STORMWATER REPORT

ENCLAVE AT BOXBOROUGH

STOW ROAD
BOXBOROUGH, MASSACHUSETTS

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6092

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1.0 Project Narrative

1.1 Project Type

The applicant Boxborough Town Center, LLC is proposing the construction of a 50-unit Active Adult Homes Development on the south side of Route 111 just northerly of Burroughs Road. The proposed units consist of 50 homes within 25 duplex buildings approximately 2,356 SF in area. The proposed site is located on Assessor's Map 14- lots 46 & 50 (Parcels: 14-046-000 & 14-050-000). The proposed scope of construction also includes a private roadway, the extension of an existing well-access road as a means of temporary construction access, on-site parking, community garden, stormwater management systems, on-site septic systems including a pump station & leaching field & new utility connections and their associated appurtenances.

1.2 Purpose and Scope

This report has been prepared to comply with the requirements of the Stormwater Management Standards incorporated in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00. These standards are intended to promote increased groundwater recharge and prevent stormwater discharges from causing or contributing to the pollution of surface waters and ground waters of the Commonwealth. The standards aim to accomplish these goals by encouraging the greater use of low impact development (LID) techniques and improving the operation and maintenance of stormwater best management practices (BMP).

This report addresses compliance of the proposed development with each of the ten stormwater standards, it provides calculations to support the compliance information, and it provides a Long-Term Pollution Prevention Plan and an Operation and Maintenance Plan for the stormwater management system.

1.3 LID Measures

Care has been taken to lay out the proposed site in a manner that works with existing topography. BMPs, have been used to manage the stormwater runoff. Stormwater from the proposed impervious surface locations are routed to infiltration basins via land flow, curb and gutter systems, or the proposed drainage pipe system. The stormwater basins will reduce run off rates below pre-developed rates while providing water quality pre-treatment by sediment forebays.

1.4 Site Description

As mentioned, the subject site is found on the south side of Route 111 just northerly of Burroughs Road in Boxborough, MA. The undeveloped wooded site is located on Parcels: 14-046-000 & 14-050-000 (62.48 acres). The site consists chiefly of undeveloped wooded areas. Multiple wetland areas as shown on the

attached Site Plans are present on site located to the north of the proposed development. There is one intermittent stream located within the mentioned BVW areas. As such there is no Riverfront Area on the subject property. The NRCS soil survey information indicates that all of the site is underlain by soils classified as belonging to Hydrologic Soil Groups A (Carlton Fine Sandy Loam), B (Charlton-Hollis-Rock outcrop & Hollis-Rock Outcrop-Charlton complex), C (Paxton Fine Sandy Loam) & D (Swansea Muck, Freetown Muck, Ridgebury Fine Sandy Loam & Whitman Fine Sandy Loam).

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.

Soils belonging to group B have 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.

Soils belonging to group D have 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 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.

Due to numerous test holes performed within the vicinity of the project, it was determined that the boundary lines of the HSG D Soils depicted via the NRCS web soil survey were not consistent with the in-situ field work. As such, the boundary lines have been adjusted to appropriately correspond with the testing.

Please refer to Appendix C for further information regarding the soils on-site & existing test hole data.

1.5 Proposed Stormwater Management System

Runoff from the proposed development will be conveyed and treated through a combination of Best Management Practices (BMP's). The following is a brief discussion of each conveyance and treatment BMP proposed.

Deep Sump Hooded Catch Basin

Deep sump hooded catch basins are proposed to convey the runoff from the proposed paved areas and roofs to the infiltration basins. These catch basins will discharge to manholes and conventional storm drains.

Infiltration Basin

The infiltration basins are designed to reduce the runoff rates and increase the groundwater recharge rates. Sediment forebays designed at the entrance of each basin were included to decrease the velocity of flow and increase the settlement of heavy solids prior to the infiltration basin. Riprap will also be installed at the inlet of the sediment forebays and the outlet of the basins to control the overflow of stormwater into the adjacent wetlands and reduce the potential for scouring.

Grassed Swales

Proposed swales have been designed to convey the flows from the 100-year frequency event. The grass swales will receive runoff from the rears of the proposed roofs and will convey the stormwater flows to associated proposed infiltration basins. The proposed design of the site has increased the Post-Developed time of concentration in Post 7.A when compared to its Pre-Developed time of concentration. This is due to the chain of drainage swales conveying the runoff from the mentioned roofs to Infiltration Basin 1.

Contech Vortsentry

AVortsentry shall be installed within the existing drainage sytem at approximately STA 5+50 on the proposed access drive. The vortsenty enhances the gravitation separation of pollutants from stormwater flows by inducing a swirling motion of the water as it enters the settling chamber. This added device to the existing system will provide the pretreatment required for the added flow to the existing drainage system, creating a system that is compliant with stormwater standards.

1.6 Methods of Analysis

The United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil cover complex methods (TR-20) were employed to compute runoff quantities for the subject property. Watershed analysis demonstrate that natural drainage patterns drain toward the wetlands (design point). Two design points were modeled to analyze the total runoff from the site. HydroCAD 10.0 computer software was employed in this hydrologic analysis.

A comparison of pre- and post-development runoff quantities at the analysis points were performed in order to design a stormwater management system that will limit peak rates of runoff from the development to predevelopment levels for

24-hour rainfall events of 2-, 10-, 25- and 100-year return frequencies. Watershed boundaries for existing conditions are depicted on the attached Predevelopment Watershed Plan. Post-Developed watershed boundaries are indicated on the Post-development Watershed Plan.

2.0 Stormwater Standards Compliance

2.1 Standard 1 – Untreated Discharge

The stormwater management system for the proposed development will not result in any new discharges of untreated stormwater to wetland resource areas. Stormwater management structures have been designed such that there is no erosion or scour to wetland resource areas or waters of the Commonwealth.

2.2 Standard 2 – Peak Rate Attenuation

Hydrologic calculations for existing and proposed site conditions are included in Appendices D and E respectively. Calculations for 24-hour rainfall events of 2-, 10-, 25- and 100-year return frequencies are provided. The following table provides a summary of peak rates of runoff related to each of these storms for the design point through which all runoff from the subject property must flow. For all rainfall events considered, the proposed stormwater management system will control runoff from the development such that corresponding peak flows at the design point will be lower than pre-developed rates.

Table 1: Wetland Design Point Runoff Summary

	Pre-Developed (ft^3 / sec)	**Post-Developed (ft^3 / sec)**
Design Point "A"		
2-Year	3.66	3.66
10-Year	12.72	8.78
25-Year	20.15	11.88
100-Year	37.55	33.53
Design Point "B"		
2-Year	0	0
10-Year*	0*	0.01*
25-Year	0.02*	0.03*
100-Year	0.21*	0.24*

* Design Point B in the Pre-developed condition consists of 91,035 SF of undeveloped woods. Of the 91,035 SF, 79,057 is HSG A & 11,978 SF is HSG B. This results in a weighted CN of 33. Due to the proposed grading & drainage design of the project we have greatly reduced the tributary area of Design Point B to 38,793 SF with a weighted CN of 37. Using the SCS runoff equation, the HydroCAD model computes a trivial increase in flow & volume during the 10-,

25-, and 100-year return frequency. Due to the tributary area reduction, we do not believe there will be an increase in offsite peak flow or volume.

2.3 Standard 3 – Recharge

NRCS data indicates that the areas within the proposed development consist of soils classified as Carlton Fine Sandy Loam, Charlton-Hollis-Rock outcrop & Hollis-Rock Outcrop-Charlton complex), Paxton Fine Sandy Loam, Swansea Muck, Freetown Muck, Ridgebury Fine Sandy Loam & Whitman Fine Sandy Loam. As mentioned, due to numerous test holes performed within the vicinity of the project, it was determined that the boundary lines of the HSG D Soils depicted via the NRCS web soil survey were not consistent with the in-situ field work. As such, the boundary lines have been adjusted to appropriately correspond with the testing. Infiltration Basin 1 has been designed with an exfiltration rate of 1.02 inches/hour (Loam soil). Infiltration Basin 2 has been designed with an exfiltration rate of 1.02 inches/hour (Loam soil). Please refer to the attached SWMA Test Hole Data from Stamski and McNary, Inc. in Appendix C.

Recharge calculations can be found in Appendix F.

2.4 Standard 4 – Water Quality

TSS removal calculations have been provided (Appendix F) showing that the proposed TSS removal efficiency from these areas will be 80% using the infiltration basins with the sediment forebay & deep sump hooded catch basin pretreatment. Two TSS calculation sheets have been provided. The sheet with a deep sump catch basin into a sediment forebay shows proper pre-treatment before entering the infiltration basins. The sheet with deep sump catch basin into a infiltration basin shows there is enough TSS removal within the whole system.

2.5 Standard 5 – Land Uses with Higher Pollutant Loads

The current and proposed uses of the subject site do not constitute land use with higher potential pollutant load, thus Standard 5 does not apply to the proposed project.

2.6 Standard 6 –Critical Areas

The proposed project does not contain a stormwater discharge within or near to any of the areas as defined as "Critical Areas" at 314 CMR 9.02 and 310 CMR 10.04.

2.7 Standard 7 – Redevelopment

The proposed project does not meet the standards to be considered a Redevelopment project.

2.8 Standard 8 – Construction Period Pollution Prevention Plan and Erosion and Sediment Control

Since the project is subject to the filing of an Environmental Protection Agency Notice of Intent (EPA NOI), and the work will be pursuant to the NPDES Construction General Permit for disturbance to an area greater than 1 acre, a copy of the Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to construction. The SWPPP will satisfy the Standard 8 Construction Period Pollution prevention. And Erosion and Sediment Control Plan is included in the attached Site Plans.

2.9 Standard 9 – Operation and Maintenance Plan

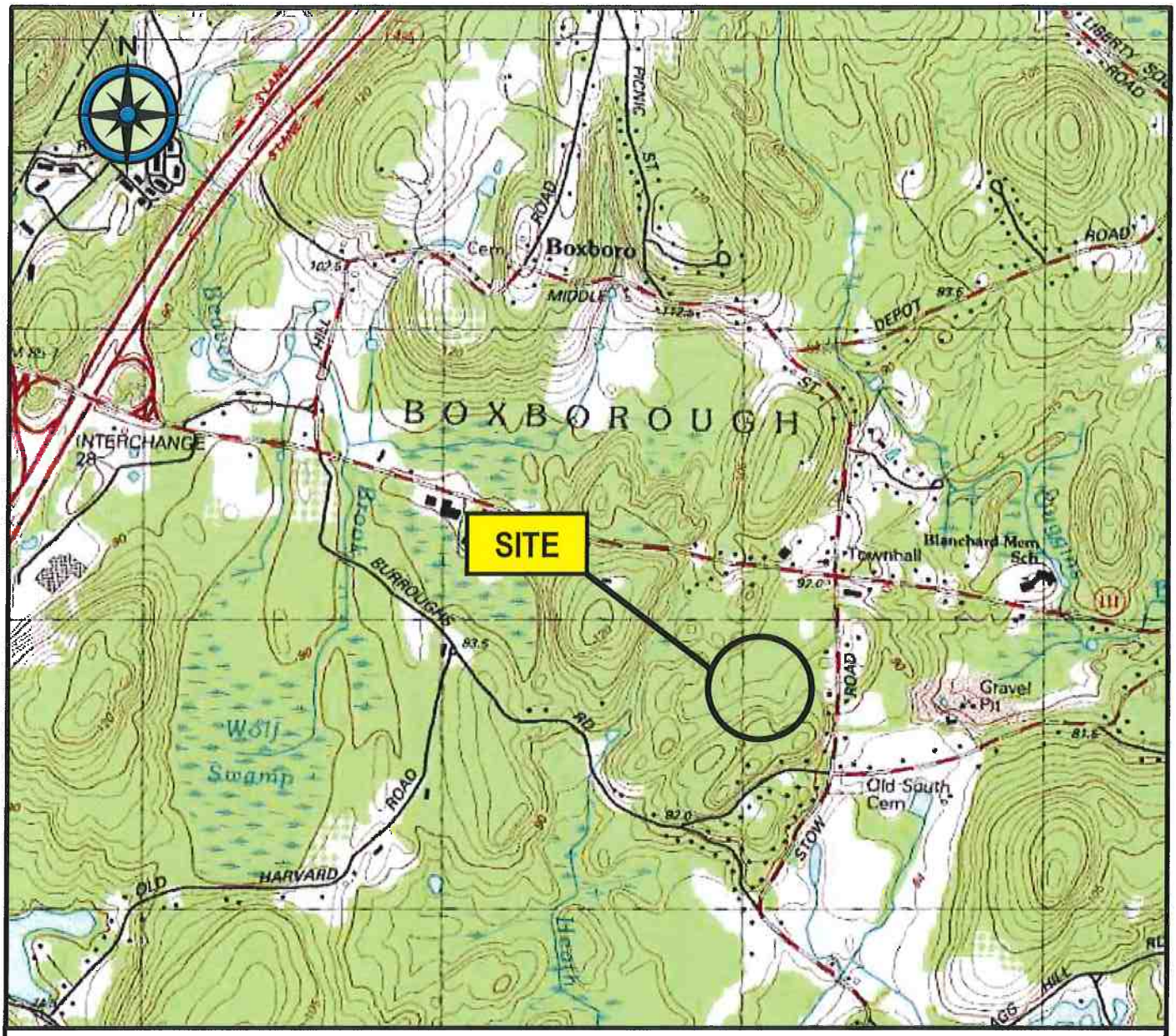
Refer to Appendix H for a complete copy of the Stormwater Operation and Maintenance Plan.

2.10 Standard 10 – Prohibition of Illicit Discharge

An illicit discharge statement will be prepared after approvals are received and prior to construction.

3.0 Appendices

Appendix A - Locus Map



Locus Map
NOT TO SCALE

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Date: 6/19/2019
CDG #: 6092

Appendix B - Checklist for Stormwater Report

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.

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[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

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
NO. 46070
REGISTERED PROFESSIONAL ENGINEER

Signature and Date 6/19/19

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 (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 (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

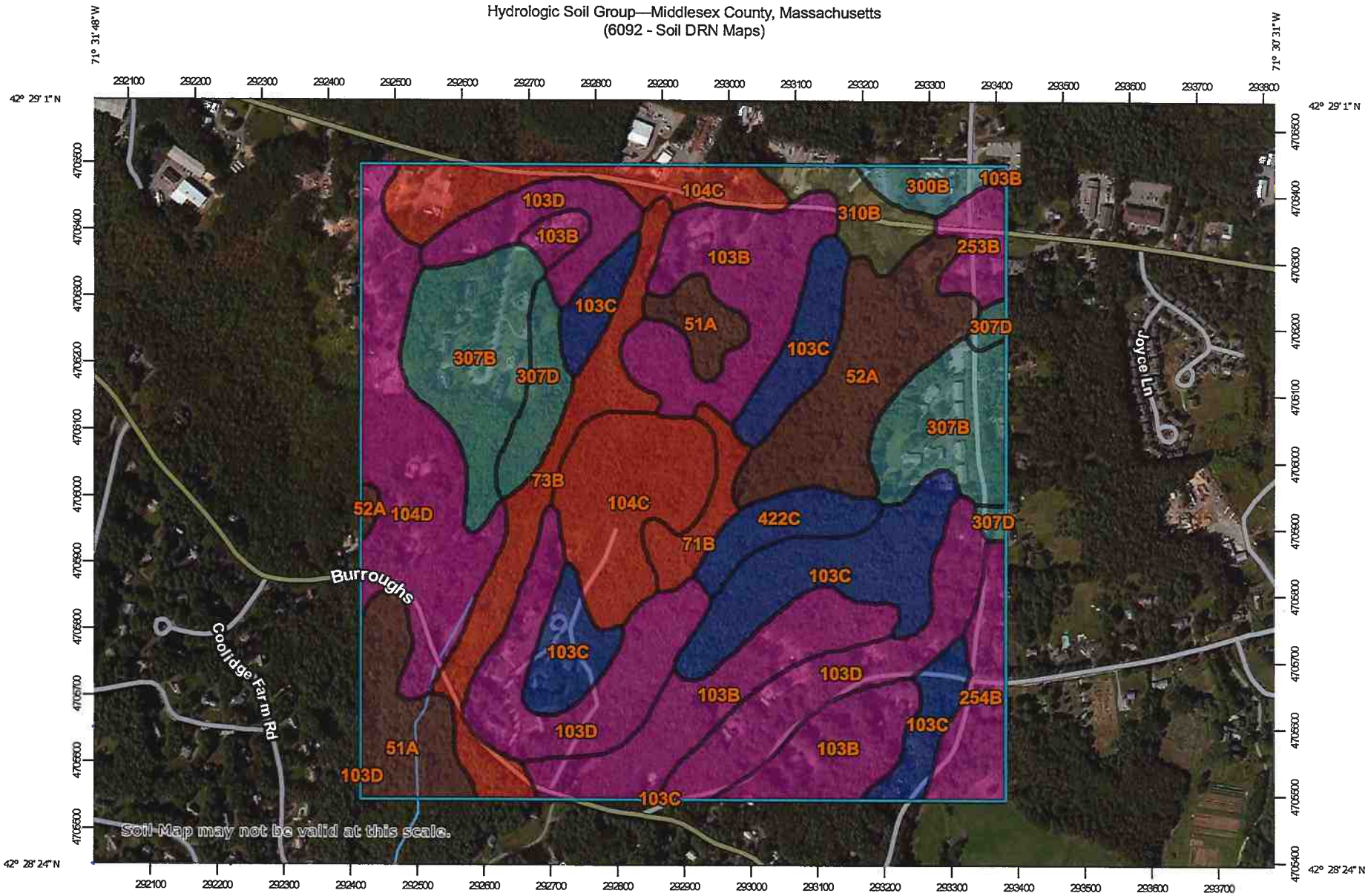
☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ 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.

Appendix C - Soils Data

Hydrologic Soil Group—Middlesex County, Massachusetts
(6092 - Soil DRN Maps)



Map Scale: 1:8,080 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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:
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 18, Sep 7, 2018

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 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

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	B/D	11.3	4.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	15.6	6.8%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	3.7	1.6%
73B	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	11.8	5.1%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A	35.3	15.4%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	27.8	12.1%
103D	Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	31.5	13.8%
104C	Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	D	21.7	9.5%
104D	Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	A	20.1	8.8%
253B	Hinckley loamy sand, 3 to 8 percent slopes	A	3.5	1.5%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	6.6	2.9%
300B	Montauk fine sandy loam, 3 to 8 percent slopes	C	2.7	1.2%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	C	22.6	9.9%
307D	Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony	C	5.6	2.4%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	4.5	2.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	B	4.7	2.0%
Totals for Area of Interest			**228.9**	**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

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of

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1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

DEP has provided this form for use by on-site professionals and local Boards of Health. Other forms may be used, but the information must be substantially the same as provided here. Before using this form, check with your local Board of Health to determine the form they use.

A. Facility Information

1. Facility Information

Owner Name: BOXBOROUGH TOWN CENTER, LLC

Street Address: _____ Map/Lot: _____

City/Town: ACTON State: MA Zip Code: _____

K. STORMWATER EVALUATIONS ONLY *
9/20/2016 16-1 ⇒ 16-15
9/21/2016 16-16 ⇒ 16-34
9/30/2016 16-35 ⇒ 16-56

B. Site Information

1. (Check one) New Construction ☒ Upgrade ☐ Repair ☐

2. Published Soil Survey available? Yes ☐ No ☐ If yes: Year Published _____ Publication Scale _____ Soil Map Unit _____

Soil Name _____ Soil limitations _____

3. Surficial Geological Report available? Yes ☐ No ☐ If yes: Year Published _____ Publication Scale _____ Map Unit _____

Geologic Material _____ Landform _____

4. Flood Rate Insurance Map:

Above the 500 year flood boundary? Yes ☒ No ☐ Within the 100 year flood boundary? Yes ☐ No ☒

Within the 500 year flood boundary? Yes ☐ No ☒ Within a Velocity Zone? Yes ☐ No ☐

5. Wetland Area: National Wetland Inventory Map Map Unit: UPLAND - WETLANDS CONFIRMED ON-SITE Name: _____

Wetlands Conservancy Program Map Map Unit: _____ Name: _____

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-1 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) WITHIN SWALE

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation: PINE, HARDWOOD Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body — feet; Drainage Way — feet; Possible Wet Area >100 feet

   Property Line _____ feet; Drinking Water Well 60' feet; Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit: — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 60"

Deep Observation Hole Number: 16-1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—	—	M	F	20% BOULDERS
20	B	10YR 5/6	—	—	—	SL			M	F	
66	C1	2.5Y 7/4	60	5YR 5/8	75	LS		2C	M	F	20
120	C2	2.5Y 6/3				SL		5S	M	F	BOULDERS

Additional Notes: STORM-WATER SOIL OBSERVATIONS
RICHARD J. HAMMINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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ACTON, MA 01720
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700 + 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-2 9/20/2016 (Date) ____ (Time) OVERCAST 70° (Weather)

1. Location

   Ground Elevation at Surface of Hole ____

   Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

   MAPLE, PINE (Vegetation) ____ Landform ____ Position on landscape (attach sheet) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other: ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: 30"

Deep Observation Hole Number: 16-2

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
26	A FILL	FILL	–	–	–	SL	–	10S	M	F	BOULDERS PEASTONE
30	B	10YR 5/6	–	–	–	SL	–	–	M	F	
48	C1	2.5Y 6/4	30	5YR 5/8	>5	SL	–	5S	M	F	20 BLDRS
120	C2	2.5Y 6/3				SL	–	–	M	F	

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number 16-3 Date 9/20/2016 Time _____ Weather OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation PINE, HARDWOOD Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 60"

Deep Observation Hole Number: 16-3

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE BOULDERS
22	B	10YR 5/6	—	—	—	SL	—	—	M	F	
60	C1	2.5Y 6/4	60	5YR 5/8	>5	SL		5S	M	F	
96	C2	2.5Y 6/3				SL			M	F	
	BOULDERS										

Additional Notes STORM-WATER SOIL OBSERVATIONS
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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-4 | 9/20/2016 (Date) | Time | OVERCAST 70° (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) | Surface Stones | Slope (%)

   HARDWOOD (Vegetation) | Landform | Position on landscape (clock sheet)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet 120+L

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 55

Deep Observation Hole Number: 16-4

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—	5S	M	F	LARGE BOULDERS
20	B	10YR 5/6	—	—	—	SL	—		M	F	
120	C	2.5Y 6/3	55	5YR 5/8	>5	LS	2G	5C	M	F	BOULDERS

Additional Notes: STORMWATER SOIL OBSERVATIONS
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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-5 9/20/2016 (Date) ____ (Time) OVERCAST 70° (Weather)

1. Location

   Ground Elevation at Surface of Hole ____

   Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

   Vegetation ____ Landform ____ Position on landscape (Mouth sheet) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 48

Deep Observation Hole Number: 16-5

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BOULDER
22	B	10YR 5/6	—	—	—	SL	—	—	M	F	LARGE
36	C1	2.5Y 7/6	—	—	—	LS	—	5C	M	F	
120	C2	2.5Y 6/3	48	5YR 5/8	>5	SL	3G 2C	10S	M	F	

Additional Notes STORMWATER SOIL OBSERVATIONS
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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-6 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 50"

Deep Observation Hole Number: 16-6

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments ½ by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/2	—	—	—	SL		—	M	F	LARGE BOULDERS
21	B	10YR 5/6	—	—	—	SL		—	M	F	
44	C1	2.5Y 7/4	—	—	—	LS		5G 2C	M	F	
130	C2	2.5Y 6/3	50	5YR 5/8	>5	SL	3G		M	F	LARGE BOULDERS

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-7 9/20/2016 (Date) _____ (Time) OVERCAST 70° (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (slope shoot) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit: — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 50'

Deep Observation Hole Number: 16-7

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE
18	B	10YR 5/6	—	—	—	SL	—	—	M	F	BOULDERS
102	C	2.5Y 6/3	50	5YR 5/8	>5	LS	56	2C 5S	M	F	GRAVELLY
102	R										BOULDERS

Additional Notes STORMWATER SOIL OBSERVATIONS
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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-8 9/20/2016 (Date) _____ (Time) OVERCAST 70° (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 54

Deep Observation Hole Number: 16-8

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL			M	F	
18	B	10YR 5/6	—	—	—	SL			M	F	
108	C	2.5Y	54	5YR 5/8	>5	LS	5G	2C 2S	M	VERY FRIABLE	
108	R					POCKETS MEDIUM SAND					

