00	0.00	0.00
70.00	0.00	0	170.75	0.00	0.00	0.00
72.00	0.00	0	170.75	0.00	0.00	0.00

Hydrograph for Pond PRG1:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	166.05	0.00	0.00	0.00
2.00	0.00	0	166.05	0.00	0.00	0.00
4.00	0.00	0	166.05	0.00	0.00	0.00
6.00	0.00	1	166.05	0.00	0.00	0.00
8.00	0.01	32	166.18	0.00	0.00	0.00
10.00	0.03	110	166.49	0.03	0.00	0.03
12.00	**0.59**	**154**	**166.94**	**0.52**	**0.01**	**0.51**
14.00	**0.05**	**116**	**166.52**	**0.05**	0.00	**0.04**
16.00	0.02	108	166.48	0.03	0.00	0.02
18.00	0.01	103	166.46	0.02	0.00	0.01
20.00	0.01	100	166.45	0.01	0.00	0.01
22.00	0.01	99	166.45	0.01	0.00	0.01
24.00	0.01	97	166.44	0.01	0.00	0.00
26.00	0.00	70	166.33	0.00	0.00	0.00
28.00	0.00	44	166.23	0.00	0.00	0.00
30.00	0.00	18	166.12	0.00	0.00	0.00
32.00	0.00	0	166.05	0.00	0.00	0.00
34.00	0.00	0	166.05	0.00	0.00	0.00
36.00	0.00	0	166.05	0.00	0.00	0.00
38.00	0.00	0	166.05	0.00	0.00	0.00
40.00	0.00	0	166.05	0.00	0.00	0.00
42.00	0.00	0	166.05	0.00	0.00	0.00
44.00	0.00	0	166.05	0.00	0.00	0.00
46.00	0.00	0	166.05	0.00	0.00	0.00
48.00	0.00	0	166.05	0.00	0.00	0.00
50.00	0.00	0	166.05	0.00	0.00	0.00
52.00	0.00	0	166.05	0.00	0.00	0.00
54.00	0.00	0	166.05	0.00	0.00	0.00
56.00	0.00	0	166.05	0.00	0.00	0.00
58.00	0.00	0	166.05	0.00	0.00	0.00
60.00	0.00	0	166.05	0.00	0.00	0.00
62.00	0.00	0	166.05	0.00	0.00	0.00
64.00	0.00	0	166.05	0.00	0.00	0.00
66.00	0.00	0	166.05	0.00	0.00	0.00
68.00	0.00	0	166.05	0.00	0.00	0.00
70.00	0.00	0	166.05	0.00	0.00	0.00
72.00	0.00	0	166.05	0.00	0.00	0.00

Hydrograph for Pond PRG2:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	166.05	0.00	0.00	0.00
2.00	0.00	0	166.05	0.00	0.00	0.00
4.00	0.00	0	166.05	0.00	0.00	0.00
6.00	0.00	0	166.05	0.00	0.00	0.00
8.00	0.01	4	166.06	0.01	0.01	0.00
10.00	0.04	125	166.24	0.01	**0.01**	0.00
12.00	**0.96**	**414**	**166.99**	**0.56**	**0.02**	**0.54**
14.00	**0.08**	**297**	**166.55**	**0.11**	0.01	**0.10**
16.00	0.04	291	166.49	0.05	0.01	0.04
18.00	0.03	274	166.46	0.03	0.01	0.02
20.00	0.02	265	166.45	0.02	0.01	0.01
22.00	0.02	260	166.44	0.02	0.01	0.01
24.00	0.01	254	166.43	0.01	0.01	0.01
26.00	0.00	185	166.33	0.01	0.01	0.00
28.00	0.00	116	166.23	0.01	0.01	0.00
30.00	0.00	47	166.12	0.01	0.01	0.00
32.00	0.00	0	166.05	0.00	0.00	0.00
34.00	0.00	0	166.05	0.00	0.00	0.00
36.00	0.00	0	166.05	0.00	0.00	0.00
38.00	0.00	0	166.05	0.00	0.00	0.00
40.00	0.00	0	166.05	0.00	0.00	0.00
42.00	0.00	0	166.05	0.00	0.00	0.00
44.00	0.00	0	166.05	0.00	0.00	0.00
46.00	0.00	0	166.05	0.00	0.00	0.00
48.00	0.00	0	166.05	0.00	0.00	0.00
50.00	0.00	0	166.05	0.00	0.00	0.00
52.00	0.00	0	166.05	0.00	0.00	0.00
54.00	0.00	0	166.05	0.00	0.00	0.00
56.00	0.00	0	166.05	0.00	0.00	0.00
58.00	0.00	0	166.05	0.00	0.00	0.00
60.00	0.00	0	166.05	0.00	0.00	0.00
62.00	0.00	0	166.05	0.00	0.00	0.00
64.00	0.00	0	166.05	0.00	0.00	0.00
66.00	0.00	0	166.05	0.00	0.00	0.00
68.00	0.00	0	166.05	0.00	0.00	0.00
70.00	0.00	0	166.05	0.00	0.00	0.00
72.00	0.00	0	166.05	0.00	0.00	0.00