Additional Notes: STORMWATER SOIL OBSERVATIONS
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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-9 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (block diagram) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 44

Deep Observation Hole Number: 16-9

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Note!)	Other
4	A	10YR 3/2	—	—	—	SL	—	—	M	F	
23	B	10YR 5/6	—	—	—	SL	—	—	M	F	LARGE BOULDERS
108	C	2.5Y 6/3	44			LS	5G	5S 2C	M	F	

Additional Notes: STORMWATER SOIL OBSERVATIONS
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C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-10 Date: 9/20/2014 Time: _____ Weather: OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agriculture field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on Landscape (ridge, slope)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Well Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ___ Depth Standing Water in Hole ___

   Estimated Depth to High Groundwater: 53

Deep Observation Hole Number: 16-10

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL			M	F	Large
19	B	10YR 5/6	—	—	—	SL			M	F	Boulders
94	C	2.5Y 6/3	53	5YR 5/8	>5	LS	5G	2C 5S	M	F	
94	R										

Additional Notes: STORM WATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012
JOHN DEERE 892 EXCAVATOR

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-11 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (slope/shape) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 60

Deep Observation Hole Number: 16-11

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Course Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—		M	F	LARGE
16	B	10YR 5/6	—	—	—	SL	—		M	F	BOULDERS
100	C	2.5Y 6/3	60	5YR 5/8	>5	LS	5G	5C 2.5	M	VERY FRIABLE	
100	R										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HAMMARSTROM, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BURLINGTON TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-12 Date 9/20/2016 Time _____ Weather OVERCAST 70°

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 44

Deep Observation Hole Number: 16-12

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
3	A	10YR 3/2	—	—	—	SL	—	—	M	F	
15	B	10YR 5/6	—	—	—	SL	—	—	M	F	
72	C	2.5Y 6/3	44	5YR 5/8	>5	LS	5g	2C 2S	M	VERY FRIABLE	
72	R										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HAMMERLING, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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ACTON, MA 01720
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BURLINGTON TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-13 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (Each sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: 40

Deep Observation Hole Number: 16-13

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
3	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE
16	B	10YR 5/6	—	—	—	SL	—	—	M	F	BOULDER
74	C	2.5Y 6/3	40	5YR 5/8	>5	LS	—	2C 2S	M	F	
74	R										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of 1

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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ACTON, MA 01720
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BUXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-14 Date 9/20/2016 Time _____ Weather OVERCAST 70°

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (sketch sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: _____

Deep Observation Hole Number: 16-14

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE BOULDERS
14	B	10YR 5/6	—	—	—	SL	—	—	M	F	
106	C	2.5Y 6/3	42	5YR 5/8	>5	LS	—	3C 2S	M	F	BLDRS
106	R										

Additional Notes STORM-WATER SOIL OBSERVATIONS
RICHARD J. HAMMERSTROM, P.E., MA SE 1012

City/Town of

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BURLINGTON TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-15 Date: 9/20/2016 Time: _____ Weather: OVERCAST 70°

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (ditch shunt) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 42

Deep Observation Hole Number: 16-15

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE
15	B	10YR 5/6	—	—	—	SL	—	—	M	F	BOULDERS
109	C	2.5Y 6/3	42	5YR 5/8	>5	LS	—	25 20	M	F	
109	R	L									

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HANNIDIAN, P.E., MA SE 1012

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City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-16 9/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 40

Deep Observation Hole Number: 16-16

Depth (in.)	Soil Horizon/ Layer	Soil Matrix/ Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
7	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
20	B	10YR 5/6	—	—	—	SL	—	—	M	F	
108	C	2.5Y 6/4	40	5YR 5/8	>5	LS	—	5C	M	F	
	BOULDERS										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-17 | 9/21/2016 (Date) _____ (Time) Sun 90 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (upslope) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-17

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	
15	B	10YR 5/6	—	—	—	SL	—	—	M	P	
50	C_1	2.5Y 6/4	24	5YR 5/8	>10	LS	—	—	M	F	
100	C_2	2.5Y 6/3				SL	—	—	M	F	
	NO REFUSAL										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HAWKINSON, P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BUXBOROUGH TOWN CENTER, LLC.
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-18 Date 9/21/2016 Time _____ Weather Sun 80

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (clinch shoot) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☑

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☑

If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: _____

Deep Observation Hole Number: 16-18

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/1	—	—	—	SL	—	—	M	F	10 BLDR
16	B	10YR 7/2	—	—	—	SL	—	—	M	F	
55	C1	2.5Y 6/3	18"	High CHROMA	>20	LS	POCKETS SAND	—	M	F	
96	C2	2.5Y 6/4				SL		2C 5S			
	NO REFUSAL										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HAWKINSON, P.E., MA SE 1017

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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BUXBOROUGH TOWN CENTER, LLC.
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-19 Date: 9/21/2016 Time: _____ Weather: Sun 80

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (crest, shoul

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-19

Depth (in.)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	10 STONES
14	B	10YR 5/6	—	—	—	SL	—	—	M	F	
30	C1	2.5Y 7/4	24	5YR 5/6	>20	LS	—	—	M	F	
100	C2	2.5Y 7/2				LS	POCKETS FINE TO MED		M WM SAND	F	
	NO	REFUSAL									

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-20 9/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (sketch sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: 76

Deep Observation Hole Number: 16-20

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/2	—	—	—	SL	—		M	F	2% BLDRS
16	B	10YR 5/6	—	—	—	SL			M	F	
60	C_1	2.5Y 6/4	—	—	—	LS	2G	5S 2C	M	F	
76	C_2	2.5Y 5/4	—	—	—	COARSE SAND	15G	2C	M	VERY FRIABLE	
120	C_3	2.5Y 6/2	76	5YR 5/8	>5	SL					

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
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ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-21 | Date: 9/21/2016 | Time: _____ | Weather: Sun 80

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) | Surface Stones _____ | Slope (%) _____

   Vegetation _____ | Landform _____ | Position on landscape (shoulder, etc.) _____

3. Distances from: Open Water Body _____ feet | Drainage Way _____ feet | Possible Wet Area >100 feet

   Property Line _____ feet | Drinking Water Well _____ feet | Other _____

4. Parent Material: GLACIAL TILL | Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — | Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 20

Deep Observation Hole Number: 16-21

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL			M	F	10 BLDRS
16	B	10YR 5/6				SL			M	F	
76	C	2.5Y 6/4	20	5YR 5/6	>5	LS		20C 10S	M		
	NO	REFUSAL									

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-22 09/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-22

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
7	A	10YR 3/2	—	—	—	SL	—	—	M	F	BLDRS
18	B	10YR 5/6	—	—	—	SL	—	—	M	F	
120	C	2.5Y 6/4	24	5YR 5/8	>5	LS	2G	10@ 2S	M	F	

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-23 9/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-23

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL		—	M	F	20 BLDR
16	B	10YR 5/6		—	—	SL			M	F	
84	C	2.5Y 7/2	24	5YR 5/8	>10	LS FINE		5C	M	F	BLDRS
	NO REFUSAL										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BIXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-24 9/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 18

Deep Observation Hole Number: 16-24

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
3	A	10YR 3/1	—	—	—	SL			M	F	LARGE BLDRS
12	B	10YR 4/2	—	—	—	SL			M	F	
60	C_1	2.5Y 6/2	18	HIGH LOW	>10	LS	POCKETS GRAVEL	5C 5S	M	F	BLDR
132	C_2			CHROMA		SL					
132											

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON P.E., MA SE 1012

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City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-25 | 9 | 21 | 2016 (Date) _____ (Time) Sun 90 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 26

Deep Observation Hole Number: 16-25

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
16	A	10YR 3/2	—	—	—	SL	—	—	M	F	LARGE BOULDERS
24	B	10YR 6/4	—	—	—	SL	—	—	M	F	
84	C	2.5Y 6/3	26	LOW CHROMA	>5	LS	—	5%	M	F	BLOCK

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-26 | Date 9/21/2016 | Time _____ | Weather Sun 80

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) | Surface Stones _____ | Slope (%) _____

Vegetation _____ | Landform _____ | Position on landscape (sketch sheet) _____

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Possible Wet Area >100 feet

Property Line ____ feet | Drinking Water Well ____ feet | Other _____

4. Parent Material: GLACIAL TILL | Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — | Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 40

Deep Observation Hole Number: 16-26

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
3	A	10YR 3/2	—	—	—	SL	—	—	M	F	
15	B	10YR 5/6	—	—	—	SL	—	—	M	F	
100	C	2.5Y 6/4	40	5YR 5/8	>5	LS	—	10S	M	F	
100	R										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HAWKINSON, P.E., MA SE 1012

City/Town of

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-279 | 21 | 2016 (Date) _____ (Time) Sun 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (hilltop, shoulder) _____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: 48

Deep Observation Hole Number: 16-27

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
3	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
14	B	10YR 5/6	—	—	—	SL	—	—	M	F	
63	C	2.5Y 6/4	40	5YR 5/6	75	LS	—		M	F	
63	R										

Additional Notes: STORMWATER SOIL OBSERVATIONS
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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-28 9/21/2016 (Date) ____ (Time) Sun 80 (Weather)

1. Location

Ground Elevation at Surface of Hole ____

Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

Vegetation ____ Landform ____ Position on landscape (attach sheet) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 40

Deep Observation Hole Number: 16-28

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
12	B	10YR 5/6	—	—	—	SL	—	—	M	F	
40	C_1	2.5Y 6/4	—	—	—	LS	—	—	M	F	
84	C_2	2.5Y 6/2	40	5YR 5/8	>5	FINE SAND	POCKETS GRAVEL		M	VERY FRIABLE	
108	C_3					LS			M	F	

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-29 Date: 9/21/2016 Time: _____ Weather: Sun 70

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sketch) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 30

Deep Observation Hole Number: 16-29

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL			M	F	20 BLDR
14	B	10YR 5/6	—	—	—	SL			M	F	
60	C_1	2.5Y 6/2	30	5YR 5/8	>5	FINE SAND			M	F	—
120	C_2	2.5Y 6/3				LS	GRAVELLY	10%			

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-30 9/21/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 38

Deep Observation Hole Number: 16-30

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BOULDERS
14	B	10YR 5/4	—	—	—	SL	—	—	M	F	
76	C1	2.5Y 6/3	38"	5YR 5/8	>5	LS	—	—	M	F	20 GLDR.
120	C2	2.5Y 6/2				LS	5G	10S	M	F	

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
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ACTON, MA 01720
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BUXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-31 Date 9/21/2016 Time _____ Weather Sun 90

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: 30'

Deep Observation Hole Number: 16-31

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—	SL	—	—	M	F	SURFACE BOULDERS
16	B	10YR 5/6	—	—	—	SL	—	—	M	F	
70	C1	2.5Y 6/2	30"	5YR 5/6	>5	LS			M	F	
120	C2	2.5Y 6/3				LS			M	F	

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-32 | 9 | 21 | 2016 (Date) ____ (Time) Sun 90 (Weather)

1. Location

   Ground Elevation at Surface of Hole ____

   Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

   Vegetation ____ Landform ____ Position on landscape (hilltop/bottom) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: ____ ____

Deep Observation Hole Number: 16-32

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
5	A	10YR 3/2				SL			M	F	
15	B	10YR 5/6				SL			M	F	
59	C	2.5Y 5/3	31		75	LS			M	F	
59	R										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HANLINGTON P.E., MA SE 1012

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-33 | 9 | 21 | 2016 (Date) _____ (Time) Sun 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (sketch/shoot) _____

3. Distances from: Open Water Body _____ (feet) Drainage Way _____ (feet) Possible Wet Area >100 (feet)

   Property Line _____ (feet) Drinking Water Well _____ (feet) Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☑

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 130 OR BELOW

Deep Observation Hole Number: 16-33

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL			M	F	
18	B	10YR 5/6	—	—	—	SL			M	F	
130	C	2.5Y 6/3	—	SEE GWC WELL INFO		MEDIUM SAND		25	SG	LOOSE	

Additional Notes STORM-WATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1017

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-34 | 9 | 21 | 2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 72

Deep Observation Hole Number: 16-34

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
	B	10YR 5/6	—	—	—	SL	—	10C	M	F	
72	C	2.5Y 6/4	—	—	—	LS					
	BOULDERS										

Additional Notes STORMWATER SOIL OBSERVATIONS
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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-35 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☑

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 14"

Deep Observation Hole Number: 16-35

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
10	A	10YR 2/2	—	—	—	SL			M	F	10 STONES
19	B	10YR 5/6	14	LOW CHROMA	>5	SL			M	F	
41	C_1	2.5Y 6/2			>20	SL	5g		M	F	
120	C_2	2.5Y 6/4				COARSE TO MEDIUM					
						VARIATED LOAMY SAND					

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City Form 11

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

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ACTON, MA 01720
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BUXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-36 9/30/2016 (Date) ____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole ____

Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

Vegetation ____ Landform ____ Position on landscape (attach sheet) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 14

Deep Observation Hole Number: 16-36

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
10	A	10YR 2/2	—	—	—	SL	—	—	M	F	5 BOULDER
17	B	10YR 5/6	14	LOW CHROMA	>5	SL	—	—	M	F	
36	C_1	2.5Y 4/2		5YR 5/8	>20	SL			M	F	
84	C_2	2.5Y 6/4				SAND VARIATED	3G	5S 5C	M	VERY FRIABLE	
120	C_3	2.5Y 6/2				MEDIUM TO COARSE			M	F	20 BLDR
						C_3 SL					

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-379 | 30 | 2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 44

Deep Observation Hole Number: 16-37

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	
12	B	10YR 5/6	—	—	—	SL	—	—	M	F	
38	C1	2.5Y 6/4	—	—	—	COARSE SAND	10G	5C	M	VERY FRIABLE	
72	C2	2.5Y 6/3	44	5YR 5/8	>5	LOAMY SAND			M	F	
112	C3	2.5Y 6/2				SANDY LOAM			M	F	
	BOULDER										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-38 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☐

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 112

Deep Observation Hole Number: 16-38

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	
12	B	10YR 5/6	—	—	—	SL	—	—	M	F	
48	C_1	2.5Y 6/6	—	—	—	LS	—	—	M	F	
72	C_2	2.5Y 6/4	—	—	—	COARSE SAND	15G	2C	M	VERY LOOSE	
112	C_3	2.5Y 6/6				MEDIUM SAND	VARIGATED COLORS		M	VERY LOOSE	
120	C_4	2.5Y 6/2				SL					

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-39 9/30/2016 (Date) ____ (Time) SM PO (Weather)

1. Location

Ground Elevation at Surface of Hole ____

Location (Identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

Vegetation ____ Landform ____ Position on landscape (attach sheet) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☐

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

Estimated Depth to High Groundwater: 96

Deep Observation Hole Number: 16-39

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	10YR 3/2	—	—	—	SL	—	—	M	F	
12	B	10YR 5/6	—	—	—	LS	—	—	M	F	
60	C_1	2.5Y 6/4	—	—	—	COARSE SAND	15G	2C	M	VERY LOOSE	
96	C_2	2.5Y 6/6	—	—	—	MEDIUM SAND	—		M	VERY FRIABLE	
120	C_3	2.5Y 6/2	96		>5	SL	—	5S	M	F	

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON P.E., MA SE 1012

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C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-40 Date: 9/30/2016 Time: _____ Weather: SUNNY

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 140+

Deep Observation Hole Number: 16-40

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—	—		—	—	M		
10	B	10YR 5/6	—	—	—		—	—	M		
70	C_1	2.5Y 6/3	—	—	—	COARSE SAND	15G	3C	M	VERY LOOSE	
140	C_2	2.5Y 6/6	—	—	—	MEDIUM SAND	—	—	M	VERY LOOSE	

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: (6-4) Date: 9/30/2016 Time: _____ Weather: Sun 80

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sketch) _____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: 104

Deep Observation Hole Number: 16-4

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4	A	10YR 3/2	—	—		SL	—	—	M		
9	B	10YR 5/6	—	—	—	LS	—	—	M		
94	C	2.5Y 6/4	—	—	—	MEDIUM COARSE SAND	10%		M	VERY FRIABLE	
132	C2	2.5 6/3	104	5YR 5/8	>5	FINE LOAMY SAND			M		

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HAMALAINEN, P.E., MA SE 1012

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700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-429 | 30 | 2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

   Estimated Depth to High Groundwater: 22

Deep Observation Hole Number: 16-42

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	Ap	10YR 3/2	—	—	—	SL	—	—	M	F	
10	B	10YR 5/6	—	—	—	LS	—	—	M	F	
36	C1	2.5Y 6/6	22	5YR 5/8	>5	FINE LS	—	—	M	F	
72	C2	2.5Y 6/4				MEDIUM SAND			M	VERY FRIABLE	
105	C3	2.5Y 6/2				SL			M	F	
	BOULDER										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BIRCHBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-43 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 54

Deep Observation Hole Number: 16-43

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
6	Ap	10YR 3/2	-	-	-	SL			M	F	
12	Bw	10YR 5/6	-	-	-	SL			M	F	
12-24	Bc	2.5Y 6/6	-	-	-	FINE LS			M	F	
114	C1	2.5Y 6/4	54	5YR 5/8	>5	MOD FINE SAND	56	25		VERY FRIABLE	
124	C2	2.5Y 6/2				SL					

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-44 | 9 | 30 | 2014 (Date) _____ (Time) Sun 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☑

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☑

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 42

Deep Observation Hole Number: 16-44

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
7	A	10YR 3/2	—	—	—	SL	—	—	M	F	10 BLDR
18	B	10YR 5/6	—	—	—	SL	—	—	M	F	
72	C1	2.5Y 6/4	42	low chrom	>5	medium sand	—	—	M	very friable	
100	C2	2.5Y 6/2				SL			M	F	
	NO REFUSAL										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BUXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-459 | 30 | 2016 (Date) _____ (Time) SM PO (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope(%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-45

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	Ap	10YR 3/2	—	—	—	SL	—	—	M	F	
24	Bw	10YR 5/6	—	—	—	SL	—	—	M	F	
72	C	2.5Y 6/2	24		>10	SL	—	—	M	Firm	
	No Refusal										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-46 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ (feet) Drainage Way _____ (feet) Possible Wet Area >100 (feet)

   Property Line _____ (feet) Drinking Water Well _____ (feet) Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 24

Deep Observation Hole Number: 16-46

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
9	Ap	10YR 3/2	–	–	–	SL	–	–	M	F	
15	Bw	10YR 5/6	–	–	–	SL	–	–	M	F	
98	C	2.5Y 5/3	24		>10	SL	–	–	M	FIRM	

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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STAMSKI AND McNARY, INC.
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BIXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-479 | 30 | 2016 (Date) _____ (Time) SM 90 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope(%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 32

Deep Observation Hole Number: 16-47

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
10	Ap	10YR 3/2	—	—	—	SL	—	—	M	F	10 STONES
24	Bw	10YR 5/6	—	—	—	SL	—	—	M	F	
100	C	2.5Y 6/3	32	LOW CHROMA	>10	SL	5g	—	M	Firm	
	NO REFUSAL										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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BIRCHBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-48 9/30/2016 (Date) _____ (Time) SM 60 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ (feet) Drainage Way _____ (feet) Possible Wet Area >100 (feet)

   Property Line _____ (feet) Drinking Water Well _____ (feet) Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 36

Deep Observation Hole Number: 16-48

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
7	Ap	10YR 3/2	–	–	–	SL			M	F	20 BLDRS
14	B	10YR 5/6	–	–	–	SL			M	F	
36	C1	2.5Y 6/4	36	5YR 5/8	>5	LS			M	Firm	
100+	C2	2.5Y 6/3				SL					
	NO REFUSAL										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-49 | 30 | 2016 (Date) ____ (Time) Sun (Weather)

1. Location

   Ground Elevation at Surface of Hole ____

   Location (identify on Plan) ____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) ____ Surface Stones ____ Slope (%) ____

   Vegetation ____ Landform ____ Position on landscape (attach sketch) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Possible Wet Area >100 feet

   Property Line ____ feet Drinking Water Well ____ feet Other ____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 30

Deep Observation Hole Number: 16-49

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
7	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLOCK
14	B	10YR 5/6	—	—	—	SL	—	—	M	F	
48	C1	2.5Y 6/6	30	low chroma	>5	LS	—	—	M	Firm	
58	C2	2.5Y 6/3				SL	—	—	M	Firm	
160	C3	2.5Y 6/2				SL	5g	—	M	Firm	
	M	REFUSAL									

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-50 9/30/2016 (Date) _____ (Time) ~~[illegible]~~ 60 (Weather) OVERCAST

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 30

Deep Observation Hole Number: 16-50

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
7	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
24	B	10YR 5/6	—	—	—	SL	—	—	M	F	
80	C	2.5Y 6/3	30	5YR 5/8	>5	SL	—	—	M	Firm	
	NO REFUSAL										

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

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STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BUXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-51 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☐

   If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

   Estimated Depth to High Groundwater: _____ _____

51

Deep Observation Hole Number: 16-51

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/2	—	—	—	SL			M	F	
20	B	10YR 5/6	—	—	—	SL			M	F	
50	C	2.5Y 6/3	24		>20	SL			M	Firm	
50	R					SL					

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-529 | 30 | 2016 (Date) _____ (Time) SM PO (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

   Estimated Depth to High Groundwater: 30

Deep Observation Hole Number: 16-52

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
8	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDG
22	B	10YR 5/6	—	—	—	SL	—	—	M	F	
60	C	2.5Y 4/3	30	—	>15	SL	—	—	M	F	
60	R		30								

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-53 Date: 9/30/2016 Time: _____ Weather: SUNNY

1. Location

Ground Elevation at Surface of Hole _____

Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: 30

Deep Observation Hole Number: 16-53

Depth (in)	Soil Horizon/ Layer	Soil Matrix Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
10	A	10YR 3/2	—	—	—	SL	—	—	M	F	20 BLDR
20	B	10YR 5/6	—	—	—	SL	—	—	M	F	
100	C	2.5Y 6/3	30			SL			M	F	
100	R										
—											

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. MACKINNON, P.E., MA SE 6012

Commonwealth of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-54 Date: 9/30/2014 Time: _____ Weather: Sun 90

1. Location

   Ground Elevation at Surface of Hole _____

   Location (identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☐

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit ____ Depth Standing Water in Hole ____

   Estimated Depth to High Groundwater: _____

Deep Observation Hole Number: 16-54

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
6	A	loam 3/2	–	–	–	SL			M	F	
11	B	loam 5/6	–	–	–	SL			M	F	
80	C	2.5Y 6/3	28		>5	LS	50	55	VM	Friable	
80	R										

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
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BOXBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-559 | 30 | 2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

Ground Elevation at Surface of Hole _____

Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: PROGLACIAL Unsuitable Materials Present: Yes ☐ No ☒

If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

If Yes: Depth Weeping from Pit — Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: 114

Deep Observation Hole Number: 16-55

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles) Depth	Color	Percent	Soil Texture (USDA)	Coarse Fragments % by Volume Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
7	A	10YR 3/2	—	—	—		—	—			
20	B	10YR 5/6	—	—	—		—	—			
114	C	2.5Y 6/4	—	—	—	FINE SAND	—	—	M	VERY FRIABLE	
120	C2	2.5Y 6/2	114			LS	—	—			

Additional Notes STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON, P.E., MA SE 1012

City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
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BIRCBOROUGH TOWN CENTER, LLC
700 & 800 MASSACHUSETTS AVE

C. On-Site Review (minimum of two holes required at every proposed disposal area)

Deep Observation Hole Number: 16-56 9/30/2016 (Date) _____ (Time) SM 80 (Weather)

1. Location

   Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

   Vegetation _____ Landform _____ Position on landscape (attach sheet) _____

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100 feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____

4. Parent Material: GLACIAL TILL Unsuitable Materials Present: Yes ☐ No ☒

   If Yes: Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock ☐

5. Groundwater Observed: Yes ☐ No ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 132 or BEGIN

Deep Observation Hole Number: 16-56

Depth (in)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
6	A	10YR 3/2	—	—	—	SL	—		M	F	10 BLDR
19	B	10YR 5/6	—	—	—	SL			M	F	
132	C	2.5Y 6/3	—			LS	2g	5s	M	F	

Additional Notes: STORMWATER SOIL OBSERVATIONS
RICHARD J. HARRINGTON P.E., MA SE 1012