Hydrograph for Pond PRG3:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	165.90	0.00	0.00	0.00
2.00	0.00	0	165.90	0.00	0.00	0.00
4.00	0.00	0	165.90	0.00	0.00	0.00
6.00	0.01	2	165.91	0.00	0.00	0.00
8.00	0.01	39	166.01	0.00	0.00	0.00
10.00	0.04	153	166.34	0.03	0.00	0.03
12.00	**0.65**	**225**	**166.82**	**0.55**	**0.01**	**0.54**
14.00	**0.05**	**165**	**166.38**	**0.05**	0.00	**0.05**
16.00	0.03	152	166.34	0.03	0.00	0.02
18.00	0.02	144	166.32	0.02	0.00	0.01
20.00	0.01	140	166.31	0.01	0.00	0.01
22.00	0.01	137	166.30	0.01	0.00	0.01
24.00	0.01	134	166.29	0.01	0.00	0.00
26.00	0.00	97	166.18	0.00	0.00	0.00
28.00	0.00	61	166.08	0.00	0.00	0.00
30.00	0.00	26	165.97	0.00	0.00	0.00
32.00	0.00	0	165.90	0.00	0.00	0.00
34.00	0.00	0	165.90	0.00	0.00	0.00
36.00	0.00	0	165.90	0.00	0.00	0.00
38.00	0.00	0	165.90	0.00	0.00	0.00
40.00	0.00	0	165.90	0.00	0.00	0.00
42.00	0.00	0	165.90	0.00	0.00	0.00
44.00	0.00	0	165.90	0.00	0.00	0.00
46.00	0.00	0	165.90	0.00	0.00	0.00
48.00	0.00	0	165.90	0.00	0.00	0.00
50.00	0.00	0	165.90	0.00	0.00	0.00
52.00	0.00	0	165.90	0.00	0.00	0.00
54.00	0.00	0	165.90	0.00	0.00	0.00
56.00	0.00	0	165.90	0.00	0.00	0.00
58.00	0.00	0	165.90	0.00	0.00	0.00
60.00	0.00	0	165.90	0.00	0.00	0.00
62.00	0.00	0	165.90	0.00	0.00	0.00
64.00	0.00	0	165.90	0.00	0.00	0.00
66.00	0.00	0	165.90	0.00	0.00	0.00
68.00	0.00	0	165.90	0.00	0.00	0.00
70.00	0.00	0	165.90	0.00	0.00	0.00
72.00	0.00	0	165.90	0.00	0.00	0.00

POINT OF ANALYSIS 1

PRE-1A

PRE-1B

LEGEND

APPROXIMATE LIMIT OF PRE-DEVELOPMENT WATERSHED

APPROXIMATE LONGEST FLOW PATH

PRE-1A PRE-DEVELOPMENT WATERSHED LABEL

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

N

THE STREET REDEVELOPMENT
CHESTNUT HILL, MASSACHUSETTS

PRE-DEVELOPMENT WATERSHED PLAN

DATE:	2016-06-20
FILE:	PRE_11X17.DWG
DRAWN BY:	CML
CHECKED:	JMP
APPROVED:	GMM

Tighe&Bond
Engineers | Environmental Specialists

Last Save Date: June 20, 2016 3:57 AM By: CML
Plot Date: Monday, June 20, 2016 Plotted By: Craig M. Langton
File Location: \\SWProjects\SWG\173 WS Development-Chestnut Hill\DWG-CAD\27-57 DESIGN\FIGURES\PRE_11x17.dwg Layout Tab: PRE