STAMSKI AND McNARY, INC.
1000 Main Street
ACTON, MA 01720
Engineering • Planning • Surveying

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method used:
   - ☐ Depth observed standing water in observation hole A. _____ inches B. _____ inches
   - ☐ Depth weeping from side of observation hole A. _____ inches B. _____ inches
   - ☐ Depth to soil redoximorphic features (mottles) A. _____ inches B. _____ inches
   - ☐ Groundwater adjustment (USGS methodology) A. _____ inches B. _____ inches

2. Index Well Number _____ Reading Date _____ Index Well Level _____

   Adjustment Factor _____ Adjusted Groundwater Level _____

E. Depth of Pervious Material

9/20/16; 9/21/16 & 9/30/16
TEST PITS 16-1 => 16-5b

1. Depth of Naturally Occurring Pervious Material

N/A a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system? Yes ☐ No ☐ * STORMWATER SOIL OBSERVATIONS

   b. If yes, at what depth was it observed? Upper boundary: _____ inches Lower boundary: _____ inches

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

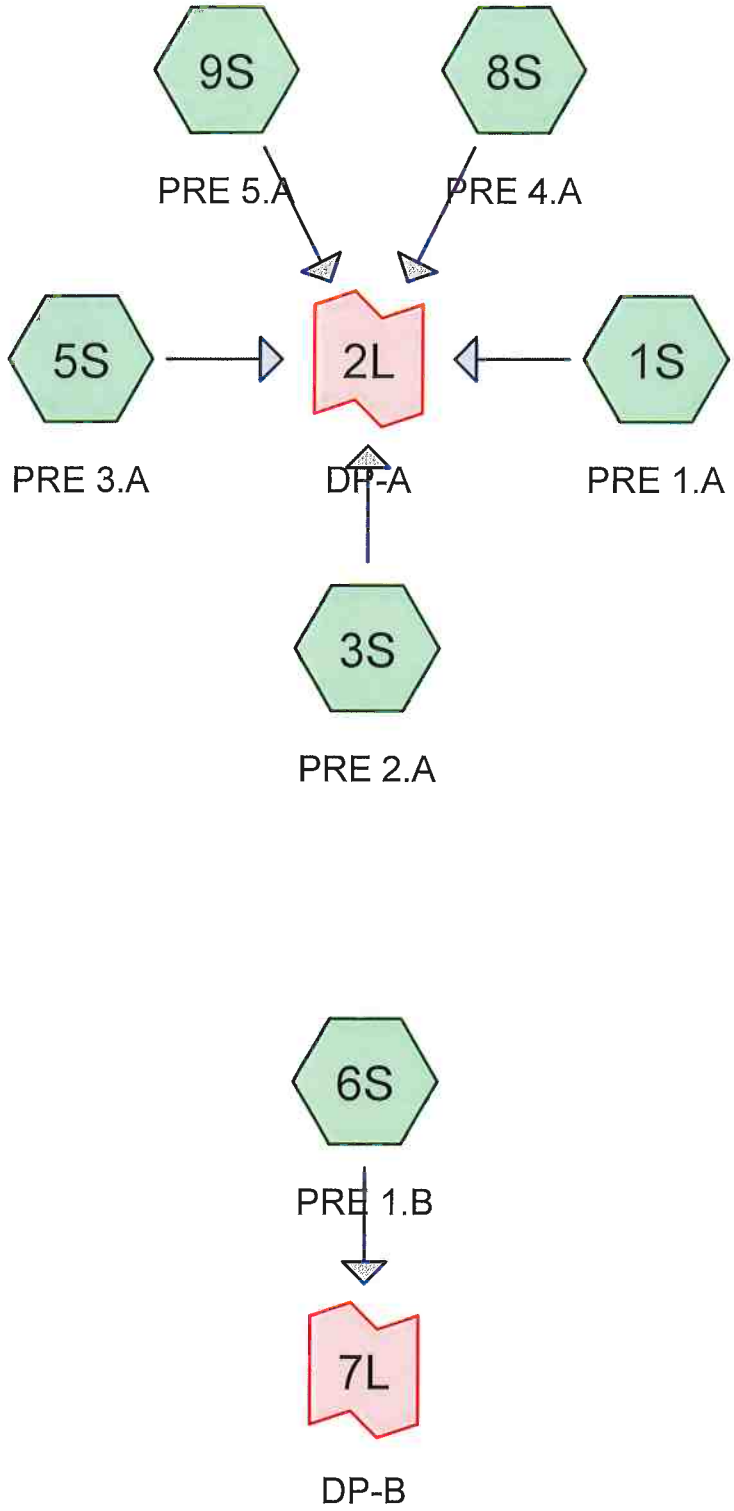
Signature of Soil Evaluator — Date: 9/21/2016

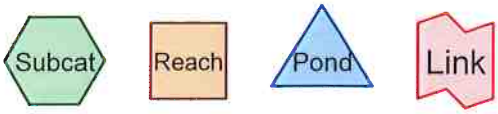
RICHARD J. HARRINGTON SE1012
Typed or Printed Name of Soil Evaluator/License Number — *Date of Soil Evaluator Exam: 10/25/1994

STORMWATER SOIL OBSERVATIONS
Name of Board of Health Witness — Board of Health: UNWITNESSED

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Appendix D - Existing Conditions Hydrologic Calculations





Routing Diagram for 6092 - PRE
Prepared by {enter your company name here}, Printed 7/16/2019
HydroCAD® 10.00-21 s/n 03590 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PRE 1.A Runoff Area=499,537 sf 0.23% Impervious Runoff Depth=0.13"
Flow Length=923' Tc=19.0 min CN=51 Runoff=0.24 cfs 0.123 af

Subcatchment 3S: PRE 2.A Runoff Area=202,863 sf 0.00% Impervious Runoff Depth=0.20"
Flow Length=572' Tc=19.6 min CN=54 Runoff=0.26 cfs 0.076 af

Subcatchment 5S: PRE 3.A Runoff Area=188,718 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=320' Tc=16.7 min CN=73 Runoff=3.11 cfs 0.332 af

Subcatchment 6S: PRE 1.B Runoff Area=91,035 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=251' Tc=10.2 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment 8S: PRE 4.A Runoff Area=17,402 sf 0.00% Impervious Runoff Depth=1.26"
Tc=6.0 min CN=79 Runoff=0.57 cfs 0.042 af

Subcatchment 9S: PRE 5.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=0.37"
Tc=6.0 min CN=60 Runoff=0.24 cfs 0.032 af

Link 2L: DP-A Inflow=3.66 cfs 0.605 af
Primary=3.66 cfs 0.605 af

Link 7L: DP-B Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 23.990 ac Runoff Volume = 0.605 af Average Runoff Depth = 0.30"
99.89% Pervious = 23.963 ac 0.11% Impervious = 0.027 ac

Summary for Subcatchment 1S: PRE 1.A

Runoff = 0.24 cfs @ 12.72 hrs, Volume= 0.123 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
88,048	30	Woods, Good, HSG A
404,937	55	Woods, Good, HSG B
5,390	70	Woods, Good, HSG C
1,162	98	Roofs, HSG B
499,537	51	Weighted Average
498,375		99.77% Pervious Area
1,162		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	873	0.0650	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.0	923	Total			

Summary for Subcatchment 3S: PRE 2.A

Runoff = 0.26 cfs @ 12.58 hrs, Volume= 0.076 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
9,883	30	Woods, Good, HSG A
188,641	55	Woods, Good, HSG B
4,339	77	Woods, Good, HSG D
202,863	54	Weighted Average
202,863		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	522	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.6	572	Total			

Summary for Subcatchment 5S: PRE 3.A

Runoff = 3.11 cfs @ 12.26 hrs, Volume= 0.332 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
154,569	77	Woods, Good, HSG D
34,149	55	Woods, Good, HSG B
188,718	73	Weighted Average
188,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	50	0.0160	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	270	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	320	Total			

Summary for Subcatchment 6S: PRE 1.B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
79,057	30	Woods, Good, HSG A
11,978	55	Woods, Good, HSG B
91,035	33	Weighted Average
91,035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
2.1	201	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	251	Total			

Summary for Subcatchment 8S: PRE 4.A

Runoff = 0.57 cfs @ 12.10 hrs, Volume= 0.042 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
9,066	74	>75% Grass cover, Good, HSG C
5,485	96	Gravel surface, HSG C
2,851	61	>75% Grass cover, Good, HSG B
17,402	79	Weighted Average
17,402		100.00% Pervious Area

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

Summary for Subcatchment 9S: PRE 5.A

Runoff = 0.24 cfs @ 12.15 hrs, Volume= 0.032 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
15,021	30	Woods, Good, HSG A
3,541	55	Woods, Good, HSG B
26,882	77	Woods, Good, HSG D
45,444	60	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Link 2L: DP-A

Inflow Area = 21.900 ac, 0.12% Impervious, Inflow Depth = 0.33" for 2-year event
Inflow = 3.66 cfs @ 12.25 hrs, Volume= 0.605 af
Primary = 3.66 cfs @ 12.25 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 7L: DP-B

Inflow Area = 2.090 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PRE 1.A Runoff Area=499,537 sf 0.23% Impervious Runoff Depth=0.58"
Flow Length=923' Tc=19.0 min CN=51 Runoff=3.32 cfs 0.558 af

Subcatchment 3S: PRE 2.A Runoff Area=202,863 sf 0.00% Impervious Runoff Depth=0.73"
Flow Length=572' Tc=19.6 min CN=54 Runoff=1.95 cfs 0.285 af

Subcatchment 5S: PRE 3.A Runoff Area=188,718 sf 0.00% Impervious Runoff Depth=1.97"
Flow Length=320' Tc=16.7 min CN=73 Runoff=7.11 cfs 0.712 af

Subcatchment 6S: PRE 1.B Runoff Area=91,035 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=251' Tc=10.2 min CN=33 Runoff=0.00 cfs 0.002 af

Subcatchment 8S: PRE 4.A Runoff Area=17,402 sf 0.00% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=79 Runoff=1.13 cfs 0.082 af

Subcatchment 9S: PRE 5.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=1.07"
Tc=6.0 min CN=60 Runoff=1.12 cfs 0.093 af

Link 2L: DP-A Inflow=12.72 cfs 1.730 af
Primary=12.72 cfs 1.730 af

Link 7L: DP-B Inflow=0.00 cfs 0.002 af
Primary=0.00 cfs 0.002 af

Total Runoff Area = 23.990 ac Runoff Volume = 1.733 af Average Runoff Depth = 0.87"
99.89% Pervious = 23.963 ac 0.11% Impervious = 0.027 ac

Summary for Subcatchment 1S: PRE 1.A

Runoff = 3.32 cfs @ 12.41 hrs, Volume= 0.558 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
88,048	30	Woods, Good, HSG A
404,937	55	Woods, Good, HSG B
5,390	70	Woods, Good, HSG C
1,162	98	Roofs, HSG B
499,537	51	Weighted Average
498,375		99.77% Pervious Area
1,162		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	873	0.0650	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.0	923	Total			

Summary for Subcatchment 3S: PRE 2.A

Runoff = 1.95 cfs @ 12.37 hrs, Volume= 0.285 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
9,883	30	Woods, Good, HSG A
188,641	55	Woods, Good, HSG B
4,339	77	Woods, Good, HSG D
202,863	54	Weighted Average
202,863		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	522	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.6	572	Total			

Summary for Subcatchment 5S: PRE 3.A

Runoff = 7.11 cfs @ 12.24 hrs, Volume= 0.712 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
154,569	77	Woods, Good, HSG D
34,149	55	Woods, Good, HSG B
188,718	73	Weighted Average
188,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	50	0.0160	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	270	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	320	Total			

Summary for Subcatchment 6S: PRE 1.B

Runoff = 0.00 cfs @ 22.21 hrs, Volume= 0.002 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
79,057	30	Woods, Good, HSG A
11,978	55	Woods, Good, HSG B
91,035	33	Weighted Average
91,035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
2.1	201	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	251	Total			

Summary for Subcatchment 8S: PRE 4.A

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
9,066	74	>75% Grass cover, Good, HSG C
5,485	96	Gravel surface, HSG C
2,851	61	>75% Grass cover, Good, HSG B
17,402	79	Weighted Average
17,402		100.00% Pervious Area

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

Summary for Subcatchment 9S: PRE 5.A

Runoff = 1.12 cfs @ 12.11 hrs, Volume= 0.093 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
15,021	30	Woods, Good, HSG A
3,541	55	Woods, Good, HSG B
26,882	77	Woods, Good, HSG D
45,444	60	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Link 2L: DP-A

Inflow Area = 21.900 ac, 0.12% Impervious, Inflow Depth = 0.95" for 10-year event
Inflow = 12.72 cfs @ 12.29 hrs, Volume= 1.730 af
Primary = 12.72 cfs @ 12.29 hrs, Volume= 1.730 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 7L: DP-B

Inflow Area = 2.090 ac, 0.00% Impervious, Inflow Depth = 0.01" for 10-year event
Inflow = 0.00 cfs @ 22.21 hrs, Volume= 0.002 af
Primary = 0.00 cfs @ 22.21 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PRE 1.A Runoff Area=499,537 sf 0.23% Impervious Runoff Depth=0.92"
Flow Length=923' Tc=19.0 min CN=51 Runoff=6.33 cfs 0.884 af

Subcatchment 3S: PRE 2.A Runoff Area=202,863 sf 0.00% Impervious Runoff Depth=1.12"
Flow Length=572' Tc=19.6 min CN=54 Runoff=3.37 cfs 0.434 af

Subcatchment 5S: PRE 3.A Runoff Area=188,718 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=320' Tc=16.7 min CN=73 Runoff=9.46 cfs 0.938 af

Subcatchment 6S: PRE 1.B Runoff Area=91,035 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=251' Tc=10.2 min CN=33 Runoff=0.02 cfs 0.014 af

Subcatchment 8S: PRE 4.A Runoff Area=17,402 sf 0.00% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=79 Runoff=1.44 cfs 0.105 af

Subcatchment 9S: PRE 5.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=1.54"
Tc=6.0 min CN=60 Runoff=1.71 cfs 0.134 af

Link 2L: DP-A Inflow=20.15 cfs 2.494 af
Primary=20.15 cfs 2.494 af

Link 7L: DP-B Inflow=0.02 cfs 0.014 af
Primary=0.02 cfs 0.014 af

Total Runoff Area = 23.990 ac Runoff Volume = 2.509 af Average Runoff Depth = 1.25"
99.89% Pervious = 23.963 ac 0.11% Impervious = 0.027 ac

Summary for Subcatchment 1S: PRE 1.A

Runoff = 6.33 cfs @ 12.34 hrs, Volume= 0.884 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
88,048	30	Woods, Good, HSG A
404,937	55	Woods, Good, HSG B
5,390	70	Woods, Good, HSG C
1,162	98	Roofs, HSG B
499,537	51	Weighted Average
498,375		99.77% Pervious Area
1,162		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	873	0.0650	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.0	923	Total			

Summary for Subcatchment 3S: PRE 2.A

Runoff = 3.37 cfs @ 12.33 hrs, Volume= 0.434 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
9,883	30	Woods, Good, HSG A
188,641	55	Woods, Good, HSG B
4,339	77	Woods, Good, HSG D
202,863	54	Weighted Average
202,863		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	522	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.6	572	Total			

Summary for Subcatchment 5S: PRE 3.A

Runoff = 9.46 cfs @ 12.24 hrs, Volume= 0.938 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
154,569	77	Woods, Good, HSG D
34,149	55	Woods, Good, HSG B
188,718	73	Weighted Average
188,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	50	0.0160	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	270	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	320	Total			

Summary for Subcatchment 6S: PRE 1.B

Runoff = 0.02 cfs @ 15.30 hrs, Volume= 0.014 af, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
79,057	30	Woods, Good, HSG A
11,978	55	Woods, Good, HSG B
91,035	33	Weighted Average
91,035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
2.1	201	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	251	Total			

Summary for Subcatchment 8S: PRE 4.A

Runoff = 1.44 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
9,066	74	>75% Grass cover, Good, HSG C
5,485	96	Gravel surface, HSG C
2,851	61	>75% Grass cover, Good, HSG B
17,402	79	Weighted Average
17,402		100.00% Pervious Area

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

Summary for Subcatchment 9S: PRE 5.A

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 0.134 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
15,021	30	Woods, Good, HSG A
3,541	55	Woods, Good, HSG B
26,882	77	Woods, Good, HSG D
45,444	60	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Link 2L: DP-A

Inflow Area = 21.900 ac, 0.12% Impervious, Inflow Depth = 1.37" for 25-year event
Inflow = 20.15 cfs @ 12.27 hrs, Volume= 2.494 af
Primary = 20.15 cfs @ 12.27 hrs, Volume= 2.494 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 7L: DP-B

Inflow Area = 2.090 ac, 0.00% Impervious, Inflow Depth = 0.08" for 25-year event
Inflow = 0.02 cfs @ 15.30 hrs, Volume= 0.014 af
Primary = 0.02 cfs @ 15.30 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PRE 1.A Runoff Area=499,537 sf 0.23% Impervious Runoff Depth=1.76"
Flow Length=923' Tc=19.0 min CN=51 Runoff=14.23 cfs 1.678 af

Subcatchment 3S: PRE 2.A Runoff Area=202,863 sf 0.00% Impervious Runoff Depth=2.03"
Flow Length=572' Tc=19.6 min CN=54 Runoff=6.89 cfs 0.788 af

Subcatchment 5S: PRE 3.A Runoff Area=188,718 sf 0.00% Impervious Runoff Depth=3.94"
Flow Length=320' Tc=16.7 min CN=73 Runoff=14.42 cfs 1.421 af

Subcatchment 6S: PRE 1.B Runoff Area=91,035 sf 0.00% Impervious Runoff Depth=0.37"
Flow Length=251' Tc=10.2 min CN=33 Runoff=0.21 cfs 0.065 af

Subcatchment 8S: PRE 4.A Runoff Area=17,402 sf 0.00% Impervious Runoff Depth=4.58"
Tc=6.0 min CN=79 Runoff=2.09 cfs 0.153 af

Subcatchment 9S: PRE 5.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=2.60"
Tc=6.0 min CN=60 Runoff=3.04 cfs 0.226 af

Link 2L: DP-A Inflow=37.55 cfs 4.266 af
Primary=37.55 cfs 4.266 af

Link 7L: DP-B Inflow=0.21 cfs 0.065 af
Primary=0.21 cfs 0.065 af

Total Runoff Area = 23.990 ac Runoff Volume = 4.331 af Average Runoff Depth = 2.17"
99.89% Pervious = 23.963 ac 0.11% Impervious = 0.027 ac

Summary for Subcatchment 1S: PRE 1.A

Runoff = 14.23 cfs @ 12.30 hrs, Volume= 1.678 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
88,048	30	Woods, Good, HSG A
404,937	55	Woods, Good, HSG B
5,390	70	Woods, Good, HSG C
1,162	98	Roofs, HSG B
499,537	51	Weighted Average
498,375		99.77% Pervious Area
1,162		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	873	0.0650	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.0	923	Total			

Summary for Subcatchment 3S: PRE 2.A

Runoff = 6.89 cfs @ 12.30 hrs, Volume= 0.788 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
9,883	30	Woods, Good, HSG A
188,641	55	Woods, Good, HSG B
4,339	77	Woods, Good, HSG D
202,863	54	Weighted Average
202,863		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	522	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.6	572	Total			

Summary for Subcatchment 5S: PRE 3.A

Runoff = 14.42 cfs @ 12.23 hrs, Volume= 1.421 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
154,569	77	Woods, Good, HSG D
34,149	55	Woods, Good, HSG B
188,718	73	Weighted Average
188,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	50	0.0160	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	270	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	320	Total			

Summary for Subcatchment 6S: PRE 1.B

Runoff = 0.21 cfs @ 12.48 hrs, Volume= 0.065 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
79,057	30	Woods, Good, HSG A
11,978	55	Woods, Good, HSG B
91,035	33	Weighted Average
91,035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
2.1	201	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	251	Total			

Summary for Subcatchment 8S: PRE 4.A

Runoff = 2.09 cfs @ 12.09 hrs, Volume= 0.153 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
9,066	74	>75% Grass cover, Good, HSG C
5,485	96	Gravel surface, HSG C
2,851	61	>75% Grass cover, Good, HSG B
17,402	79	Weighted Average
17,402		100.00% Pervious Area

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

Summary for Subcatchment 9S: PRE 5.A

Runoff = 3.04 cfs @ 12.10 hrs, Volume= 0.226 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
15,021	30	Woods, Good, HSG A
3,541	55	Woods, Good, HSG B
26,882	77	Woods, Good, HSG D
45,444	60	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Link 2L: DP-A

Inflow Area = 21.900 ac, 0.12% Impervious, Inflow Depth = 2.34" for 100-year event
Inflow = 37.55 cfs @ 12.26 hrs, Volume= 4.266 af
Primary = 37.55 cfs @ 12.26 hrs, Volume= 4.266 af, Atten= 0%, Lag= 0.0 min

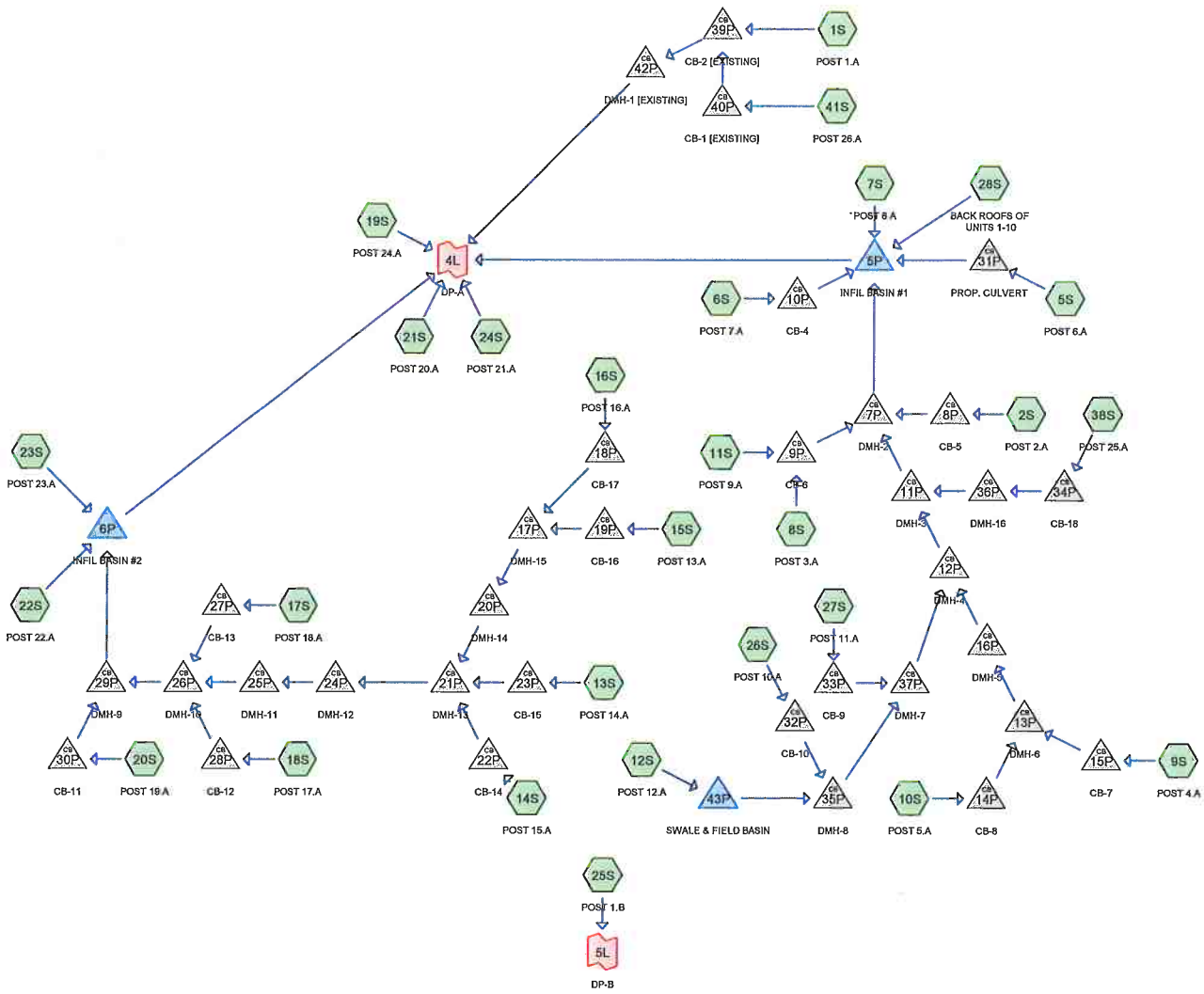
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 7L: DP-B