POINT OF ANALYSIS

POST-1
DECK
27 ROOF #4
27 ROOF #3
PPP-1
PCB-12
PCB-13
CB-1
PRG-1
PRG-2
PRG-2
PRG-1
POST-2
PPP-2
PCB-15
27 ROOF #2
PPP-7
POST-1
27 ROOF #1
PPP-6
PAD-1
PPP-3
POST-1
PPP-4
PPP-5

HAMMOND'S POND (A GREAT POND) (SEE NOTE #5)
MOORFIELD ROAD (PRIVATE – 40' WIDE)
BOYLSTON (STATE HIGHWAY – VARIABLE WIDTH – PUBLIC) STREET
(REGISTERED LAND) L.C.C. 162748
(UNREGISTERED LAND)
100' WETLAND BUFFER
ACCESS ROAD
PARCEL B AREA=55,960 SQ.FT.
PARCEL C AREA=37,865 SQ.FT.
(MIDDLESEX COUNTY) CITY OF NEWTON TOWN OF BROOKLINE (NORFOLK COUNTY)

LEGEND

APPROXIMATE LIMIT OF POST-DEVELOPMENT WATERSHED

APPROXIMATE LONGEST FLOW PATH

PPP-4 POST-DEVELOPMENT WATERSHED LABEL

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

N

THE STREET REDEVELOPMENT
CHESTNUT HILL, MASSACHUSETTS

POST-DEVELOPMENT WATERSHED PLAN

DATE:	2016-06-20
FILE:	POST_11X17.DWG
DRAWN BY:	CML
CHECKED:	JMP
APPROVED:	GMM

Tighe&Bond
Engineers | Environmental Specialists

Last Save Date: June 16, 2016 2:24 AM By: CML
Plot Date: Monday, June 20, 2016 Plotted By: Craig M. Langton
File Location: \\SVA\Projects\WW1753 WS Development Chestnut Hill\DWG-CAD\27-57 DESIGN\FIGURES\POST_11x17.dwg Layout Tab: POST


71° 10' 29" W
71° 9' 38" W
42° 19' 34" N
42° 19' 9" N
320800
320900
321000
321100
321200
321300
321400
321500
321600
321700
321800
321900
4688200
4688100
4688000
4687900
4687800
4687700
4687600
4687500
106C
654
1
105E
602
602
9
Hammond St
Dunster Rd
Hammond
Holly Ln
Parking Lot
Boylston St
Ramp
Ramp
Heath St
Pine Rd
Map Scale: 1:5,380 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 11, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Middlesex County, Massachusetts (MA017)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
1	Water		6.9	10.7%
105E	Rock outcrop-Hollis complex, 3 to 35 percent slopes		0.9	1.4%
106C	Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	4.9	7.5%
602	Urban land		31.5	48.6%
Subtotals for Soil Survey Area			**44.2**	**68.2%**
Totals for Area of Interest			**64.8**	**100.0%**

Hydrologic Soil Group— Summary by Map Unit — Norfolk and Suffolk Counties, Massachusetts (MA616)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
602	Urban land, 0 to 15 percent slopes		19.1	29.5%
654	Udorthents, loamy	A	1.5	2.3%
Subtotals for Soil Survey Area			**20.6**	**31.8%**
Totals for Area of Interest			**64.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: 27 & 55 Boylston Street

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Porous Pavement	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **The Street Redevelopment**

Prepared By: **Tighe & Bond**

Date: **20-Jun-16**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: 27 & 55 Boylston Street

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Rain Garden	**0.90**	**1.00**	**0.90**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**

Total TSS Removal = **90%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **The Street Redevelopment**

Prepared By: **Tighe & Bond**

Date: **20-Jun-16**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

LONG-TERM POLLUTION PREVENTION PLAN &

OPERATION AND MAINTENANCE PLAN

FOR PARKING LOT AND DRAINAGE STRUCTURES AT

27 & 55 BOYLSTON STREET

NEWTON, MASSACHUSETTS

June 20, 2016

This Operation and Maintenance Plan has been prepared in accordance with the Massachusetts Department of Environmental Protection, Stormwater Management Policy.

Contact/Responsible Party

Chestnut Hill Shopping Center LLC
33 Boylston Street, Suite 3000
Chestnut Hill, Massachusetts 02467
617.646.3205

Maintenance Items

Maintenance of the following items shall be recorded:

Parking Lot Sweeping
Litter/Debris Removal
Permeable Pavers
Catch Basin Cleaning
Rain Gardens
Landscaping
Snow Management

The managers of the property are to monitor the site for those who use this site for illegal dumping. Any materials that are illegally dumped on this property are to be removed.