Inflow Area = 2.090 ac, 0.00% Impervious, Inflow Depth = 0.37" for 100-year event
Inflow = 0.21 cfs @ 12.48 hrs, Volume= 0.065 af
Primary = 0.21 cfs @ 12.48 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Appendix E - Proposed Conditions Hydrologic Calculations



Routing Diagram for 6092 - POST Toll Rev4 (current)
Prepared by {enter your company name here}, Printed 7/17/2019
HydroCAD® 10.00-21 s/n 03590 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: POST 1.A Runoff Area=11,232 sf 80.47% Impervious Runoff Depth=2.35"
Tc=6.0 min CN=93 Runoff=0.67 cfs 0.050 af

Subcatchment 2S: POST 2.A Runoff Area=23,362 sf 69.71% Impervious Runoff Depth=1.83"
Tc=6.0 min CN=87 Runoff=1.12 cfs 0.082 af

Subcatchment 5S: POST 6.A Runoff Area=101,865 sf 19.03% Impervious Runoff Depth=0.48"
Flow Length=1,092' Tc=22.1 min CN=63 Runoff=0.59 cfs 0.093 af

Subcatchment 6S: POST 7.A Runoff Area=21,169 sf 82.05% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=1.19 cfs 0.088 af

Subcatchment 7S: POST 8.A Runoff Area=21,105 sf 5.32% Impervious Runoff Depth=0.55"
Tc=6.0 min UI Adjusted CN=65 Runoff=0.24 cfs 0.022 af

Subcatchment 8S: POST 3.A Runoff Area=5,197 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment 9S: POST 4.A Runoff Area=25,089 sf 74.55% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=84 Runoff=1.06 cfs 0.077 af

Subcatchment 10S: POST 5.A Runoff Area=14,640 sf 81.36% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=89 Runoff=0.76 cfs 0.056 af

Subcatchment 11S: POST 9.A Runoff Area=12,906 sf 81.22% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=0.72 cfs 0.053 af

Subcatchment 12S: POST 12.A Runoff Area=96,627 sf 18.52% Impervious Runoff Depth=0.48"
Tc=8.0 min UI Adjusted CN=63 Runoff=0.77 cfs 0.088 af

Subcatchment 13S: POST 14.A Runoff Area=7,009 sf 98.59% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=97 Runoff=0.47 cfs 0.037 af

Subcatchment 14S: POST 15.A Runoff Area=16,242 sf 76.57% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=84 Runoff=0.69 cfs 0.050 af

Subcatchment 15S: POST 13.A Runoff Area=15,308 sf 48.14% Impervious Runoff Depth=1.26"
Tc=6.0 min CN=79 Runoff=0.50 cfs 0.037 af

Subcatchment 16S: POST 16.A Runoff Area=6,688 sf 98.52% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=97 Runoff=0.44 cfs 0.035 af

Subcatchment 17S: POST 18.A Runoff Area=7,933 sf 98.50% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=97 Runoff=0.53 cfs 0.042 af

Subcatchment 18S: POST 17.A Runoff Area=21,158 sf 76.42% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=89 Runoff=1.10 cfs 0.081 af

Subcatchment 19S: POST 24.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=0.92"
Tc=6.0 min CN=73 Runoff=1.03 cfs 0.080 af

Subcatchment 20S: POST 19.A Runoff Area=31,969 sf 74.09% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=88 Runoff=1.60 cfs 0.117 af

Subcatchment 21S: POST 20.A Runoff Area=54,029 sf 13.37% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=69 Runoff=0.90 cfs 0.075 af

Subcatchment 22S: POST 22.A Runoff Area=165,736 sf 13.02% Impervious Runoff Depth=0.40"
Flow Length=884' Tc=15.2 min CN=61 Runoff=0.82 cfs 0.128 af

Subcatchment 23S: POST 23.A Runoff Area=176,164 sf 0.00% Impervious Runoff Depth=0.97"
Tc=16.7 min CN=74 Runoff=3.11 cfs 0.328 af

Subcatchment 24S: POST 21.A Runoff Area=74,028 sf 1.61% Impervious Runoff Depth=0.40"
Tc=6.0 min UI Adjusted CN=61 Runoff=0.46 cfs 0.057 af

Subcatchment 25S: POST 1.B Runoff Area=38,793 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=106' Tc=11.1 min CN=37 Runoff=0.00 cfs 0.000 af

Subcatchment 26S: POST 10.A Runoff Area=4,620 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.31 cfs 0.025 af

Subcatchment 27S: POST 11.A Runoff Area=5,180 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.028 af

Subcatchment 28S: BACK ROOFS OF Runoff Area=13,690 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.92 cfs 0.075 af

Subcatchment 38S: POST 25.A Runoff Area=20,255 sf 62.98% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=84 Runoff=0.85 cfs 0.062 af

Subcatchment 41S: POST 26.A Runoff Area=7,581 sf 81.24% Impervious Runoff Depth=2.35"
Tc=6.0 min CN=93 Runoff=0.45 cfs 0.034 af

Pond 5P: INFIL BASIN #1 Peak Elev=312.80' Storage=17,080 cf Inflow=8.51 cfs 0.763 af
Discarded=0.30 cfs 0.450 af Primary=0.35 cfs 0.313 af Outflow=0.65 cfs 0.763 af

Pond 6P: INFIL BASIN #2 Peak Elev=316.02' Storage=18,450 cf Inflow=7.45 cfs 0.854 af
Discarded=0.60 cfs 0.778 af Primary=0.14 cfs 0.076 af Outflow=0.74 cfs 0.854 af

Pond 7P: DMH-2 Peak Elev=315.13' Inflow=6.08 cfs 0.485 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=6.08 cfs 0.485 af

Pond 8P: CB-5 Peak Elev=315.89' Inflow=1.12 cfs 0.082 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0180 '/' Outflow=1.12 cfs 0.082 af

Pond 9P: CB-6 Peak Elev=316.27' Inflow=1.07 cfs 0.082 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0375 '/' Outflow=1.07 cfs 0.082 af

Pond 10P: CB-4 Peak Elev=315.48' Inflow=1.19 cfs 0.088 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0168 '/' Outflow=1.19 cfs 0.088 af

Pond 11P: DMH-3 Peak Elev=318.06' Inflow=3.90 cfs 0.321 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0349 '/' Outflow=3.90 cfs 0.321 af

Pond 12P: DMH-4 Peak Elev=322.79' Inflow=3.05 cfs 0.259 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0481 '/' Outflow=3.05 cfs 0.259 af

Pond 13P: DMH-6 Peak Elev=335.95' Inflow=1.82 cfs 0.132 af
18.0" Round Culvert n=0.013 L=124.0' S=0.0576 '/' Outflow=1.82 cfs 0.132 af

Pond 14P: CB-8 Peak Elev=337.06' Inflow=0.76 cfs 0.056 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0571 '/' Outflow=0.76 cfs 0.056 af

Pond 15P: CB-7 Peak Elev=336.56' Inflow=1.06 cfs 0.077 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0200 '/' Outflow=1.06 cfs 0.077 af

Pond 16P: DMH-5 Peak Elev=328.71' Inflow=1.82 cfs 0.132 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0599 '/' Outflow=1.82 cfs 0.132 af

Pond 17P: DMH-15 Peak Elev=336.12' Inflow=0.94 cfs 0.072 af
12.0" Round Culvert n=0.013 L=69.0' S=0.0100 '/' Outflow=0.94 cfs 0.072 af

Pond 18P: CB-17 Peak Elev=336.25' Inflow=0.44 cfs 0.035 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=0.44 cfs 0.035 af

Pond 19P: CB-16 Peak Elev=336.27' Inflow=0.50 cfs 0.037 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=0.50 cfs 0.037 af

Pond 20P: DMH-14 Peak Elev=335.33' Inflow=0.94 cfs 0.072 af
12.0" Round Culvert n=0.013 L=88.0' S=0.0100 '/' Outflow=0.94 cfs 0.072 af

Pond 21P: DMH-13 Peak Elev=334.14' Inflow=2.09 cfs 0.159 af
18.0" Round Culvert n=0.013 L=136.0' S=0.0200 '/' Outflow=2.09 cfs 0.159 af

Pond 22P: CB-14 Peak Elev=338.69' Inflow=0.69 cfs 0.050 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0124 '/' Outflow=0.69 cfs 0.050 af

Pond 23P: CB-15 Peak Elev=338.70' Inflow=0.47 cfs 0.037 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0111 '/' Outflow=0.47 cfs 0.037 af

Pond 24P: DMH-12 Peak Elev=331.32' Inflow=2.09 cfs 0.159 af
18.0" Round Culvert n=0.013 L=99.0' S=0.0275 '/' Outflow=2.09 cfs 0.159 af

Pond 25P: DMH-11 Peak Elev=328.50' Inflow=2.09 cfs 0.159 af
18.0" Round Culvert n=0.013 L=76.0' S=0.0753 '/' Outflow=2.09 cfs 0.159 af

Pond 26P: DMH-10 Peak Elev=322.99' Inflow=3.72 cfs 0.281 af
18.0" Round Culvert n=0.013 L=174.0' S=0.0294 '/' Outflow=3.72 cfs 0.281 af

Pond 27P: CB-13 Peak Elev=323.92' Inflow=0.53 cfs 0.042 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=0.53 cfs 0.042 af

Pond 28P: CB-12 Peak Elev=324.14' Inflow=1.10 cfs 0.081 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=1.10 cfs 0.081 af

Pond 29P: DMH-9 Peak Elev=317.53' Inflow=5.33 cfs 0.398 af
24.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=5.33 cfs 0.398 af

Pond 30P: CB-11 Peak Elev=317.96' Inflow=1.60 cfs 0.117 af
18.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=1.60 cfs 0.117 af

Pond 31P: PROP. CULVERT Peak Elev=314.41' Inflow=0.59 cfs 0.093 af
15.0" Round Culvert n=0.013 L=75.8' S=0.0132 '/' Outflow=0.59 cfs 0.093 af

Pond 32P: CB-10 Peak Elev=323.30' Inflow=0.31 cfs 0.025 af
18.0" Round Culvert n=0.013 L=55.0' S=0.0049 '/' Outflow=0.31 cfs 0.025 af

Pond 33P: CB-9 Peak Elev=323.29' Inflow=0.35 cfs 0.028 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0686 '/' Outflow=0.35 cfs 0.028 af

Pond 34P: CB-18 Peak Elev=320.54' Inflow=0.85 cfs 0.062 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0600 '/' Outflow=0.85 cfs 0.062 af

Pond 35P: DMH-8 Peak Elev=323.21' Inflow=0.99 cfs 0.099 af
24.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=0.99 cfs 0.099 af

Pond 36P: DMH-16 Peak Elev=319.48' Inflow=0.85 cfs 0.062 af
12.0" Round Culvert n=0.013 L=21.0' S=0.0829 '/' Outflow=0.85 cfs 0.062 af

Pond 37P: DMH-7 Peak Elev=323.07' Inflow=1.27 cfs 0.127 af
24.0" Round Culvert n=0.013 L=78.1' S=0.0059 '/' Outflow=1.27 cfs 0.127 af

Pond 39P: CB-2 [EXISTING] Peak Elev=310.86' Inflow=1.13 cfs 0.085 af
12.0" Round Culvert n=0.013 L=49.0' S=0.0010 '/' Outflow=1.13 cfs 0.085 af

Pond 40P: CB-1 [EXISTING] Peak Elev=311.13' Inflow=0.45 cfs 0.034 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0353 '/' Outflow=0.45 cfs 0.034 af

Pond 42P: DMH-1 [EXISTING] Peak Elev=310.64' Inflow=1.13 cfs 0.085 af
12.0" Round Culvert n=0.013 L=92.0' S=0.0215 '/' Outflow=1.13 cfs 0.085 af

Pond 43P: SWALE & FIELD BASIN Peak Elev=328.07' Storage=44 cf Inflow=0.77 cfs 0.088 af
Discarded=0.02 cfs 0.015 af Primary=0.76 cfs 0.073 af Outflow=0.78 cfs 0.088 af

Link 4L: DP-A Inflow=3.66 cfs 0.686 af
Primary=3.66 cfs 0.686 af

Link 5L: DP-B Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 23.990 ac Runoff Volume = 1.928 af Average Runoff Depth = 0.96"
73.13% Pervious = 17.545 ac 26.87% Impervious = 6.446 ac

Summary for Subcatchment 1S: POST 1.A

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,679	98	Paved parking, HSG C
1,673	98	Paved parking, HSG B
2,343	98	Unconnected pavement, HSG C
343	98	Unconnected pavement, HSG B
395	61	>75% Grass cover, Good, HSG B
1,799	74	>75% Grass cover, Good, HSG C
11,232	93	Weighted Average
2,194		19.53% Pervious Area
9,038		80.47% Impervious Area
2,686		29.72% Unconnected

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

Summary for Subcatchment 2S: POST 2.A

Runoff = 1.12 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
757	98	Unconnected pavement, HSG B
8,275	98	Paved parking, HSG B
7,076	61	>75% Grass cover, Good, HSG B
23,362	87	Weighted Average
7,076		30.29% Pervious Area
16,286		69.71% Impervious Area
757		4.65% Unconnected

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

Summary for Subcatchment 5S: POST 6.A

Runoff = 0.59 cfs @ 12.42 hrs, Volume= 0.093 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
3,460	70	Woods, Good, HSG C
1,929	74	>75% Grass cover, Good, HSG C
11,762	55	Woods, Good, HSG B
43,358	61	>75% Grass cover, Good, HSG B
10,565	98	Roofs, HSG B
1,187	98	Unconnected pavement, HSG B
6,891	98	Roofs, HSG A
741	98	Unconnected pavement, HSG A
21,972	39	>75% Grass cover, Good, HSG A
101,865	63	Weighted Average
82,481		80.97% Pervious Area
19,384		19.03% Impervious Area
1,928		9.95% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0060	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
11.8	859	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	100	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	83	0.0200	10.18	31.99	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
22.1	1,092	Total			

Summary for Subcatchment 6S: POST 7.A

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.088 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
9,604	98	Paved parking, HSG B
511	98	Unconnected pavement, HSG B
3,800	61	>75% Grass cover, Good, HSG B
21,169	91	Weighted Average
3,800		17.95% Pervious Area
17,369		82.05% Impervious Area
511		2.94% Unconnected

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

Summary for Subcatchment 7S: POST 8.A

Runoff = 0.24 cfs @ 12.11 hrs, Volume= 0.022 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Adj	Description
120	98		Roofs, HSG B
1,579	96		Gravel surface, HSG B
1,003	98		Unconnected pavement, HSG B
18,403	61		>75% Grass cover, Good, HSG B
21,105	66	65	Weighted Average, UI Adjusted
19,982			94.68% Pervious Area
1,123			5.32% Impervious Area
1,003			89.31% Unconnected

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

Summary for Subcatchment 8S: POST 3.A

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
5,197	98	Paved parking, HSG B
5,197		100.00% Impervious Area

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

Summary for Subcatchment 9S: POST 4.A

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,372	98	Roofs, HSG B
150	98	Unconnected pavement, HSG B
2,521	98	Paved parking, HSG B
1,636	61	>75% Grass cover, Good, HSG B
6,091	98	Roofs, HSG A
649	98	Unconnected pavement, HSG A
6,920	98	Paved parking, HSG A
4,750	39	>75% Grass cover, Good, HSG A
25,089	84	Weighted Average
6,386		25.45% Pervious Area
18,703		74.55% Impervious Area
799		4.27% Unconnected

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

Summary for Subcatchment 10S: POST 5.A

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.056 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
338	98	Unconnected pavement, HSG B
2,578	98	Paved parking, HSG B
1,011	61	>75% Grass cover, Good, HSG B
2,418	98	Roofs, HSG A
494	98	Unconnected pavement, HSG A
3,665	98	Paved parking, HSG A
1,718	39	>75% Grass cover, Good, HSG A
14,640	89	Weighted Average
2,729		18.64% Pervious Area
11,911		81.36% Impervious Area
832		6.99% Unconnected

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

Summary for Subcatchment 11S: POST 9.A

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
7,363	98	Paved parking, HSG B
701	98	Unconnected pavement, HSG B
2,424	61	>75% Grass cover, Good, HSG B
12,906	91	Weighted Average
2,424		18.78% Pervious Area
10,482		81.22% Impervious Area
701		6.69% Unconnected

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

Summary for Subcatchment 12S: POST 12.A

Runoff = 0.77 cfs @ 12.16 hrs, Volume= 0.088 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Adj	Description
9,152	98		Roofs, HSG B
2,471	98		Unconnected pavement, HSG B
59,845	61		>75% Grass cover, Good, HSG B
4,539	98		Roofs, HSG A
1,734	98		Unconnected pavement, HSG A
18,886	39		>75% Grass cover, Good, HSG A
96,627	64	63	Weighted Average, UI Adjusted
78,731			81.48% Pervious Area
17,896			18.52% Impervious Area
4,205			23.50% Unconnected

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

Summary for Subcatchment 13S: POST 14.A

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,784	98	Roofs, HSG A
3,387	98	Paved parking, HSG A
99	39	>75% Grass cover, Good, HSG A
1,105	98	Paved parking, HSG B
634	98	Roofs, HSG B
7,009	97	Weighted Average
99		1.41% Pervious Area
6,910		98.59% Impervious Area

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

Summary for Subcatchment 14S: POST 15.A

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,135	98	Paved parking, HSG B
6,045	98	Roofs, HSG A
496	98	Unconnected pavement, HSG A
4,760	98	Paved parking, HSG A
3,806	39	>75% Grass cover, Good, HSG A
16,242	84	Weighted Average
3,806		23.43% Pervious Area
12,436		76.57% Impervious Area
496		3.99% Unconnected

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

Summary for Subcatchment 15S: POST 13.A

Runoff = 0.50 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
1,547	98	Unconnected pavement, HSG B
3,405	98	Paved parking, HSG B
7,938	61	>75% Grass cover, Good, HSG B
15,308	79	Weighted Average
7,938		51.86% Pervious Area
7,370		48.14% Impervious Area
1,547		20.99% Unconnected

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

Summary for Subcatchment 16S: POST 16.A

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
4,171	98	Paved parking, HSG B
99	61	>75% Grass cover, Good, HSG B
6,688	97	Weighted Average
99		1.48% Pervious Area
6,589		98.52% Impervious Area

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

Summary for Subcatchment 17S: POST 18.A

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
5,396	98	Paved parking, HSG B
119	61	>75% Grass cover, Good, HSG B
7,933	97	Weighted Average
119		1.50% Pervious Area
7,814		98.50% Impervious Area

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

Summary for Subcatchment 18S: POST 17.A

Runoff = 1.10 cfs @ 12.09 hrs, Volume= 0.081 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
7,406	98	Paved parking, HSG B
1,509	98	Unconnected pavement, HSG B
4,989	61	>75% Grass cover, Good, HSG B
21,158	89	Weighted Average
4,989		23.58% Pervious Area
16,169		76.42% Impervious Area
1,509		9.33% Unconnected

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

Summary for Subcatchment 19S: POST 24.A

Runoff = 1.03 cfs @ 12.10 hrs, Volume= 0.080 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
16,251	77	Woods, Good, HSG D
5,201	96	Gravel surface, HSG D
5,436	80	>75% Grass cover, Good, HSG D
6,221	30	Woods, Good, HSG A
3,810	39	>75% Grass cover, Good, HSG A
4,986	96	Gravel surface, HSG A
1,269	61	>75% Grass cover, Good, HSG B
2,270	96	Gravel surface, HSG B
45,444	73	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Subcatchment 20S: POST 19.A

Runoff = 1.60 cfs @ 12.09 hrs, Volume= 0.117 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
15,358	98	Paved parking, HSG B
1,073	98	Unconnected pavement, HSG B
8,284	61	>75% Grass cover, Good, HSG B
31,969	88	Weighted Average
8,284		25.91% Pervious Area
23,685		74.09% Impervious Area
1,073		4.53% Unconnected

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

Summary for Subcatchment 21S: POST 20.A

Runoff = 0.90 cfs @ 12.11 hrs, Volume= 0.075 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
5,596	98	Roofs, HSG B
1,630	98	Unconnected pavement, HSG B
1,749	96	Gravel surface, HSG B
40,318	61	>75% Grass cover, Good, HSG B
1,861	96	Gravel surface, HSG D
2,875	80	>75% Grass cover, Good, HSG D
54,029	69	Weighted Average
46,803		86.63% Pervious Area
7,226		13.37% Impervious Area
1,630		22.56% Unconnected

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

Summary for Subcatchment 22S: POST 22.A

Runoff = 0.82 cfs @ 12.32 hrs, Volume= 0.128 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
6,845	98	Roofs, HSG A
819	98	Unconnected pavement, HSG A
5,708	30	Woods, Good, HSG A
30,256	39	>75% Grass cover, Good, HSG A
11,252	98	Roofs, HSG B
2,667	98	Unconnected pavement, HSG B
88,631	61	>75% Grass cover, Good, HSG B
14,680	55	Woods, Good, HSG B
2,251	96	Gravel surface, HSG B
831	96	Gravel surface, HSG D
1,334	80	>75% Grass cover, Good, HSG D
462	77	Woods, Good, HSG D
165,736	61	Weighted Average
144,153		86.98% Pervious Area
21,583		13.02% Impervious Area
3,486		16.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.7	348	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	486	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	884	Total			

Summary for Subcatchment 23S: POST 23.A

Runoff = 3.11 cfs @ 12.25 hrs, Volume= 0.328 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
24,614	55	Woods, Good, HSG B
1,206	96	Gravel surface, HSG D
1,599	80	>75% Grass cover, Good, HSG D
148,745	77	Woods, Good, HSG D
176,164	74	Weighted Average
176,164		100.00% Pervious Area

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

Summary for Subcatchment 24S: POST 21.A

Runoff = 0.46 cfs @ 12.14 hrs, Volume= 0.057 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Adj	Description
1,194	98		Unconnected pavement, HSG B
248	96		Gravel surface, HSG B
72,586	61		>75% Grass cover, Good, HSG B
74,028	62	61	Weighted Average, UI Adjusted
72,834			98.39% Pervious Area
1,194			1.61% Impervious Area
1,194			100.00% Unconnected

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

Summary for Subcatchment 25S: POST 1.B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,624	55	Woods, Good, HSG B
176	61	>75% Grass cover, Good, HSG B
24,732	30	Woods, Good, HSG A
6,261	39	>75% Grass cover, Good, HSG A
38,793	37	Weighted Average
38,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	56	0.2700	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.1	106	Total			

Summary for Subcatchment 26S: POST 10.A

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,620	98	Paved parking, HSG B
4,620		100.00% Impervious Area

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

Summary for Subcatchment 27S: POST 11.A

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
5,180	98	Paved parking, HSG B
5,180		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK ROOFS OF UNITS 1-10

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
13,690	98	Roofs, HSG B
13,690		100.00% Impervious Area

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

Summary for Subcatchment 38S: POST 25.A

Runoff = 0.85 cfs @ 12.09 hrs, Volume= 0.062 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,914	98	Roofs, HSG A
10,842	98	Unconnected pavement, HSG B
7,499	61	>75% Grass cover, Good, HSG B
20,255	84	Weighted Average
7,499		37.02% Pervious Area
12,756		62.98% Impervious Area
10,842		85.00% Unconnected

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

Summary for Subcatchment 41S: POST 26.A

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,658	98	Paved parking, HSG C
1,501	98	Paved parking, HSG B
352	61	>75% Grass cover, Good, HSG B
1,070	74	>75% Grass cover, Good, HSG C
7,581	93	Weighted Average
1,422		18.76% Pervious Area
6,159		81.24% Impervious Area

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

Summary for Pond 5P: INFIL BASIN #1

Inflow Area = 8.395 ac, 42.27% Impervious, Inflow Depth = 1.09" for 2-year event
Inflow = 8.51 cfs @ 12.10 hrs, Volume= 0.763 af
Outflow = 0.65 cfs @ 14.44 hrs, Volume= 0.763 af, Atten= 92%, Lag= 140.7 min
Discarded = 0.30 cfs @ 14.44 hrs, Volume= 0.450 af
Primary = 0.35 cfs @ 14.44 hrs, Volume= 0.313 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 312.80' @ 14.44 hrs Surf.Area= 6,219 sf Storage= 17,080 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 386.4 min (1,212.2 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	309.00'	42,092 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
309.00	2,439	200.1	0	0	2,439
310.00	3,839	242.8	3,113	3,113	3,960
312.00	5,491	281.0	9,281	12,394	5,636
314.00	7,393	320.0	12,837	25,230	7,596
316.00	9,513	355.0	16,862	42,092	9,594

Device	Routing	Invert	Outlet Devices
#1	Primary	309.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 309.00' / 308.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	309.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 306.73'
#3	Primary	315.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	315.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	310.45'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.30 cfs @ 14.44 hrs HW=312.80' (Free Discharge)
└─**2=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=0.35 cfs @ 14.44 hrs HW=312.80' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.35 cfs of 19.99 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
│ └─**5=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.18 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: INFIL BASIN #2

Inflow Area =	10.289 ac, 22.88% Impervious, Inflow Depth = 1.00" for 2-year event			
Inflow =	7.45 cfs @ 12.12 hrs, Volume=	0.854 af		
Outflow =	0.74 cfs @ 14.79 hrs, Volume=	0.854 af, Atten= 90%, Lag= 160.1 min		
Discarded =	0.60 cfs @ 14.79 hrs, Volume=	0.778 af		
Primary =	0.14 cfs @ 14.79 hrs, Volume=	0.076 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.02' @ 14.79 hrs Surf.Area= 18,103 sf Storage= 18,450 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 375.9 min (1,226.3 - 850.4)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	118,862 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
314.00	2,513	223.0	0	0	2,513
316.00	17,939	667.0	18,111	18,111	33,971
318.00	39,591	937.0	56,120	74,231	68,472
319.00	49,868	1,019.0	44,631	118,862	81,273

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 312.60' S= 0.0280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	314.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 312.00'
#3	Primary	317.80'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	317.40'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	315.55'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.60 cfs @ 14.79 hrs HW=316.02' (Free Discharge)
└─**2=Exfiltration** (Controls 0.60 cfs)

Primary OutFlow Max=0.14 cfs @ 14.79 hrs HW=316.02' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.14 cfs of 12.05 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
│ └─**5=Orifice/Grate** (Orifice Controls 0.14 cfs @ 2.82 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: DMH-2

Inflow Area =	4.772 ac, 49.56% Impervious, Inflow Depth = 1.22" for 2-year event			
Inflow =	6.08 cfs @ 12.10 hrs, Volume=	0.485 af		
Outflow =	6.08 cfs @ 12.10 hrs, Volume=	0.485 af, Atten= 0%, Lag= 0.0 min		
Primary =	6.08 cfs @ 12.10 hrs, Volume=	0.485 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.13' @ 12.10 hrs
Flood Elev= 319.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.90'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.90' / 312.70' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.06 cfs @ 12.10 hrs HW=315.13' TW=311.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.06 cfs @ 2.98 fps)

Summary for Pond 8P: CB-5

Inflow Area =	0.536 ac, 69.71% Impervious, Inflow Depth = 1.83" for 2-year event				
Inflow =	1.12 cfs @	12.09 hrs,	Volume=	0.082 af	
Outflow =	1.12 cfs @	12.09 hrs,	Volume=	0.082 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.12 cfs @	12.09 hrs,	Volume=	0.082 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.89' @ 12.09 hrs
Flood Elev= 319.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.26'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.26' / 314.90' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.09 hrs HW=315.89' TW=315.12' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.10 cfs @ 2.13 fps)

Summary for Pond 9P: CB-6

Inflow Area =	0.416 ac, 86.61% Impervious, Inflow Depth = 2.37" for 2-year event				
Inflow =	1.07 cfs @	12.09 hrs,	Volume=	0.082 af	
Outflow =	1.07 cfs @	12.09 hrs,	Volume=	0.082 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.07 cfs @	12.09 hrs,	Volume=	0.082 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.27' @ 12.09 hrs
Flood Elev= 319.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.65'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.65' / 314.90' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.09 hrs HW=316.26' TW=315.11' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.05 cfs @ 2.10 fps)

Summary for Pond 10P: CB-4

Inflow Area =	0.486 ac, 82.05% Impervious, Inflow Depth = 2.16" for 2-year event				
Inflow =	1.19 cfs @	12.09 hrs,	Volume=	0.088 af	
Outflow =	1.19 cfs @	12.09 hrs,	Volume=	0.088 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.19 cfs @	12.09 hrs,	Volume=	0.088 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.48' @ 12.09 hrs
Flood Elev= 318.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.82'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.82' / 314.40' S= 0.0168 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.16 cfs @ 12.09 hrs HW=315.47' TW=311.03' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.16 cfs @ 2.16 fps)

Summary for Pond 11P: DMH-3

Inflow Area =	3.820 ac, 42.71% Impervious, Inflow Depth = 1.01" for 2-year event			
Inflow =	3.90 cfs @ 12.10 hrs, Volume=	0.321 af		
Outflow =	3.90 cfs @ 12.10 hrs, Volume=	0.321 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.90 cfs @ 12.10 hrs, Volume=	0.321 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.06' @ 12.10 hrs
Flood Elev= 321.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.10'	**24.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.10' / 314.90' S= 0.0349 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.86 cfs @ 12.10 hrs HW=318.05' TW=315.13' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.86 cfs @ 2.62 fps)

Summary for Pond 12P: DMH-4

Inflow Area =	3.355 ac, 39.90% Impervious, Inflow Depth = 0.93" for 2-year event			
Inflow =	3.05 cfs @ 12.11 hrs, Volume=	0.259 af		
Outflow =	3.05 cfs @ 12.11 hrs, Volume=	0.259 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.05 cfs @ 12.11 hrs, Volume=	0.259 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 322.79' @ 12.11 hrs
Flood Elev= 326.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.96'	**24.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.96' / 317.20' S= 0.0481 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.00 cfs @ 12.11 hrs HW=322.79' TW=318.05' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.00 cfs @ 2.45 fps)

Summary for Pond 13P: DMH-6

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 1.74" for 2-year event				
Inflow =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af			
Outflow =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.95' @ 12.09 hrs
Flood Elev= 340.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.25'	**18.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.25' / 328.11' S= 0.0576 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.79 cfs @ 12.09 hrs HW=335.94' TW=328.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.79 cfs @ 2.24 fps)

Summary for Pond 14P: CB-8

Inflow Area =	0.336 ac, 81.36% Impervious, Inflow Depth = 1.99" for 2-year event				
Inflow =	0.76 cfs @ 12.09 hrs, Volume=	0.056 af			
Outflow =	0.76 cfs @ 12.09 hrs, Volume=	0.056 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.76 cfs @ 12.09 hrs, Volume=	0.056 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.06' @ 12.09 hrs
Flood Elev= 340.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.55'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.55' / 335.75' S= 0.0571 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 12.09 hrs HW=337.05' TW=335.94' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.75 cfs @ 1.90 fps)

Summary for Pond 15P: CB-7

Inflow Area =	0.576 ac, 74.55% Impervious, Inflow Depth = 1.60" for 2-year event				
Inflow =	1.06 cfs @ 12.09 hrs, Volume=	0.077 af			
Outflow =	1.06 cfs @ 12.09 hrs, Volume=	0.077 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.06 cfs @ 12.09 hrs, Volume=	0.077 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.56' @ 12.09 hrs
Flood Elev= 339.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.95'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.95' / 335.75' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.09 hrs HW=336.56' TW=335.94' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.04 cfs @ 2.09 fps)

Summary for Pond 16P: DMH-5

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 1.74" for 2-year event			
Inflow =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af		
Outflow =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.82 cfs @ 12.09 hrs, Volume=	0.132 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.71' @ 12.09 hrs
Flood Elev= 332.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.01'	**18.0" Round Culvert** L= 91.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 328.01' / 322.56' S= 0.0599 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.79 cfs @ 12.09 hrs HW=328.70' TW=322.78' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.79 cfs @ 2.24 fps)

Summary for Pond 17P: DMH-15

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 1.72" for 2-year event			
Inflow =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af		
Outflow =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.12' @ 12.09 hrs
Flood Elev= 340.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.55'	**12.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.55' / 334.86' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.93 cfs @ 12.09 hrs HW=336.12' TW=335.33' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.93 cfs @ 2.02 fps)

Summary for Pond 18P: CB-17

Inflow Area =	0.154 ac, 98.52% Impervious, Inflow Depth = 2.76" for 2-year event				
Inflow =	0.44 cfs @ 12.09 hrs, Volume=	0.035 af			
Outflow =	0.44 cfs @ 12.09 hrs, Volume=	0.035 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.44 cfs @ 12.09 hrs, Volume=	0.035 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.25' @ 12.11 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.09 hrs HW=336.23' TW=336.11' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.36 cfs @ 1.70 fps)

Summary for Pond 19P: CB-16

Inflow Area =	0.351 ac, 48.14% Impervious, Inflow Depth = 1.26" for 2-year event				
Inflow =	0.50 cfs @ 12.10 hrs, Volume=	0.037 af			
Outflow =	0.50 cfs @ 12.10 hrs, Volume=	0.037 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.50 cfs @ 12.10 hrs, Volume=	0.037 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.27' @ 12.12 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.10 hrs HW=336.26' TW=336.12' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.44 cfs @ 1.88 fps)

Summary for Pond 20P: DMH-14

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 1.72" for 2-year event				
Inflow =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af			
Outflow =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.94 cfs @ 12.09 hrs, Volume=	0.072 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.33' @ 12.09 hrs
Flood Elev= 341.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.76'	**12.0" Round Culvert** L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.76' / 333.88' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.93 cfs @ 12.09 hrs HW=335.33' TW=334.13' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.93 cfs @ 2.02 fps)

Summary for Pond 21P: DMH-13

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 1.84" for 2-year event				
Inflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	
Outflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 334.14' @ 12.09 hrs
Flood Elev= 342.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.38'	**18.0" Round Culvert** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.38' / 330.66' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.05 cfs @ 12.09 hrs HW=334.13' TW=331.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.05 cfs @ 2.33 fps)

Summary for Pond 22P: CB-14

Inflow Area =	0.373 ac, 76.57% Impervious, Inflow Depth = 1.60" for 2-year event				
Inflow =	0.69 cfs @	12.09 hrs,	Volume=	0.050 af	
Outflow =	0.69 cfs @	12.09 hrs,	Volume=	0.050 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.69 cfs @	12.09 hrs,	Volume=	0.050 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.69' @ 12.09 hrs
Flood Elev= 342.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.21'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.21' / 338.00' S= 0.0124 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.09 hrs HW=338.68' TW=334.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.67 cfs @ 1.85 fps)

Summary for Pond 23P: CB-15

Inflow Area =	0.161 ac, 98.59% Impervious, Inflow Depth = 2.76" for 2-year event				
Inflow =	0.47 cfs @	12.09 hrs,	Volume=	0.037 af	
Outflow =	0.47 cfs @	12.09 hrs,	Volume=	0.037 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.47 cfs @	12.09 hrs,	Volume=	0.037 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.70' @ 12.09 hrs
Flood Elev= 342.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.31'	**12.0" Round Culvert** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.31' / 338.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.09 hrs HW=338.69' TW=334.12' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.45 cfs @ 1.66 fps)

Summary for Pond 24P: DMH-12

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 1.84" for 2-year event				
Inflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	
Outflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 331.32' @ 12.09 hrs
Flood Elev= 338.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	330.56'	**18.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.56' / 327.84' S= 0.0275 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.05 cfs @ 12.09 hrs HW=331.31' TW=328.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.05 cfs @ 2.33 fps)

Summary for Pond 25P: DMH-11

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 1.84" for 2-year event				
Inflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	
Outflow =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.09 cfs @	12.09 hrs,	Volume=	0.159 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.50' @ 12.09 hrs
Flood Elev= 332.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	327.74'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 327.74' / 322.02' S= 0.0753 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.05 cfs @ 12.09 hrs HW=328.49' TW=322.97' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.05 cfs @ 2.33 fps)

Summary for Pond 26P: DMH-10

Inflow Area =	1.707 ac, 77.06% Impervious, Inflow Depth = 1.98" for 2-year event				
Inflow =	3.72 cfs @	12.09 hrs, Volume=	0.281 af		
Outflow =	3.72 cfs @	12.09 hrs, Volume=	0.281 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.72 cfs @	12.09 hrs, Volume=	0.281 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 322.99' @ 12.09 hrs
Flood Elev= 327.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.92'	**18.0" Round Culvert** L= 174.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.92' / 316.81' S= 0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.64 cfs @ 12.09 hrs HW=322.97' TW=317.51' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.64 cfs @ 2.76 fps)

Summary for Pond 27P: CB-13

Inflow Area =	0.182 ac, 98.50% Impervious, Inflow Depth = 2.76" for 2-year event				
Inflow =	0.53 cfs @	12.09 hrs, Volume=	0.042 af		
Outflow =	0.53 cfs @	12.09 hrs, Volume=	0.042 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.53 cfs @	12.09 hrs, Volume=	0.042 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.92' @ 12.09 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=323.92' TW=322.97' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.51 cfs @ 1.71 fps)

Summary for Pond 28P: CB-12

Inflow Area =	0.486 ac, 76.42% Impervious, Inflow Depth = 1.99" for 2-year event				
Inflow =	1.10 cfs @ 12.09 hrs, Volume=	0.081 af			
Outflow =	1.10 cfs @ 12.09 hrs, Volume=	0.081 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.10 cfs @ 12.09 hrs, Volume=	0.081 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.14' @ 12.09 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.09 hrs HW=324.13' TW=322.97' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.08 cfs @ 2.11 fps)

Summary for Pond 29P: DMH-9

Inflow Area =	2.440 ac, 76.17% Impervious, Inflow Depth = 1.96" for 2-year event				
Inflow =	5.33 cfs @ 12.09 hrs, Volume=	0.398 af			
Outflow =	5.33 cfs @ 12.09 hrs, Volume=	0.398 af, Atten= 0%, Lag= 0.0 min			
Primary =	5.33 cfs @ 12.09 hrs, Volume=	0.398 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.53' @ 12.09 hrs
Flood Elev= 322.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	316.31'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 316.31' / 316.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.21 cfs @ 12.09 hrs HW=317.51' TW=315.05' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.21 cfs @ 3.79 fps)

Summary for Pond 30P: CB-11

Inflow Area =	0.734 ac, 74.09% Impervious, Inflow Depth = 1.91" for 2-year event				
Inflow =	1.60 cfs @ 12.09 hrs, Volume=	0.117 af			
Outflow =	1.60 cfs @ 12.09 hrs, Volume=	0.117 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.60 cfs @ 12.09 hrs, Volume=	0.117 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.96' @ 12.10 hrs
Flood Elev= 321.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.30'	**18.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.30' / 316.81' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.47 cfs @ 12.09 hrs HW=317.95' TW=317.51' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.47 cfs @ 2.94 fps)

Summary for Pond 31P: PROP. CULVERT

Inflow Area =	2.338 ac, 19.03% Impervious, Inflow Depth = 0.48" for 2-year event				
Inflow =	0.59 cfs @	12.42 hrs,	Volume=	0.093 af	
Outflow =	0.59 cfs @	12.42 hrs,	Volume=	0.093 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.59 cfs @	12.42 hrs,	Volume=	0.093 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 314.41' @ 12.42 hrs
Flood Elev= 318.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**15.0" Round Culvert** L= 75.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 313.00' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.59 cfs @ 12.42 hrs HW=314.41' TW=312.17' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.59 cfs @ 1.71 fps)

Summary for Pond 32P: CB-10

Inflow Area =	0.106 ac,100.00% Impervious, Inflow Depth = 2.87" for 2-year event				
Inflow =	0.31 cfs @	12.09 hrs,	Volume=	0.025 af	
Outflow =	0.31 cfs @	12.09 hrs,	Volume=	0.025 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.31 cfs @	12.09 hrs,	Volume=	0.025 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.30' @ 12.13 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.73' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.25 cfs @ 12.09 hrs HW=323.30' TW=323.09' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.25 cfs @ 1.53 fps)

Summary for Pond 33P: CB-9

Inflow Area = 0.119 ac,100.00% Impervious, Inflow Depth = 2.87" for 2-year event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.29' @ 12.09 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.52' S= 0.0686 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=323.29' TW=323.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.34 cfs @ 1.44 fps)

Summary for Pond 34P: CB-18

Inflow Area = 0.465 ac, 62.98% Impervious, Inflow Depth = 1.60" for 2-year event
Inflow = 0.85 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.85 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.09 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 320.54' @ 12.09 hrs
Flood Elev= 325.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.00' / 319.04' S= 0.0600 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.09 hrs HW=320.53' TW=319.47' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.84 cfs @ 1.97 fps)

Summary for Pond 35P: DMH-8

Inflow Area = 2.324 ac, 22.24% Impervious, Inflow Depth = 0.51" for 2-year event
Inflow = 0.99 cfs @ 12.15 hrs, Volume= 0.099 af
Outflow = 0.99 cfs @ 12.15 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.15 hrs, Volume= 0.099 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.21' @ 12.18 hrs
Flood Elev= 327.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.63'	**24.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.63' / 322.52' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=0.88 cfs @ 12.15 hrs HW=323.20' TW=323.07' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.88 cfs @ 1.80 fps)

Summary for Pond 36P: DMH-16

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 1.60" for 2-year event			
Inflow =	0.85 cfs @ 12.09 hrs, Volume=	0.062 af		
Outflow =	0.85 cfs @ 12.09 hrs, Volume=	0.062 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.85 cfs @ 12.09 hrs, Volume=	0.062 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.48' @ 12.09 hrs
Flood Elev= 326.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.94'	**12.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 318.94' / 317.20' S= 0.0829 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.09 hrs HW=319.47' TW=318.04' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.84 cfs @ 1.97 fps)

Summary for Pond 37P: DMH-7

Inflow Area =	2.443 ac, 26.02% Impervious, Inflow Depth = 0.62" for 2-year event			
Inflow =	1.27 cfs @ 12.13 hrs, Volume=	0.127 af		
Outflow =	1.27 cfs @ 12.13 hrs, Volume=	0.127 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.27 cfs @ 12.13 hrs, Volume=	0.127 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.07' @ 12.15 hrs
Flood Elev= 327.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.42'	**24.0" Round Culvert** L= 78.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.42' / 321.96' S= 0.0059 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=1.26 cfs @ 12.13 hrs HW=323.06' TW=322.76' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.26 cfs @ 2.19 fps)

Summary for Pond 39P: CB-2 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 2.35" for 2-year event				
Inflow =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af			
Outflow =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 310.86' @ 12.10 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.05'	**12.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.05' / 310.00' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.09 hrs HW=310.85' TW=310.63' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.04 cfs @ 2.12 fps)

Summary for Pond 40P: CB-1 [EXISTING]

Inflow Area =	0.174 ac, 81.24% Impervious, Inflow Depth = 2.35" for 2-year event				
Inflow =	0.45 cfs @ 12.09 hrs, Volume=	0.034 af			
Outflow =	0.45 cfs @ 12.09 hrs, Volume=	0.034 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.45 cfs @ 12.09 hrs, Volume=	0.034 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.13' @ 12.09 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.75'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.75' / 310.15' S= 0.0353 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.09 hrs HW=311.13' TW=310.85' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.44 cfs @ 1.65 fps)

Summary for Pond 42P: DMH-1 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 2.35" for 2-year event				
Inflow =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af			
Outflow =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.13 cfs @ 12.09 hrs, Volume=	0.085 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 310.64' @ 12.09 hrs
Flood Elev= 315.33'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**12.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.00' / 308.02' S= 0.0215 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.09 hrs HW=310.63' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.10 cfs @ 2.13 fps)

Summary for Pond 43P: SWALE & FIELD BASIN

Inflow Area =	2.218 ac, 18.52% Impervious, Inflow Depth = 0.48" for 2-year event				
Inflow =	0.77 cfs @	12.16 hrs,	Volume=	0.088 af	
Outflow =	0.78 cfs @	12.17 hrs,	Volume=	0.088 af,	Atten= 0%, Lag= 0.6 min
Discarded =	0.02 cfs @	12.17 hrs,	Volume=	0.015 af	
Primary =	0.76 cfs @	12.17 hrs,	Volume=	0.073 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.07' @ 12.17 hrs Surf.Area= 663 sf Storage= 44 cf

Plug-Flow detention time= 1.5 min calculated for 0.088 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (911.6 - 910.1)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	1,150 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	600	119.4	0	0	600
329.00	1,808	444.3	1,150	1,150	15,177

Device	Routing	Invert	Outlet Devices
#1	Discarded	328.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 320.50'
#2	Primary	324.00'	**18.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 324.00' / 322.73' S= 0.0249 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	328.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.02 cfs @ 12.17 hrs HW=328.07' (Free Discharge)
└**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.74 cfs @ 12.17 hrs HW=328.07' TW=323.20' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.74 cfs of 12.24 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.74 cfs @ 0.86 fps)

Summary for Link 4L: DP-A

Inflow Area = 23.100 ac, 27.90% Impervious, Inflow Depth = 0.36" for 2-year event
Inflow = 3.66 cfs @ 12.11 hrs, Volume= 0.686 af
Primary = 3.66 cfs @ 12.11 hrs, Volume= 0.686 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 0.891 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: POST 1.A Runoff Area=11,232 sf 80.47% Impervious Runoff Depth=3.81"
Tc=6.0 min CN=93 Runoff=1.06 cfs 0.082 af

Subcatchment 2S: POST 2.A Runoff Area=23,362 sf 69.71% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=87 Runoff=1.94 cfs 0.143 af

Subcatchment 5S: POST 6.A Runoff Area=101,865 sf 19.03% Impervious Runoff Depth=1.26"
Flow Length=1,092' Tc=22.1 min CN=63 Runoff=2.02 cfs 0.246 af

Subcatchment 6S: POST 7.A Runoff Area=21,169 sf 82.05% Impervious Runoff Depth=3.59"
Tc=6.0 min CN=91 Runoff=1.93 cfs 0.146 af

Subcatchment 7S: POST 8.A Runoff Area=21,105 sf 5.32% Impervious Runoff Depth=1.39"
Tc=6.0 min UI Adjusted CN=65 Runoff=0.73 cfs 0.056 af

Subcatchment 8S: POST 3.A Runoff Area=5,197 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af

Subcatchment 9S: POST 4.A Runoff Area=25,089 sf 74.55% Impervious Runoff Depth=2.91"
Tc=6.0 min CN=84 Runoff=1.91 cfs 0.140 af

Subcatchment 10S: POST 5.A Runoff Area=14,640 sf 81.36% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=89 Runoff=1.27 cfs 0.095 af

Subcatchment 11S: POST 9.A Runoff Area=12,906 sf 81.22% Impervious Runoff Depth=3.59"
Tc=6.0 min CN=91 Runoff=1.17 cfs 0.089 af

Subcatchment 12S: POST 12.A Runoff Area=96,627 sf 18.52% Impervious Runoff Depth=1.26"
Tc=8.0 min UI Adjusted CN=63 Runoff=2.71 cfs 0.233 af

Subcatchment 13S: POST 14.A Runoff Area=7,009 sf 98.59% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=97 Runoff=0.70 cfs 0.057 af

Subcatchment 14S: POST 15.A Runoff Area=16,242 sf 76.57% Impervious Runoff Depth=2.91"
Tc=6.0 min CN=84 Runoff=1.24 cfs 0.090 af

Subcatchment 15S: POST 13.A Runoff Area=15,308 sf 48.14% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=79 Runoff=0.99 cfs 0.072 af

Subcatchment 16S: POST 16.A Runoff Area=6,688 sf 98.52% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=97 Runoff=0.67 cfs 0.054 af

Subcatchment 17S: POST 18.A Runoff Area=7,933 sf 98.50% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=97 Runoff=0.79 cfs 0.064 af

Subcatchment 18S: POST 17.A Runoff Area=21,158 sf 76.42% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=89 Runoff=1.84 cfs 0.137 af

Subcatchment 19S: POST 24.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=1.97"
Tc=6.0 min CN=73 Runoff=2.34 cfs 0.171 af