Previously approved Operation and Maintenance Plans for this Site will continue which includes operation and maintenance details of subsurface structures and closed drainage systems.

The responsible party shall:

- Maintain an operation and maintenance log for the last three years, including inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and the disposal location);

- Make this log available to MassDEP and the Conservation Commission upon request; and
- Allow members and agents of the MassDEP and the Conservation Commission to enter and inspect the premises to evaluate and ensure that the responsibility party complies with the Operation and Maintenance Plan requirements for each BMP.

Operation and Maintenance Schedule

Maintenance Item	Frequency of Maintenance (Minimums)	Operation
Parking Lot Sweeping • Lot swept to remove sand and litter	• Weekly	Parking lot sweeper with vacuum
Litter/Debris Removal • Litter/debris removed from fence line at the rear, compactor/dumpster areas, parking field, detention pond and wetland areas	• Regularly as needed	Contracted through management company
Permeable Paver Cleaning • -Vacuum porous asphalt areas to remove sand and litter.	2 - 4 times annually	Parking Lot Vacuum Sweeper Truck
Catch Basin (CB) Cleaning • Units to be cleaned of solids and oils	• Quarterly or when depth of sediment exceed ½ of sump	Vacuum truck
Landscaping • Landscaped islands to be maintained and mulched. • No fertilizers containing phosphorus will be allowed • Grass clippings and leaf clippings are to be removed from the site	• Maintained as required and mulched each spring	Contracted through management company
Snow Management (Per previous approvals) • Snow will be stockpiled in areas previous approved (far northwest corner)	• As needed	Contracted through management company
Rip-Rap • Inspected for Erosion/Low Spots • Replace/Repair	• After Large Storms • As Necessary	

Permeable Paver Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect for Signs of Deterioration	Annually	- Repair as required
Monitor for proper Infiltration	Periodically	- Inspect the area for infiltration rate. - If required: hire qualified professional to assess the condition of the facility to determine measures required to restore the filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.
Permeable Pavers	2 - 4 times annually	- Vacuum Sweeper to clean entire permeable paver areas (Note: power washing may be required on heavily soiled areas to dislodge particles prior to sweeping/vacuuming).

Rain Garden Inspection/Maintenance Requirements	
Frequency	**Action**
Four (4) times annually (quarterly) and after any rainfall event exceeding 2.5” in a 24-hr period	- Trash and debris to be removed - Any required maintenance shall be addressed
Annually	- Inspect the condition of all Rain Garden vegetation - Prune back overgrowth - Replace dead vegetation - Remove any invasive species
Annually	- Assess the condition of the facility to determine measures required to restore the filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.

ESTIMATED OPERATION AND MAINTENANCE BUDGET

BMP	Estimated Annual Maintenace Cost
Rain Garden #1	$500.00
Rain Garden #2	$1,000.00
Rain Garden #3	$1,000.00
Permeable Paver Section #1	$500.00
Permeable Paver Section #2	$500.00
Permeable Paver Section #3	$500.00
Permeable Paver Section #4	$500.00
Permeable Paver Section #5	$500.00
Permeable Paver Section #6	$500.00
Permeable Paver Section #7	$500.00
Total	$6,000.00

Stormwater Construction Site Inspection Report

General Information			
Project Name			
NPDES Tracking No.		**Location**	
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Describe present phase of construction			

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Permeable Paver Section1	❑Yes ❑No	❑Yes ❑No	
2	Permeable Paver Section2	❑Yes ❑No	❑Yes ❑No	
3	Permeable Paver Section3	❑Yes ❑No	❑Yes ❑No	
4	Permeable Paver Section4	❑Yes ❑No	❑Yes ❑No	
5	Permeable Paver Section5	❑Yes ❑No	❑Yes ❑No	
6	Permeable Paver Section6	❑Yes ❑No	❑Yes ❑No	
7	Permeable Paver	❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
	Section7			
8	Rain Garden 1	❑Yes ❑No	❑Yes ❑No	
9	Rain Garden 2	❑Yes ❑No	❑Yes ❑No	
10	Rain Garden 3	❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ **Date:**_____