Subcatchment 20S: POST 19.A Runoff Area=31,969 sf 74.09% Impervious Runoff Depth=3.29"
Tc=6.0 min CN=88 Runoff=2.72 cfs 0.201 af

Subcatchment 21S: POST 20.A Runoff Area=54,029 sf 13.37% Impervious Runoff Depth=1.67"
Tc=6.0 min CN=69 Runoff=2.31 cfs 0.173 af

Subcatchment 22S: POST 22.A Runoff Area=165,736 sf 13.02% Impervious Runoff Depth=1.14"
Flow Length=884' Tc=15.2 min CN=61 Runoff=3.30 cfs 0.360 af

Subcatchment 23S: POST 23.A Runoff Area=176,164 sf 0.00% Impervious Runoff Depth=2.05"
Tc=16.7 min CN=74 Runoff=6.93 cfs 0.691 af

Subcatchment 24S: POST 21.A Runoff Area=74,028 sf 1.61% Impervious Runoff Depth=1.14"
Tc=6.0 min UI Adjusted CN=61 Runoff=1.97 cfs 0.161 af

Subcatchment 25S: POST 1.B Runoff Area=38,793 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=106' Tc=11.1 min CN=37 Runoff=0.01 cfs 0.006 af

Subcatchment 26S: POST 10.A Runoff Area=4,620 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.039 af

Subcatchment 27S: POST 11.A Runoff Area=5,180 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af

Subcatchment 28S: BACK ROOFS OF Runoff Area=13,690 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=1.38 cfs 0.114 af

Subcatchment 38S: POST 25.A Runoff Area=20,255 sf 62.98% Impervious Runoff Depth=2.91"
Tc=6.0 min CN=84 Runoff=1.54 cfs 0.113 af

Subcatchment 41S: POST 26.A Runoff Area=7,581 sf 81.24% Impervious Runoff Depth=3.81"
Tc=6.0 min CN=93 Runoff=0.72 cfs 0.055 af

Pond 5P: INFIL BASIN #1 Peak Elev=315.07' Storage=33,723 cf Inflow=16.62 cfs 1.483 af
Discarded=0.47 cfs 0.760 af Primary=1.47 cfs 0.723 af Outflow=1.94 cfs 1.483 af

Pond 6P: INFIL BASIN #2 Peak Elev=317.03' Storage=41,465 cf Inflow=15.66 cfs 1.727 af
Discarded=1.01 cfs 1.442 af Primary=0.27 cfs 0.286 af Outflow=1.28 cfs 1.727 af

Pond 7P: DMH-2 Peak Elev=315.87' Inflow=11.80 cfs 0.921 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=11.80 cfs 0.921 af

Pond 8P: CB-5 Peak Elev=316.18' Inflow=1.94 cfs 0.143 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0180 '/' Outflow=1.94 cfs 0.143 af

Pond 9P: CB-6 Peak Elev=316.48' Inflow=1.70 cfs 0.132 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0375 '/' Outflow=1.70 cfs 0.132 af

Pond 10P: CB-4 Peak Elev=315.73' Inflow=1.93 cfs 0.146 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0168 '/' Outflow=1.93 cfs 0.146 af

Pond 11P: DMH-3 Peak Elev=318.58' Inflow=8.19 cfs 0.646 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0349 '/' Outflow=8.19 cfs 0.646 af

Pond 12P: DMH-4 Peak Elev=323.26' Inflow=6.67 cfs 0.534 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0481 '/' Outflow=6.67 cfs 0.534 af

Pond 13P: DMH-6 Peak Elev=336.22' Inflow=3.19 cfs 0.234 af
18.0" Round Culvert n=0.013 L=124.0' S=0.0576 '/' Outflow=3.19 cfs 0.234 af

Pond 14P: CB-8 Peak Elev=337.23' Inflow=1.27 cfs 0.095 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0571 '/' Outflow=1.27 cfs 0.095 af

Pond 15P: CB-7 Peak Elev=336.86' Inflow=1.91 cfs 0.140 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0200 '/' Outflow=1.91 cfs 0.140 af

Pond 16P: DMH-5 Peak Elev=328.98' Inflow=3.19 cfs 0.234 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0599 '/' Outflow=3.19 cfs 0.234 af

Pond 17P: DMH-15 Peak Elev=336.36' Inflow=1.66 cfs 0.126 af
12.0" Round Culvert n=0.013 L=69.0' S=0.0100 '/' Outflow=1.66 cfs 0.126 af

Pond 18P: CB-17 Peak Elev=336.45' Inflow=0.67 cfs 0.054 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=0.67 cfs 0.054 af

Pond 19P: CB-16 Peak Elev=336.53' Inflow=0.99 cfs 0.072 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=0.99 cfs 0.072 af

Pond 20P: DMH-14 Peak Elev=335.57' Inflow=1.66 cfs 0.126 af
12.0" Round Culvert n=0.013 L=88.0' S=0.0100 '/' Outflow=1.66 cfs 0.126 af

Pond 21P: DMH-13 Peak Elev=334.42' Inflow=3.60 cfs 0.274 af
18.0" Round Culvert n=0.013 L=136.0' S=0.0200 '/' Outflow=3.60 cfs 0.274 af

Pond 22P: CB-14 Peak Elev=338.88' Inflow=1.24 cfs 0.090 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0124 '/' Outflow=1.24 cfs 0.090 af

Pond 23P: CB-15 Peak Elev=338.79' Inflow=0.70 cfs 0.057 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0111 '/' Outflow=0.70 cfs 0.057 af

Pond 24P: DMH-12 Peak Elev=331.60' Inflow=3.60 cfs 0.274 af
18.0" Round Culvert n=0.013 L=99.0' S=0.0275 '/' Outflow=3.60 cfs 0.274 af

Pond 25P: DMH-11 Peak Elev=328.78' Inflow=3.60 cfs 0.274 af
18.0" Round Culvert n=0.013 L=76.0' S=0.0753 '/' Outflow=3.60 cfs 0.274 af

Pond 26P: DMH-10 Peak Elev=323.53' Inflow=6.24 cfs 0.475 af
18.0" Round Culvert n=0.013 L=174.0' S=0.0294 '/' Outflow=6.24 cfs 0.475 af

Pond 27P: CB-13 Peak Elev=324.03' Inflow=0.79 cfs 0.064 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=0.79 cfs 0.064 af

Pond 28P: CB-12 Peak Elev=324.39' Inflow=1.84 cfs 0.137 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=1.84 cfs 0.137 af

Pond 29P: DMH-9 Peak Elev=317.99' Inflow=8.95 cfs 0.677 af
24.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=8.95 cfs 0.677 af

Pond 30P: CB-11 Peak Elev=318.31' Inflow=2.72 cfs 0.201 af
18.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=2.72 cfs 0.201 af

Pond 31P: PROP. CULVERT Peak Elev=315.09' Inflow=2.02 cfs 0.246 af
15.0" Round Culvert n=0.013 L=75.8' S=0.0132 '/' Outflow=2.02 cfs 0.246 af

Pond 32P: CB-10 Peak Elev=323.76' Inflow=0.47 cfs 0.039 af
18.0" Round Culvert n=0.013 L=55.0' S=0.0049 '/' Outflow=0.47 cfs 0.039 af

Pond 33P: CB-9 Peak Elev=323.60' Inflow=0.52 cfs 0.043 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0686 '/' Outflow=0.52 cfs 0.043 af

Pond 34P: CB-18 Peak Elev=320.77' Inflow=1.54 cfs 0.113 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0600 '/' Outflow=1.54 cfs 0.113 af

Pond 35P: DMH-8 Peak Elev=323.75' Inflow=3.09 cfs 0.256 af
24.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=3.09 cfs 0.256 af

Pond 36P: DMH-16 Peak Elev=319.71' Inflow=1.54 cfs 0.113 af
12.0" Round Culvert n=0.013 L=21.0' S=0.0829 '/' Outflow=1.54 cfs 0.113 af

Pond 37P: DMH-7 Peak Elev=323.59' Inflow=3.58 cfs 0.299 af
24.0" Round Culvert n=0.013 L=78.1' S=0.0059 '/' Outflow=3.58 cfs 0.299 af

Pond 39P: CB-2 [EXISTING] Peak Elev=311.16' Inflow=1.78 cfs 0.137 af
12.0" Round Culvert n=0.013 L=49.0' S=0.0010 '/' Outflow=1.78 cfs 0.137 af

Pond 40P: CB-1 [EXISTING] Peak Elev=311.30' Inflow=0.72 cfs 0.055 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0353 '/' Outflow=0.72 cfs 0.055 af

Pond 42P: DMH-1 [EXISTING] Peak Elev=310.86' Inflow=1.78 cfs 0.137 af
12.0" Round Culvert n=0.013 L=92.0' S=0.0215 '/' Outflow=1.78 cfs 0.137 af

Pond 43P: SWALE & FIELD BASIN Peak Elev=328.16' Storage=110 cf Inflow=2.71 cfs 0.233 af
Discarded=0.02 cfs 0.016 af Primary=2.70 cfs 0.217 af Outflow=2.72 cfs 0.233 af

Link 4L: DP-A Inflow=8.78 cfs 1.651 af
Primary=8.78 cfs 1.651 af

Link 5L: DP-B Inflow=0.01 cfs 0.006 af
Primary=0.01 cfs 0.006 af

Total Runoff Area = 23.990 ac Runoff Volume = 3.874 af Average Runoff Depth = 1.94"
73.13% Pervious = 17.545 ac 26.87% Impervious = 6.446 ac

Summary for Subcatchment 1S: POST 1.A

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
4,679	98	Paved parking, HSG C
1,673	98	Paved parking, HSG B
2,343	98	Unconnected pavement, HSG C
343	98	Unconnected pavement, HSG B
395	61	>75% Grass cover, Good, HSG B
1,799	74	>75% Grass cover, Good, HSG C
11,232	93	Weighted Average
2,194		19.53% Pervious Area
9,038		80.47% Impervious Area
2,686		29.72% Unconnected

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

Summary for Subcatchment 2S: POST 2.A

Runoff = 1.94 cfs @ 12.09 hrs, Volume= 0.143 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
757	98	Unconnected pavement, HSG B
8,275	98	Paved parking, HSG B
7,076	61	>75% Grass cover, Good, HSG B
23,362	87	Weighted Average
7,076		30.29% Pervious Area
16,286		69.71% Impervious Area
757		4.65% Unconnected

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

Summary for Subcatchment 5S: POST 6.A

Runoff = 2.02 cfs @ 12.35 hrs, Volume= 0.246 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,460	70	Woods, Good, HSG C
1,929	74	>75% Grass cover, Good, HSG C
11,762	55	Woods, Good, HSG B
43,358	61	>75% Grass cover, Good, HSG B
10,565	98	Roofs, HSG B
1,187	98	Unconnected pavement, HSG B
6,891	98	Roofs, HSG A
741	98	Unconnected pavement, HSG A
21,972	39	>75% Grass cover, Good, HSG A
101,865	63	Weighted Average
82,481		80.97% Pervious Area
19,384		19.03% Impervious Area
1,928		9.95% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0060	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
11.8	859	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	100	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	83	0.0200	10.18	31.99	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
22.1	1,092	Total			

Summary for Subcatchment 6S: POST 7.A

Runoff = 1.93 cfs @ 12.09 hrs, Volume= 0.146 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
9,604	98	Paved parking, HSG B
511	98	Unconnected pavement, HSG B
3,800	61	>75% Grass cover, Good, HSG B
21,169	91	Weighted Average
3,800		17.95% Pervious Area
17,369		82.05% Impervious Area
511		2.94% Unconnected

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

Summary for Subcatchment 7S: POST 8.A

Runoff = 0.73 cfs @ 12.10 hrs, Volume= 0.056 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Adj	Description
120	98		Roofs, HSG B
1,579	96		Gravel surface, HSG B
1,003	98		Unconnected pavement, HSG B
18,403	61		>75% Grass cover, Good, HSG B
21,105	66	65	Weighted Average, UI Adjusted
19,982			94.68% Pervious Area
1,123			5.32% Impervious Area
1,003			89.31% Unconnected

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

Summary for Subcatchment 8S: POST 3.A

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
5,197	98	Paved parking, HSG B
5,197		100.00% Impervious Area

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

Summary for Subcatchment 9S: POST 4.A

Runoff = 1.91 cfs @ 12.09 hrs, Volume= 0.140 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,372	98	Roofs, HSG B
150	98	Unconnected pavement, HSG B
2,521	98	Paved parking, HSG B
1,636	61	>75% Grass cover, Good, HSG B
6,091	98	Roofs, HSG A
649	98	Unconnected pavement, HSG A
6,920	98	Paved parking, HSG A
4,750	39	>75% Grass cover, Good, HSG A
25,089	84	Weighted Average
6,386		25.45% Pervious Area
18,703		74.55% Impervious Area
799		4.27% Unconnected

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

Summary for Subcatchment 10S: POST 5.A

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 0.095 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
338	98	Unconnected pavement, HSG B
2,578	98	Paved parking, HSG B
1,011	61	>75% Grass cover, Good, HSG B
2,418	98	Roofs, HSG A
494	98	Unconnected pavement, HSG A
3,665	98	Paved parking, HSG A
1,718	39	>75% Grass cover, Good, HSG A
14,640	89	Weighted Average
2,729		18.64% Pervious Area
11,911		81.36% Impervious Area
832		6.99% Unconnected

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

Summary for Subcatchment 11S: POST 9.A

Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
7,363	98	Paved parking, HSG B
701	98	Unconnected pavement, HSG B
2,424	61	>75% Grass cover, Good, HSG B
12,906	91	Weighted Average
2,424		18.78% Pervious Area
10,482		81.22% Impervious Area
701		6.69% Unconnected

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

Summary for Subcatchment 12S: POST 12.A

Runoff = 2.71 cfs @ 12.13 hrs, Volume= 0.233 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Adj	Description
9,152	98		Roofs, HSG B
2,471	98		Unconnected pavement, HSG B
59,845	61		>75% Grass cover, Good, HSG B
4,539	98		Roofs, HSG A
1,734	98		Unconnected pavement, HSG A
18,886	39		>75% Grass cover, Good, HSG A
96,627	64	63	Weighted Average, UI Adjusted
78,731			81.48% Pervious Area
17,896			18.52% Impervious Area
4,205			23.50% Unconnected

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

Summary for Subcatchment 13S: POST 14.A

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,784	98	Roofs, HSG A
3,387	98	Paved parking, HSG A
99	39	>75% Grass cover, Good, HSG A
1,105	98	Paved parking, HSG B
634	98	Roofs, HSG B
7,009	97	Weighted Average
99		1.41% Pervious Area
6,910		98.59% Impervious Area

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

Summary for Subcatchment 14S: POST 15.A

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 0.090 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,135	98	Paved parking, HSG B
6,045	98	Roofs, HSG A
496	98	Unconnected pavement, HSG A
4,760	98	Paved parking, HSG A
3,806	39	>75% Grass cover, Good, HSG A
16,242	84	Weighted Average
3,806		23.43% Pervious Area
12,436		76.57% Impervious Area
496		3.99% Unconnected

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

Summary for Subcatchment 15S: POST 13.A

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
1,547	98	Unconnected pavement, HSG B
3,405	98	Paved parking, HSG B
7,938	61	>75% Grass cover, Good, HSG B
15,308	79	Weighted Average
7,938		51.86% Pervious Area
7,370		48.14% Impervious Area
1,547		20.99% Unconnected

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

Summary for Subcatchment 16S: POST 16.A

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
4,171	98	Paved parking, HSG B
99	61	>75% Grass cover, Good, HSG B
6,688	97	Weighted Average
99		1.48% Pervious Area
6,589		98.52% Impervious Area

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

Summary for Subcatchment 17S: POST 18.A

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
5,396	98	Paved parking, HSG B
119	61	>75% Grass cover, Good, HSG B
7,933	97	Weighted Average
119		1.50% Pervious Area
7,814		98.50% Impervious Area

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

Summary for Subcatchment 18S: POST 17.A

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.137 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
7,406	98	Paved parking, HSG B
1,509	98	Unconnected pavement, HSG B
4,989	61	>75% Grass cover, Good, HSG B
21,158	89	Weighted Average
4,989		23.58% Pervious Area
16,169		76.42% Impervious Area
1,509		9.33% Unconnected

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

Summary for Subcatchment 19S: POST 24.A

Runoff = 2.34 cfs @ 12.10 hrs, Volume= 0.171 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
16,251	77	Woods, Good, HSG D
5,201	96	Gravel surface, HSG D
5,436	80	>75% Grass cover, Good, HSG D
6,221	30	Woods, Good, HSG A
3,810	39	>75% Grass cover, Good, HSG A
4,986	96	Gravel surface, HSG A
1,269	61	>75% Grass cover, Good, HSG B
2,270	96	Gravel surface, HSG B
45,444	73	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Subcatchment 20S: POST 19.A

Runoff = 2.72 cfs @ 12.09 hrs, Volume= 0.201 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
15,358	98	Paved parking, HSG B
1,073	98	Unconnected pavement, HSG B
8,284	61	>75% Grass cover, Good, HSG B
31,969	88	Weighted Average
8,284		25.91% Pervious Area
23,685		74.09% Impervious Area
1,073		4.53% Unconnected

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

Summary for Subcatchment 21S: POST 20.A

Runoff = 2.31 cfs @ 12.10 hrs, Volume= 0.173 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
5,596	98	Roofs, HSG B
1,630	98	Unconnected pavement, HSG B
1,749	96	Gravel surface, HSG B
40,318	61	>75% Grass cover, Good, HSG B
1,861	96	Gravel surface, HSG D
2,875	80	>75% Grass cover, Good, HSG D
54,029	69	Weighted Average
46,803		86.63% Pervious Area
7,226		13.37% Impervious Area
1,630		22.56% Unconnected

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

Summary for Subcatchment 22S: POST 22.A

Runoff = 3.30 cfs @ 12.24 hrs, Volume= 0.360 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
6,845	98	Roofs, HSG A
819	98	Unconnected pavement, HSG A
5,708	30	Woods, Good, HSG A
30,256	39	>75% Grass cover, Good, HSG A
11,252	98	Roofs, HSG B
2,667	98	Unconnected pavement, HSG B
88,631	61	>75% Grass cover, Good, HSG B
14,680	55	Woods, Good, HSG B
2,251	96	Gravel surface, HSG B
831	96	Gravel surface, HSG D
1,334	80	>75% Grass cover, Good, HSG D
462	77	Woods, Good, HSG D
165,736	61	Weighted Average
144,153		86.98% Pervious Area
21,583		13.02% Impervious Area
3,486		16.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.7	348	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	486	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	884	Total			

Summary for Subcatchment 23S: POST 23.A

Runoff = 6.93 cfs @ 12.24 hrs, Volume= 0.691 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
24,614	55	Woods, Good, HSG B
1,206	96	Gravel surface, HSG D
1,599	80	>75% Grass cover, Good, HSG D
148,745	77	Woods, Good, HSG D
176,164	74	Weighted Average
176,164		100.00% Pervious Area

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

Summary for Subcatchment 24S: POST 21.A

Runoff = 1.97 cfs @ 12.11 hrs, Volume= 0.161 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Adj	Description
1,194	98		Unconnected pavement, HSG B
248	96		Gravel surface, HSG B
72,586	61		>75% Grass cover, Good, HSG B
74,028	62	61	Weighted Average, UI Adjusted
72,834			98.39% Pervious Area
1,194			1.61% Impervious Area
1,194			100.00% Unconnected

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

Summary for Subcatchment 25S: POST 1.B

Runoff = 0.01 cfs @ 15.20 hrs, Volume= 0.006 af, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
7,624	55	Woods, Good, HSG B
176	61	>75% Grass cover, Good, HSG B
24,732	30	Woods, Good, HSG A
6,261	39	>75% Grass cover, Good, HSG A
38,793	37	Weighted Average
38,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	56	0.2700	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.1	106	Total			

Summary for Subcatchment 26S: POST 10.A

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
4,620	98	Paved parking, HSG B
4,620		100.00% Impervious Area

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

Summary for Subcatchment 27S: POST 11.A

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
5,180	98	Paved parking, HSG B
5,180		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK ROOFS OF UNITS 1-10

Runoff = 1.38 cfs @ 12.09 hrs, Volume= 0.114 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
13,690	98	Roofs, HSG B
13,690		100.00% Impervious Area

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

Summary for Subcatchment 38S: POST 25.A

Runoff = 1.54 cfs @ 12.09 hrs, Volume= 0.113 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,914	98	Roofs, HSG A
10,842	98	Unconnected pavement, HSG B
7,499	61	>75% Grass cover, Good, HSG B
20,255	84	Weighted Average
7,499		37.02% Pervious Area
12,756		62.98% Impervious Area
10,842		85.00% Unconnected

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

Summary for Subcatchment 41S: POST 26.A

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
4,658	98	Paved parking, HSG C
1,501	98	Paved parking, HSG B
352	61	>75% Grass cover, Good, HSG B
1,070	74	>75% Grass cover, Good, HSG C
7,581	93	Weighted Average
1,422		18.76% Pervious Area
6,159		81.24% Impervious Area

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

Summary for Pond 5P: INFIL BASIN #1

Inflow Area = 8.395 ac, 42.27% Impervious, Inflow Depth = 2.12" for 10-year event
Inflow = 16.62 cfs @ 12.10 hrs, Volume= 1.483 af
Outflow = 1.94 cfs @ 13.16 hrs, Volume= 1.483 af, Atten= 88%, Lag= 63.8 min
Discarded = 0.47 cfs @ 13.16 hrs, Volume= 0.760 af
Primary = 1.47 cfs @ 13.16 hrs, Volume= 0.723 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 315.07' @ 13.16 hrs Surf.Area= 8,494 sf Storage= 33,723 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 448.1 min (1,266.9 - 818.8)

Volume	Invert	Avail.Storage	Storage Description
#1	309.00'	42,092 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
309.00	2,439	200.1	0	0	2,439
310.00	3,839	242.8	3,113	3,113	3,960
312.00	5,491	281.0	9,281	12,394	5,636
314.00	7,393	320.0	12,837	25,230	7,596
316.00	9,513	355.0	16,862	42,092	9,594

Device	Routing	Invert	Outlet Devices
#1	Primary	309.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 309.00' / 308.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	309.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 306.73'
#3	Primary	315.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	315.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	310.45'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.47 cfs @ 13.16 hrs HW=315.07' (Free Discharge)
└─**2=Exfiltration** (Controls 0.47 cfs)

Primary OutFlow Max=1.47 cfs @ 13.16 hrs HW=315.07' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.47 cfs of 26.89 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.96 cfs @ 0.86 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 0.50 cfs @ 10.21 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: INFIL BASIN #2

Inflow Area =	10.289 ac, 22.88% Impervious, Inflow Depth = 2.01" for 10-year event			
Inflow =	15.66 cfs @ 12.15 hrs, Volume=	1.727 af		
Outflow =	1.28 cfs @ 15.06 hrs, Volume=	1.727 af, Atten= 92%, Lag= 174.5 min		
Discarded =	1.01 cfs @ 15.06 hrs, Volume=	1.442 af		
Primary =	0.27 cfs @ 15.06 hrs, Volume=	0.286 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.03' @ 15.06 hrs Surf.Area= 27,983 sf Storage= 41,465 cf

Plug-Flow detention time= 453.8 min calculated for 1.726 af (100% of inflow)
Center-of-Mass det. time= 454.3 min (1,290.6 - 836.2)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	118,862 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
314.00	2,513	223.0	0	0	2,513
316.00	17,939	667.0	18,111	18,111	33,971
318.00	39,591	937.0	56,120	74,231	68,472
319.00	49,868	1,019.0	44,631	118,862	81,273

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 312.60' S= 0.0280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	314.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 312.00'
#3	Primary	317.80'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	317.40'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	315.55'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.01 cfs @ 15.06 hrs HW=317.03' (Free Discharge)
└─**2=Exfiltration** (Controls 1.01 cfs)

Primary OutFlow Max=0.27 cfs @ 15.06 hrs HW=317.03' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.27 cfs of 17.00 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
│ └─**5=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.60 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: DMH-2

Inflow Area =	4.772 ac, 49.56% Impervious, Inflow Depth = 2.32" for 10-year event			
Inflow =	11.80 cfs @ 12.10 hrs, Volume=	0.921 af		
Outflow =	11.80 cfs @ 12.10 hrs, Volume=	0.921 af, Atten= 0%, Lag= 0.0 min		
Primary =	11.80 cfs @ 12.10 hrs, Volume=	0.921 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.87' @ 12.10 hrs
Flood Elev= 319.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.90'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.90' / 312.70' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=11.77 cfs @ 12.10 hrs HW=315.86' TW=312.64' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.77 cfs @ 3.76 fps)

Summary for Pond 8P: CB-5

Inflow Area =	0.536 ac, 69.71% Impervious, Inflow Depth = 3.19" for 10-year event				
Inflow =	1.94 cfs @	12.09 hrs, Volume=	0.143 af		
Outflow =	1.94 cfs @	12.09 hrs, Volume=	0.143 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.94 cfs @	12.09 hrs, Volume=	0.143 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.18' @ 12.12 hrs
Flood Elev= 319.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.26'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.26' / 314.90' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.65 cfs @ 12.09 hrs HW=316.16' TW=315.82' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.65 cfs @ 2.21 fps)

Summary for Pond 9P: CB-6

Inflow Area =	0.416 ac, 86.61% Impervious, Inflow Depth = 3.82" for 10-year event				
Inflow =	1.70 cfs @	12.09 hrs, Volume=	0.132 af		
Outflow =	1.70 cfs @	12.09 hrs, Volume=	0.132 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.70 cfs @	12.09 hrs, Volume=	0.132 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.48' @ 12.09 hrs
Flood Elev= 319.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.65'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.65' / 314.90' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.66 cfs @ 12.09 hrs HW=316.46' TW=315.81' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.66 cfs @ 2.42 fps)

Summary for Pond 10P: CB-4

Inflow Area =	0.486 ac, 82.05% Impervious, Inflow Depth = 3.59" for 10-year event				
Inflow =	1.93 cfs @	12.09 hrs, Volume=	0.146 af		
Outflow =	1.93 cfs @	12.09 hrs, Volume=	0.146 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.93 cfs @	12.09 hrs, Volume=	0.146 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.73' @ 12.09 hrs
Flood Elev= 318.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.82'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.82' / 314.40' S= 0.0168 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=315.71' TW=312.54' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.88 cfs @ 2.54 fps)

Summary for Pond 11P: DMH-3

Inflow Area =	3.820 ac, 42.71% Impervious, Inflow Depth = 2.03" for 10-year event				
Inflow =	8.19 cfs @	12.10 hrs, Volume=	0.646 af		
Outflow =	8.19 cfs @	12.10 hrs, Volume=	0.646 af, Atten= 0%, Lag= 0.0 min		
Primary =	8.19 cfs @	12.10 hrs, Volume=	0.646 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.58' @ 12.10 hrs
Flood Elev= 321.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.10'	**24.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.10' / 314.90' S= 0.0349 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=8.12 cfs @ 12.10 hrs HW=318.58' TW=315.85' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.12 cfs @ 3.27 fps)

Summary for Pond 12P: DMH-4

Inflow Area =	3.355 ac, 39.90% Impervious, Inflow Depth = 1.91" for 10-year event				
Inflow =	6.67 cfs @	12.11 hrs, Volume=	0.534 af		
Outflow =	6.67 cfs @	12.11 hrs, Volume=	0.534 af, Atten= 0%, Lag= 0.0 min		
Primary =	6.67 cfs @	12.11 hrs, Volume=	0.534 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.26' @ 12.11 hrs
Flood Elev= 326.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.96'	**24.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.96' / 317.20' S= 0.0481 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.56 cfs @ 12.11 hrs HW=323.25' TW=318.57' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.56 cfs @ 3.06 fps)

Summary for Pond 13P: DMH-6

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 3.08" for 10-year event				
Inflow =	3.19 cfs @	12.09 hrs, Volume=	0.234 af		
Outflow =	3.19 cfs @	12.09 hrs, Volume=	0.234 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.19 cfs @	12.09 hrs, Volume=	0.234 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.22' @ 12.09 hrs
Flood Elev= 340.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.25'	**18.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.25' / 328.11' S= 0.0576 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.12 cfs @ 12.09 hrs HW=336.20' TW=328.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.12 cfs @ 2.63 fps)

Summary for Pond 14P: CB-8

Inflow Area =	0.336 ac, 81.36% Impervious, Inflow Depth = 3.39" for 10-year event				
Inflow =	1.27 cfs @	12.09 hrs, Volume=	0.095 af		
Outflow =	1.27 cfs @	12.09 hrs, Volume=	0.095 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.27 cfs @	12.09 hrs, Volume=	0.095 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.23' @ 12.09 hrs
Flood Elev= 340.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.55'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.55' / 335.75' S= 0.0571 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.24 cfs @ 12.09 hrs HW=337.22' TW=336.20' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.24 cfs @ 2.21 fps)

Summary for Pond 15P: CB-7

Inflow Area =	0.576 ac, 74.55% Impervious, Inflow Depth = 2.91" for 10-year event				
Inflow =	1.91 cfs @	12.09 hrs, Volume=	0.140 af		
Outflow =	1.91 cfs @	12.09 hrs, Volume=	0.140 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.91 cfs @	12.09 hrs, Volume=	0.140 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.86' @ 12.09 hrs
Flood Elev= 339.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.95'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.95' / 335.75' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=336.84' TW=336.21' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.88 cfs @ 2.54 fps)

Summary for Pond 16P: DMH-5

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 3.08" for 10-year event			
Inflow =	3.19 cfs @ 12.09 hrs, Volume=	0.234 af		
Outflow =	3.19 cfs @ 12.09 hrs, Volume=	0.234 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.19 cfs @ 12.09 hrs, Volume=	0.234 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.98' @ 12.09 hrs
Flood Elev= 332.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.01'	**18.0" Round Culvert** L= 91.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 328.01' / 322.56' S= 0.0599 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.12 cfs @ 12.09 hrs HW=328.96' TW=323.24' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.12 cfs @ 2.63 fps)

Summary for Pond 17P: DMH-15

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 3.00" for 10-year event			
Inflow =	1.66 cfs @ 12.09 hrs, Volume=	0.126 af		
Outflow =	1.66 cfs @ 12.09 hrs, Volume=	0.126 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.66 cfs @ 12.09 hrs, Volume=	0.126 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.36' @ 12.09 hrs
Flood Elev= 340.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.55'	**12.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.55' / 334.86' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=336.35' TW=335.56' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.63 cfs @ 2.41 fps)

Summary for Pond 18P: CB-17

Inflow Area =	0.154 ac, 98.52% Impervious, Inflow Depth = 4.25" for 10-year event				
Inflow =	0.67 cfs @	12.09 hrs,	Volume=	0.054 af	
Outflow =	0.67 cfs @	12.09 hrs,	Volume=	0.054 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.67 cfs @	12.09 hrs,	Volume=	0.054 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.45' @ 12.13 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=336.41' TW=336.35' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.43 cfs @ 1.27 fps)

Summary for Pond 19P: CB-16

Inflow Area =	0.351 ac, 48.14% Impervious, Inflow Depth = 2.46" for 10-year event				
Inflow =	0.99 cfs @	12.09 hrs,	Volume=	0.072 af	
Outflow =	0.99 cfs @	12.09 hrs,	Volume=	0.072 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.99 cfs @	12.09 hrs,	Volume=	0.072 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.53' @ 12.12 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.09 hrs HW=336.50' TW=336.35' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.82 cfs @ 1.99 fps)

Summary for Pond 20P: DMH-14

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 3.00" for 10-year event				
Inflow =	1.66 cfs @	12.09 hrs,	Volume=	0.126 af	
Outflow =	1.66 cfs @	12.09 hrs,	Volume=	0.126 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.66 cfs @	12.09 hrs,	Volume=	0.126 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.57' @ 12.09 hrs
Flood Elev= 341.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.76'	**12.0" Round Culvert** L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.76' / 333.88' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=335.56' TW=334.41' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.63 cfs @ 2.41 fps)

Summary for Pond 21P: DMH-13

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 3.16" for 10-year event				
Inflow =	3.60 cfs @	12.09 hrs,	Volume=	0.274 af	
Outflow =	3.60 cfs @	12.09 hrs,	Volume=	0.274 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.60 cfs @	12.09 hrs,	Volume=	0.274 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 334.42' @ 12.09 hrs
Flood Elev= 342.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.38'	**18.0" Round Culvert** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.38' / 330.66' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.52 cfs @ 12.09 hrs HW=334.41' TW=331.59' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.52 cfs @ 2.73 fps)

Summary for Pond 22P: CB-14

Inflow Area =	0.373 ac, 76.57% Impervious, Inflow Depth = 2.91" for 10-year event				
Inflow =	1.24 cfs @	12.09 hrs,	Volume=	0.090 af	
Outflow =	1.24 cfs @	12.09 hrs,	Volume=	0.090 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.24 cfs @	12.09 hrs,	Volume=	0.090 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.88' @ 12.09 hrs
Flood Elev= 342.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.21'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.21' / 338.00' S= 0.0124 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.21 cfs @ 12.09 hrs HW=338.87' TW=334.41' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.21 cfs @ 2.19 fps)

Summary for Pond 23P: CB-15

Inflow Area = 0.161 ac, 98.59% Impervious, Inflow Depth = 4.25" for 10-year event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.79' @ 12.09 hrs
Flood Elev= 342.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.31'	**12.0" Round Culvert** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.31' / 338.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 12.09 hrs HW=338.79' TW=334.40' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.68 cfs @ 1.85 fps)

Summary for Pond 24P: DMH-12

Inflow Area = 1.039 ac, 73.61% Impervious, Inflow Depth = 3.16" for 10-year event
Inflow = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af
Outflow = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 331.60' @ 12.09 hrs
Flood Elev= 338.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	330.56'	**18.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.56' / 327.84' S= 0.0275 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.52 cfs @ 12.09 hrs HW=331.59' TW=328.77' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.52 cfs @ 2.73 fps)

Summary for Pond 25P: DMH-11

Inflow Area = 1.039 ac, 73.61% Impervious, Inflow Depth = 3.16" for 10-year event
Inflow = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af
Outflow = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.09 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.78' @ 12.09 hrs
Flood Elev= 332.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	327.74'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 327.74' / 322.02' S= 0.0753 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.52 cfs @ 12.09 hrs HW=328.77' TW=323.49' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.52 cfs @ 2.73 fps)

Summary for Pond 26P: DMH-10

Inflow Area =	1.707 ac, 77.06% Impervious, Inflow Depth = 3.34" for 10-year event				
Inflow =	6.24 cfs @	12.09 hrs, Volume=	0.475 af		
Outflow =	6.24 cfs @	12.09 hrs, Volume=	0.475 af, Atten= 0%, Lag= 0.0 min		
Primary =	6.24 cfs @	12.09 hrs, Volume=	0.475 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.53' @ 12.09 hrs
Flood Elev= 327.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.92'	**18.0" Round Culvert** L= 174.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.92' / 316.81' S= 0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.09 cfs @ 12.09 hrs HW=323.49' TW=317.96' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 6.09 cfs @ 3.44 fps)

Summary for Pond 27P: CB-13

Inflow Area =	0.182 ac, 98.50% Impervious, Inflow Depth = 4.25" for 10-year event				
Inflow =	0.79 cfs @	12.09 hrs, Volume=	0.064 af		
Outflow =	0.79 cfs @	12.09 hrs, Volume=	0.064 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.79 cfs @	12.09 hrs, Volume=	0.064 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.03' @ 12.09 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.77 cfs @ 12.09 hrs HW=324.02' TW=323.48' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.77 cfs @ 1.92 fps)

Summary for Pond 28P: CB-12

Inflow Area =	0.486 ac, 76.42% Impervious, Inflow Depth = 3.39" for 10-year event				
Inflow =	1.84 cfs @	12.09 hrs, Volume=	0.137 af		
Outflow =	1.84 cfs @	12.09 hrs, Volume=	0.137 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.84 cfs @	12.09 hrs, Volume=	0.137 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.39' @ 12.09 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.09 hrs HW=324.37' TW=323.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.80 cfs @ 2.50 fps)

Summary for Pond 29P: DMH-9

Inflow Area =	2.440 ac, 76.17% Impervious, Inflow Depth = 3.33" for 10-year event				
Inflow =	8.95 cfs @	12.09 hrs, Volume=	0.677 af		
Outflow =	8.95 cfs @	12.09 hrs, Volume=	0.677 af, Atten= 0%, Lag= 0.0 min		
Primary =	8.95 cfs @	12.09 hrs, Volume=	0.677 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.99' @ 12.09 hrs
Flood Elev= 322.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	316.31'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 316.31' / 316.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=8.74 cfs @ 12.09 hrs HW=317.96' TW=315.72' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 8.74 cfs @ 4.27 fps)

Summary for Pond 30P: CB-11

Inflow Area =	0.734 ac, 74.09% Impervious, Inflow Depth = 3.29" for 10-year event				
Inflow =	2.72 cfs @	12.09 hrs, Volume=	0.201 af		
Outflow =	2.72 cfs @	12.09 hrs, Volume=	0.201 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.72 cfs @	12.09 hrs, Volume=	0.201 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.31' @ 12.12 hrs
Flood Elev= 321.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.30'	**18.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.30' / 316.81' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.09 hrs HW=318.27' TW=317.96' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.22 cfs @ 2.62 fps)

Summary for Pond 31P: PROP. CULVERT

Inflow Area =	2.338 ac, 19.03% Impervious, Inflow Depth = 1.26" for 10-year event				
Inflow =	2.02 cfs @	12.35 hrs,	Volume=	0.246 af	
Outflow =	2.02 cfs @	12.35 hrs,	Volume=	0.246 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.02 cfs @	12.35 hrs,	Volume=	0.246 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.09' @ 13.16 hrs
Flood Elev= 318.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**15.0" Round Culvert** L= 75.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 313.00' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.01 cfs @ 12.35 hrs HW=314.81' TW=314.08' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.01 cfs @ 2.41 fps)

Summary for Pond 32P: CB-10

Inflow Area =	0.106 ac,100.00% Impervious, Inflow Depth = 4.36" for 10-year event				
Inflow =	0.47 cfs @	12.09 hrs,	Volume=	0.039 af	
Outflow =	0.47 cfs @	12.09 hrs,	Volume=	0.039 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.47 cfs @	12.09 hrs,	Volume=	0.039 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.76' @ 12.23 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.73' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.48' TW=323.54' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 33P: CB-9

Inflow Area =	0.119 ac,100.00% Impervious, Inflow Depth = 4.36" for 10-year event			
Inflow =	0.52 cfs @ 12.09 hrs, Volume=	0.043 af		
Outflow =	0.52 cfs @ 12.09 hrs, Volume=	0.043 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.52 cfs @ 12.09 hrs, Volume=	0.043 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.60' @ 12.19 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.52' S= 0.0686 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.41' TW=323.46' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 34P: CB-18

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 2.91" for 10-year event			
Inflow =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af		
Outflow =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 320.77' @ 12.09 hrs
Flood Elev= 325.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.00' / 319.04' S= 0.0600 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.09 hrs HW=320.76' TW=319.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.51 cfs @ 2.35 fps)

Summary for Pond 35P: DMH-8

Inflow Area =	2.324 ac, 22.24% Impervious, Inflow Depth = 1.32" for 10-year event			
Inflow =	3.09 cfs @ 12.13 hrs, Volume=	0.256 af		
Outflow =	3.09 cfs @ 12.13 hrs, Volume=	0.256 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.09 cfs @ 12.13 hrs, Volume=	0.256 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.75' @ 12.18 hrs
Flood Elev= 327.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.63'	**24.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.63' / 322.52' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=2.20 cfs @ 12.13 hrs HW=323.69' TW=323.56' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.20 cfs @ 1.90 fps)

Summary for Pond 36P: DMH-16

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 2.91" for 10-year event				
Inflow =	1.54 cfs @	12.09 hrs, Volume=	0.113 af		
Outflow =	1.54 cfs @	12.09 hrs, Volume=	0.113 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.54 cfs @	12.09 hrs, Volume=	0.113 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.71' @ 12.09 hrs
Flood Elev= 326.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.94'	**12.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 318.94' / 317.20' S= 0.0829 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.09 hrs HW=319.70' TW=318.56' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.51 cfs @ 2.35 fps)

Summary for Pond 37P: DMH-7

Inflow Area =	2.443 ac, 26.02% Impervious, Inflow Depth = 1.47" for 10-year event				
Inflow =	3.58 cfs @	12.12 hrs, Volume=	0.299 af		
Outflow =	3.58 cfs @	12.12 hrs, Volume=	0.299 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.58 cfs @	12.12 hrs, Volume=	0.299 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.59' @ 12.15 hrs
Flood Elev= 327.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.42'	**24.0" Round Culvert** L= 78.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.42' / 321.96' S= 0.0059 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.32 cfs @ 12.12 hrs HW=323.55' TW=323.23' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.32 cfs @ 2.62 fps)

Summary for Pond 39P: CB-2 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 3.81" for 10-year event				
Inflow =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af	
Outflow =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.16' @ 12.10 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.05'	**12.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.05' / 310.00' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=311.14' TW=310.84' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.63 cfs @ 2.07 fps)

Summary for Pond 40P: CB-1 [EXISTING]

Inflow Area =	0.174 ac, 81.24% Impervious, Inflow Depth = 3.81" for 10-year event				
Inflow =	0.72 cfs @	12.09 hrs,	Volume=	0.055 af	
Outflow =	0.72 cfs @	12.09 hrs,	Volume=	0.055 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.72 cfs @	12.09 hrs,	Volume=	0.055 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.30' @ 12.12 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.75'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.75' / 310.15' S= 0.0353 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=311.28' TW=311.14' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.54 cfs @ 1.87 fps)

Summary for Pond 42P: DMH-1 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 3.81" for 10-year event				
Inflow =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af	
Outflow =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.78 cfs @	12.09 hrs,	Volume=	0.137 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 310.86' @ 12.09 hrs
Flood Elev= 315.33'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**12.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.00' / 308.02' S= 0.0215 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.73 cfs @ 12.09 hrs HW=310.84' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.73 cfs @ 2.46 fps)

Summary for Pond 43P: SWALE & FIELD BASIN

Inflow Area =	2.218 ac, 18.52% Impervious, Inflow Depth = 1.26" for 10-year event				
Inflow =	2.71 cfs @	12.13 hrs,	Volume=	0.233 af	
Outflow =	2.72 cfs @	12.14 hrs,	Volume=	0.233 af,	Atten= 0%, Lag= 0.7 min
Discarded =	0.02 cfs @	12.14 hrs,	Volume=	0.016 af	
Primary =	2.70 cfs @	12.14 hrs,	Volume=	0.217 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.16' @ 12.14 hrs Surf.Area= 753 sf Storage= 110 cf

Plug-Flow detention time= 1.2 min calculated for 0.233 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (875.3 - 874.1)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	1,150 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	600	119.4	0	0	600
329.00	1,808	444.3	1,150	1,150	15,177

Device	Routing	Invert	Outlet Devices
#1	Discarded	328.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 320.50'
#2	Primary	324.00'	**18.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 324.00' / 322.73' S= 0.0249 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	328.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.02 cfs @ 12.14 hrs HW=328.16' (Free Discharge)
└─**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=2.66 cfs @ 12.14 hrs HW=328.16' TW=323.71' (Dynamic Tailwater)
└─**2=Culvert** (Passes 2.66 cfs of 12.41 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 2.66 cfs @ 1.31 fps)

Summary for Link 4L: DP-A

Inflow Area = 23.100 ac, 27.90% Impervious, Inflow Depth = 0.86" for 10-year event
Inflow = 8.78 cfs @ 12.10 hrs, Volume= 1.651 af
Primary = 8.78 cfs @ 12.10 hrs, Volume= 1.651 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 0.891 ac, 0.00% Impervious, Inflow Depth = 0.08" for 10-year event
Inflow = 0.01 cfs @ 15.20 hrs, Volume= 0.006 af
Primary = 0.01 cfs @ 15.20 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: POST 1.A Runoff Area=11,232 sf 80.47% Impervious Runoff Depth=4.59"
Tc=6.0 min CN=93 Runoff=1.27 cfs 0.099 af

Subcatchment 2S: POST 2.A Runoff Area=23,362 sf 69.71% Impervious Runoff Depth=3.95"
Tc=6.0 min CN=87 Runoff=2.37 cfs 0.176 af

Subcatchment 5S: POST 6.A Runoff Area=101,865 sf 19.03% Impervious Runoff Depth=1.77"
Flow Length=1,092' Tc=22.1 min CN=63 Runoff=2.95 cfs 0.345 af

Subcatchment 6S: POST 7.A Runoff Area=21,169 sf 82.05% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=91 Runoff=2.32 cfs 0.177 af

Subcatchment 7S: POST 8.A Runoff Area=21,105 sf 5.32% Impervious Runoff Depth=1.93"
Tc=6.0 min UI Adjusted CN=65 Runoff=1.04 cfs 0.078 af

Subcatchment 8S: POST 3.A Runoff Area=5,197 sf 100.00% Impervious Runoff Depth=5.16"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.051 af

Subcatchment 9S: POST 4.A Runoff Area=25,089 sf 74.55% Impervious Runoff Depth=3.64"
Tc=6.0 min CN=84 Runoff=2.38 cfs 0.175 af

Subcatchment 10S: POST 5.A Runoff Area=14,640 sf 81.36% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=89 Runoff=1.55 cfs 0.116 af

Subcatchment 11S: POST 9.A Runoff Area=12,906 sf 81.22% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=91 Runoff=1.41 cfs 0.108 af

Subcatchment 12S: POST 12.A Runoff Area=96,627 sf 18.52% Impervious Runoff Depth=1.77"
Tc=8.0 min UI Adjusted CN=63 Runoff=4.01 cfs 0.327 af

Subcatchment 13S: POST 14.A Runoff Area=7,009 sf 98.59% Impervious Runoff Depth=5.05"
Tc=6.0 min CN=97 Runoff=0.83 cfs 0.068 af

Subcatchment 14S: POST 15.A Runoff Area=16,242 sf 76.57% Impervious Runoff Depth=3.64"
Tc=6.0 min CN=84 Runoff=1.54 cfs 0.113 af

Subcatchment 15S: POST 13.A Runoff Area=15,308 sf 48.14% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=79 Runoff=1.27 cfs 0.092 af

Subcatchment 16S: POST 16.A Runoff Area=6,688 sf 98.52% Impervious Runoff Depth=5.05"
Tc=6.0 min CN=97 Runoff=0.79 cfs 0.065 af

Subcatchment 17S: POST 18.A Runoff Area=7,933 sf 98.50% Impervious Runoff Depth=5.05"
Tc=6.0 min CN=97 Runoff=0.93 cfs 0.077 af

Subcatchment 18S: POST 17.A Runoff Area=21,158 sf 76.42% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=89 Runoff=2.24 cfs 0.168 af

Subcatchment 19S: POST 24.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=2.60"
Tc=6.0 min CN=73 Runoff=3.11 cfs 0.226 af

Subcatchment 20S: POST 19.A Runoff Area=31,969 sf 74.09% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=88 Runoff=3.31 cfs 0.248 af

Subcatchment 21S: POST 20.A Runoff Area=54,029 sf 13.37% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=69 Runoff=3.17 cfs 0.233 af

Subcatchment 22S: POST 22.A Runoff Area=165,736 sf 13.02% Impervious Runoff Depth=1.62"
Flow Length=884' Tc=15.2 min CN=61 Runoff=4.96 cfs 0.512 af

Subcatchment 23S: POST 23.A Runoff Area=176,164 sf 0.00% Impervious Runoff Depth=2.69"
Tc=16.7 min CN=74 Runoff=9.16 cfs 0.906 af

Subcatchment 24S: POST 21.A Runoff Area=74,028 sf 1.61% Impervious Runoff Depth=1.62"
Tc=6.0 min UI Adjusted CN=61 Runoff=2.95 cfs 0.229 af

Subcatchment 25S: POST 1.B Runoff Area=38,793 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=106' Tc=11.1 min CN=37 Runoff=0.03 cfs 0.016 af

Subcatchment 26S: POST 10.A Runoff Area=4,620 sf 100.00% Impervious Runoff Depth=5.16"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.046 af

Subcatchment 27S: POST 11.A Runoff Area=5,180 sf 100.00% Impervious Runoff Depth=5.16"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.051 af

Subcatchment 28S: BACK ROOFS OF Runoff Area=13,690 sf 100.00% Impervious Runoff Depth=5.16"
Tc=6.0 min CN=98 Runoff=1.62 cfs 0.135 af

Subcatchment 38S: POST 25.A Runoff Area=20,255 sf 62.98% Impervious Runoff Depth=3.64"
Tc=6.0 min CN=84 Runoff=1.92 cfs 0.141 af

Subcatchment 41S: POST 26.A Runoff Area=7,581 sf 81.24% Impervious Runoff Depth=4.59"
Tc=6.0 min CN=93 Runoff=0.86 cfs 0.067 af

Pond 5P: INFIL BASIN #1 Peak Elev=315.27' Storage=35,472 cf Inflow=21.35 cfs 1.909 af
Discarded=0.49 cfs 0.810 af Primary=7.98 cfs 1.100 af Outflow=8.47 cfs 1.909 af

Pond 6P: INFIL BASIN #2 Peak Elev=317.45' Storage=54,251 cf Inflow=20.70 cfs 2.248 af
Discarded=1.21 cfs 1.806 af Primary=0.84 cfs 0.442 af Outflow=2.05 cfs 2.248 af

Pond 7P: DMH-2 Peak Elev=316.49' Inflow=15.07 cfs 1.175 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=15.07 cfs 1.175 af

Pond 8P: CB-5 Peak Elev=316.92' Inflow=2.37 cfs 0.176 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0180 '/' Outflow=2.37 cfs 0.176 af

Pond 9P: CB-6 Peak Elev=316.79' Inflow=2.03 cfs 0.159 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0375 '/' Outflow=2.03 cfs 0.159 af

Pond 10P: CB-4 Peak Elev=315.92' Inflow=2.32 cfs 0.177 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0168 '/' Outflow=2.32 cfs 0.177 af

Pond 11P: DMH-3 Peak Elev=318.90' Inflow=10.71 cfs 0.839 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0349 '/' Outflow=10.71 cfs 0.839 af

Pond 12P: DMH-4 Peak Elev=323.52' Inflow=8.81 cfs 0.698 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0481 '/' Outflow=8.81 cfs 0.698 af

Pond 13P: DMH-6 Peak Elev=336.35' Inflow=3.93 cfs 0.291 af
18.0" Round Culvert n=0.013 L=124.0' S=0.0576 '/' Outflow=3.93 cfs 0.291 af

Pond 14P: CB-8 Peak Elev=337.33' Inflow=1.55 cfs 0.116 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0571 '/' Outflow=1.55 cfs 0.116 af

Pond 15P: CB-7 Peak Elev=337.08' Inflow=2.38 cfs 0.175 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0200 '/' Outflow=2.38 cfs 0.175 af

Pond 16P: DMH-5 Peak Elev=329.11' Inflow=3.93 cfs 0.291 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0599 '/' Outflow=3.93 cfs 0.291 af

Pond 17P: DMH-15 Peak Elev=336.52' Inflow=2.06 cfs 0.157 af
12.0" Round Culvert n=0.013 L=69.0' S=0.0100 '/' Outflow=2.06 cfs 0.157 af

Pond 18P: CB-17 Peak Elev=336.59' Inflow=0.79 cfs 0.065 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=0.79 cfs 0.065 af

Pond 19P: CB-16 Peak Elev=336.68' Inflow=1.27 cfs 0.092 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=1.27 cfs 0.092 af

Pond 20P: DMH-14 Peak Elev=335.73' Inflow=2.06 cfs 0.157 af
12.0" Round Culvert n=0.013 L=88.0' S=0.0100 '/' Outflow=2.06 cfs 0.157 af

Pond 21P: DMH-13 Peak Elev=334.57' Inflow=4.42 cfs 0.337 af
18.0" Round Culvert n=0.013 L=136.0' S=0.0200 '/' Outflow=4.42 cfs 0.337 af

Pond 22P: CB-14 Peak Elev=338.98' Inflow=1.54 cfs 0.113 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0124 '/' Outflow=1.54 cfs 0.113 af

Pond 23P: CB-15 Peak Elev=338.84' Inflow=0.83 cfs 0.068 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0111 '/' Outflow=0.83 cfs 0.068 af

Pond 24P: DMH-12 Peak Elev=331.75' Inflow=4.42 cfs 0.337 af
18.0" Round Culvert n=0.013 L=99.0' S=0.0275 '/' Outflow=4.42 cfs 0.337 af

Pond 25P: DMH-11 Peak Elev=328.93' Inflow=4.42 cfs 0.337 af
18.0" Round Culvert n=0.013 L=76.0' S=0.0753 '/' Outflow=4.42 cfs 0.337 af

Pond 26P: DMH-10 Peak Elev=323.94' Inflow=7.59 cfs 0.582 af
18.0" Round Culvert n=0.013 L=174.0' S=0.0294 '/' Outflow=7.59 cfs 0.582 af

Pond 27P: CB-13 Peak Elev=324.12' Inflow=0.93 cfs 0.077 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=0.93 cfs 0.077 af

Pond 28P: CB-12 Peak Elev=324.57' Inflow=2.24 cfs 0.168 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=2.24 cfs 0.168 af

Pond 29P: DMH-9 Peak Elev=318.23' Inflow=10.91 cfs 0.830 af
24.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=10.91 cfs 0.830 af

Pond 30P: CB-11 Peak Elev=318.51' Inflow=3.31 cfs 0.248 af
18.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=3.31 cfs 0.248 af

Pond 31P: PROP. CULVERT Peak Elev=315.56' Inflow=2.95 cfs 0.345 af
15.0" Round Culvert n=0.013 L=75.8' S=0.0132 '/' Outflow=2.95 cfs 0.345 af

Pond 32P: CB-10 Peak Elev=324.04' Inflow=0.55 cfs 0.046 af
18.0" Round Culvert n=0.013 L=55.0' S=0.0049 '/' Outflow=0.55 cfs 0.046 af

Pond 33P: CB-9 Peak Elev=323.87' Inflow=0.61 cfs 0.051 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0686 '/' Outflow=0.61 cfs 0.051 af

Pond 34P: CB-18 Peak Elev=320.91' Inflow=1.92 cfs 0.141 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0600 '/' Outflow=1.92 cfs 0.141 af

Pond 35P: DMH-8 Peak Elev=324.04' Inflow=4.42 cfs 0.356 af
24.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=4.42 cfs 0.356 af

Pond 36P: DMH-16 Peak Elev=319.85' Inflow=1.92 cfs 0.141 af
12.0" Round Culvert n=0.013 L=21.0' S=0.0829 '/' Outflow=1.92 cfs 0.141 af

Pond 37P: DMH-7 Peak Elev=323.86' Inflow=5.01 cfs 0.407 af
24.0" Round Culvert n=0.013 L=78.1' S=0.0059 '/' Outflow=5.01 cfs 0.407 af

Pond 39P: CB-2 [EXISTING] Peak Elev=311.42' Inflow=2.12 cfs 0.165 af
12.0" Round Culvert n=0.013 L=49.0' S=0.0010 '/' Outflow=2.12 cfs 0.165 af

Pond 40P: CB-1 [EXISTING] Peak Elev=311.50' Inflow=0.86 cfs 0.067 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0353 '/' Outflow=0.86 cfs 0.067 af

Pond 42P: DMH-1 [EXISTING] Peak Elev=311.00' Inflow=2.12 cfs 0.165 af
12.0" Round Culvert n=0.013 L=92.0' S=0.0215 '/' Outflow=2.12 cfs 0.165 af

Pond 43P: SWALE & FIELD BASIN Peak Elev=328.21' Storage=146 cf Inflow=4.01 cfs 0.327 af
Discarded=0.02 cfs 0.017 af Primary=3.95 cfs 0.310 af Outflow=3.97 cfs 0.327 af

Link 4L: DP-A Inflow=11.88 cfs 2.394 af
Primary=11.88 cfs 2.394 af

Link 5L: DP-B Inflow=0.03 cfs 0.016 af
Primary=0.03 cfs 0.016 af

Total Runoff Area = 23.990 ac Runoff Volume = 5.042 af Average Runoff Depth = 2.52"
73.13% Pervious = 17.545 ac 26.87% Impervious = 6.446 ac

Summary for Subcatchment 1S: POST 1.A

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
4,679	98	Paved parking, HSG C
1,673	98	Paved parking, HSG B
2,343	98	Unconnected pavement, HSG C
343	98	Unconnected pavement, HSG B
395	61	>75% Grass cover, Good, HSG B
1,799	74	>75% Grass cover, Good, HSG C
11,232	93	Weighted Average
2,194		19.53% Pervious Area
9,038		80.47% Impervious Area
2,686		29.72% Unconnected

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

Summary for Subcatchment 2S: POST 2.A

Runoff = 2.37 cfs @ 12.09 hrs, Volume= 0.176 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
757	98	Unconnected pavement, HSG B
8,275	98	Paved parking, HSG B
7,076	61	>75% Grass cover, Good, HSG B
23,362	87	Weighted Average
7,076		30.29% Pervious Area
16,286		69.71% Impervious Area
757		4.65% Unconnected

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

Summary for Subcatchment 5S: POST 6.A

Runoff = 2.95 cfs @ 12.33 hrs, Volume= 0.345 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
3,460	70	Woods, Good, HSG C
1,929	74	>75% Grass cover, Good, HSG C
11,762	55	Woods, Good, HSG B
43,358	61	>75% Grass cover, Good, HSG B
10,565	98	Roofs, HSG B
1,187	98	Unconnected pavement, HSG B
6,891	98	Roofs, HSG A
741	98	Unconnected pavement, HSG A
21,972	39	>75% Grass cover, Good, HSG A
101,865	63	Weighted Average
82,481		80.97% Pervious Area
19,384		19.03% Impervious Area
1,928		9.95% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0060	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
11.8	859	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	100	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	83	0.0200	10.18	31.99	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
22.1	1,092	Total			

Summary for Subcatchment 6S: POST 7.A

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.177 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
9,604	98	Paved parking, HSG B
511	98	Unconnected pavement, HSG B
3,800	61	>75% Grass cover, Good, HSG B
21,169	91	Weighted Average
3,800		17.95% Pervious Area
17,369		82.05% Impervious Area
511		2.94% Unconnected

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

Summary for Subcatchment 7S: POST 8.A

Runoff = 1.04 cfs @ 12.10 hrs, Volume= 0.078 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Adj	Description
120	98		Roofs, HSG B
1,579	96		Gravel surface, HSG B
1,003	98		Unconnected pavement, HSG B
18,403	61		>75% Grass cover, Good, HSG B
21,105	66	65	Weighted Average, UI Adjusted
19,982			94.68% Pervious Area
1,123			5.32% Impervious Area
1,003			89.31% Unconnected

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

Summary for Subcatchment 8S: POST 3.A

Runoff = 0.62 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
5,197	98	Paved parking, HSG B
5,197		100.00% Impervious Area

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

Summary for Subcatchment 9S: POST 4.A

Runoff = 2.38 cfs @ 12.09 hrs, Volume= 0.175 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,372	98	Roofs, HSG B
150	98	Unconnected pavement, HSG B
2,521	98	Paved parking, HSG B
1,636	61	>75% Grass cover, Good, HSG B
6,091	98	Roofs, HSG A
649	98	Unconnected pavement, HSG A
6,920	98	Paved parking, HSG A
4,750	39	>75% Grass cover, Good, HSG A
25,089	84	Weighted Average
6,386		25.45% Pervious Area
18,703		74.55% Impervious Area
799		4.27% Unconnected

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

Summary for Subcatchment 10S: POST 5.A

Runoff = 1.55 cfs @ 12.09 hrs, Volume= 0.116 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
338	98	Unconnected pavement, HSG B
2,578	98	Paved parking, HSG B
1,011	61	>75% Grass cover, Good, HSG B
2,418	98	Roofs, HSG A
494	98	Unconnected pavement, HSG A
3,665	98	Paved parking, HSG A
1,718	39	>75% Grass cover, Good, HSG A
14,640	89	Weighted Average
2,729		18.64% Pervious Area
11,911		81.36% Impervious Area
832		6.99% Unconnected

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

Summary for Subcatchment 11S: POST 9.A

Runoff = 1.41 cfs @ 12.09 hrs, Volume= 0.108 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
7,363	98	Paved parking, HSG B
701	98	Unconnected pavement, HSG B
2,424	61	>75% Grass cover, Good, HSG B
12,906	91	Weighted Average
2,424		18.78% Pervious Area
10,482		81.22% Impervious Area
701		6.69% Unconnected

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

Summary for Subcatchment 12S: POST 12.A

Runoff = 4.01 cfs @ 12.12 hrs, Volume= 0.327 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Adj	Description
9,152	98		Roofs, HSG B
2,471	98		Unconnected pavement, HSG B
59,845	61		>75% Grass cover, Good, HSG B
4,539	98		Roofs, HSG A
1,734	98		Unconnected pavement, HSG A
18,886	39		>75% Grass cover, Good, HSG A
96,627	64	63	Weighted Average, UI Adjusted
78,731			81.48% Pervious Area
17,896			18.52% Impervious Area
4,205			23.50% Unconnected

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

Summary for Subcatchment 13S: POST 14.A

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
1,784	98	Roofs, HSG A
3,387	98	Paved parking, HSG A
99	39	>75% Grass cover, Good, HSG A
1,105	98	Paved parking, HSG B
634	98	Roofs, HSG B
7,009	97	Weighted Average
99		1.41% Pervious Area
6,910		98.59% Impervious Area

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

Summary for Subcatchment 14S: POST 15.A

Runoff = 1.54 cfs @ 12.09 hrs, Volume= 0.113 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
1,135	98	Paved parking, HSG B
6,045	98	Roofs, HSG A
496	98	Unconnected pavement, HSG A
4,760	98	Paved parking, HSG A
3,806	39	>75% Grass cover, Good, HSG A
16,242	84	Weighted Average
3,806		23.43% Pervious Area
12,436		76.57% Impervious Area
496		3.99% Unconnected

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

Summary for Subcatchment 15S: POST 13.A

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 0.092 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
1,547	98	Unconnected pavement, HSG B
3,405	98	Paved parking, HSG B
7,938	61	>75% Grass cover, Good, HSG B
15,308	79	Weighted Average
7,938		51.86% Pervious Area
7,370		48.14% Impervious Area
1,547		20.99% Unconnected

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

Summary for Subcatchment 16S: POST 16.A

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
4,171	98	Paved parking, HSG B
99	61	>75% Grass cover, Good, HSG B
6,688	97	Weighted Average
99		1.48% Pervious Area
6,589		98.52% Impervious Area

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

Summary for Subcatchment 17S: POST 18.A

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.077 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
5,396	98	Paved parking, HSG B
119	61	>75% Grass cover, Good, HSG B
7,933	97	Weighted Average
119		1.50% Pervious Area
7,814		98.50% Impervious Area

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

Summary for Subcatchment 18S: POST 17.A

Runoff = 2.24 cfs @ 12.09 hrs, Volume= 0.168 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
7,406	98	Paved parking, HSG B
1,509	98	Unconnected pavement, HSG B
4,989	61	>75% Grass cover, Good, HSG B
21,158	89	Weighted Average
4,989		23.58% Pervious Area
16,169		76.42% Impervious Area
1,509		9.33% Unconnected

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

Summary for Subcatchment 19S: POST 24.A

Runoff = 3.11 cfs @ 12.09 hrs, Volume= 0.226 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
16,251	77	Woods, Good, HSG D
5,201	96	Gravel surface, HSG D
5,436	80	>75% Grass cover, Good, HSG D
6,221	30	Woods, Good, HSG A
3,810	39	>75% Grass cover, Good, HSG A
4,986	96	Gravel surface, HSG A
1,269	61	>75% Grass cover, Good, HSG B
2,270	96	Gravel surface, HSG B
45,444	73	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Subcatchment 20S: POST 19.A

Runoff = 3.31 cfs @ 12.09 hrs, Volume= 0.248 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
15,358	98	Paved parking, HSG B
1,073	98	Unconnected pavement, HSG B
8,284	61	>75% Grass cover, Good, HSG B
31,969	88	Weighted Average
8,284		25.91% Pervious Area
23,685		74.09% Impervious Area
1,073		4.53% Unconnected

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

Summary for Subcatchment 21S: POST 20.A

Runoff = 3.17 cfs @ 12.10 hrs, Volume= 0.233 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
5,596	98	Roofs, HSG B
1,630	98	Unconnected pavement, HSG B
1,749	96	Gravel surface, HSG B
40,318	61	>75% Grass cover, Good, HSG B
1,861	96	Gravel surface, HSG D
2,875	80	>75% Grass cover, Good, HSG D
54,029	69	Weighted Average
46,803		86.63% Pervious Area
7,226		13.37% Impervious Area
1,630		22.56% Unconnected

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

Summary for Subcatchment 22S: POST 22.A

Runoff = 4.96 cfs @ 12.23 hrs, Volume= 0.512 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
6,845	98	Roofs, HSG A
819	98	Unconnected pavement, HSG A
5,708	30	Woods, Good, HSG A
30,256	39	>75% Grass cover, Good, HSG A
11,252	98	Roofs, HSG B
2,667	98	Unconnected pavement, HSG B
88,631	61	>75% Grass cover, Good, HSG B
14,680	55	Woods, Good, HSG B
2,251	96	Gravel surface, HSG B
831	96	Gravel surface, HSG D
1,334	80	>75% Grass cover, Good, HSG D
462	77	Woods, Good, HSG D
165,736	61	Weighted Average
144,153		86.98% Pervious Area
21,583		13.02% Impervious Area
3,486		16.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.7	348	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	486	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	884	Total			

Summary for Subcatchment 23S: POST 23.A

Runoff = 9.16 cfs @ 12.24 hrs, Volume= 0.906 af, Depth= 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
24,614	55	Woods, Good, HSG B
1,206	96	Gravel surface, HSG D
1,599	80	>75% Grass cover, Good, HSG D
148,745	77	Woods, Good, HSG D
176,164	74	Weighted Average
176,164		100.00% Pervious Area

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

Summary for Subcatchment 24S: POST 21.A

Runoff = 2.95 cfs @ 12.10 hrs, Volume= 0.229 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Adj	Description
1,194	98		Unconnected pavement, HSG B
248	96		Gravel surface, HSG B
72,586	61		>75% Grass cover, Good, HSG B
74,028	62	61	Weighted Average, UI Adjusted
72,834			98.39% Pervious Area
1,194			1.61% Impervious Area
1,194			100.00% Unconnected

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

Summary for Subcatchment 25S: POST 1.B

Runoff = 0.03 cfs @ 12.57 hrs, Volume= 0.016 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
7,624	55	Woods, Good, HSG B
176	61	>75% Grass cover, Good, HSG B
24,732	30	Woods, Good, HSG A
6,261	39	>75% Grass cover, Good, HSG A
38,793	37	Weighted Average
38,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	56	0.2700	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.1	106	Total			

Summary for Subcatchment 26S: POST 10.A

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
4,620	98	Paved parking, HSG B
4,620		100.00% Impervious Area

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

Summary for Subcatchment 27S: POST 11.A

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
5,180	98	Paved parking, HSG B
5,180		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK ROOFS OF UNITS 1-10

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.135 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
13,690	98	Roofs, HSG B
13,690		100.00% Impervious Area

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

Summary for Subcatchment 38S: POST 25.A

Runoff = 1.92 cfs @ 12.09 hrs, Volume= 0.141 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
1,914	98	Roofs, HSG A
10,842	98	Unconnected pavement, HSG B
7,499	61	>75% Grass cover, Good, HSG B
20,255	84	Weighted Average
7,499		37.02% Pervious Area
12,756		62.98% Impervious Area
10,842		85.00% Unconnected

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

Summary for Subcatchment 41S: POST 26.A

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
4,658	98	Paved parking, HSG C
1,501	98	Paved parking, HSG B
352	61	>75% Grass cover, Good, HSG B
1,070	74	>75% Grass cover, Good, HSG C
7,581	93	Weighted Average
1,422		18.76% Pervious Area
6,159		81.24% Impervious Area

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

Summary for Pond 5P: INFIL BASIN #1

Inflow Area = 8.395 ac, 42.27% Impervious, Inflow Depth = 2.73" for 25-year event
Inflow = 21.35 cfs @ 12.10 hrs, Volume= 1.909 af
Outflow = 8.47 cfs @ 12.47 hrs, Volume= 1.909 af, Atten= 60%, Lag= 22.3 min
Discarded = 0.49 cfs @ 12.47 hrs, Volume= 0.810 af
Primary = 7.98 cfs @ 12.47 hrs, Volume= 1.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 315.27' @ 12.47 hrs Surf.Area= 8,712 sf Storage= 35,472 cf

Plug-Flow detention time= 377.2 min calculated for 1.908 af (100% of inflow)
Center-of-Mass det. time= 377.9 min (1,193.3 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	309.00'	42,092 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
309.00	2,439	200.1	0	0	2,439
310.00	3,839	242.8	3,113	3,113	3,960
312.00	5,491	281.0	9,281	12,394	5,636
314.00	7,393	320.0	12,837	25,230	7,596
316.00	9,513	355.0	16,862	42,092	9,594

Device	Routing	Invert	Outlet Devices
#1	Primary	309.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 309.00' / 308.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	309.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 306.73'
#3	Primary	315.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	315.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	310.45'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.49 cfs @ 12.47 hrs HW=315.27' (Free Discharge)
└─**2=Exfiltration** (Controls 0.49 cfs)

Primary OutFlow Max=7.79 cfs @ 12.47 hrs HW=315.27' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 7.79 cfs of 27.41 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Weir Controls 7.28 cfs @ 1.69 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 0.51 cfs @ 10.43 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: INFIL BASIN #2

Inflow Area =	10.289 ac, 22.88% Impervious, Inflow Depth = 2.62" for 25-year event				
Inflow =	20.70 cfs @	12.15 hrs,	Volume=	2.248 af	
Outflow =	2.05 cfs @	14.13 hrs,	Volume=	2.248 af,	Atten= 90%, Lag= 118.6 min
Discarded =	1.21 cfs @	14.13 hrs,	Volume=	1.806 af	
Primary =	0.84 cfs @	14.13 hrs,	Volume=	0.442 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.45' @ 14.13 hrs Surf.Area= 32,756 sf Storage= 54,251 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 478.8 min (1,309.5 - 830.6)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	118,862 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
314.00	2,513	223.0	0	0	2,513
316.00	17,939	667.0	18,111	18,111	33,971
318.00	39,591	937.0	56,120	74,231	68,472
319.00	49,868	1,019.0	44,631	118,862	81,273

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 312.60' S= 0.0280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	314.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 312.00'
#3	Primary	317.80'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	317.40'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	315.55'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.21 cfs @ 14.13 hrs HW=317.45' (Free Discharge)
└─**2=Exfiltration** (Controls 1.21 cfs)

Primary OutFlow Max=0.84 cfs @ 14.13 hrs HW=317.45' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.84 cfs of 18.68 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.53 cfs @ 0.71 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.41 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: DMH-2

Inflow Area =	4.772 ac, 49.56% Impervious, Inflow Depth = 2.95" for 25-year event				
Inflow =	15.07 cfs @	12.10 hrs, Volume=	1.175 af		
Outflow =	15.07 cfs @	12.10 hrs, Volume=	1.175 af, Atten= 0%, Lag= 0.0 min		
Primary =	15.07 cfs @	12.10 hrs, Volume=	1.175 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.49' @ 12.10 hrs
Flood Elev= 319.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.90'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.90' / 312.70' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=15.04 cfs @ 12.10 hrs HW=316.49' TW=313.46' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 15.04 cfs @ 4.79 fps)

Summary for Pond 8P: CB-5

Inflow Area =	0.536 ac, 69.71% Impervious, Inflow Depth = 3.95" for 25-year event				
Inflow =	2.37 cfs @ 12.09 hrs, Volume=	0.176 af			
Outflow =	2.37 cfs @ 12.09 hrs, Volume=	0.176 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.37 cfs @ 12.09 hrs, Volume=	0.176 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.92' @ 12.14 hrs
Flood Elev= 319.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.26'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.26' / 314.90' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.41 cfs @ 12.09 hrs HW=316.63' TW=316.41' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.41 cfs @ 1.79 fps)

Summary for Pond 9P: CB-6

Inflow Area =	0.416 ac, 86.61% Impervious, Inflow Depth = 4.60" for 25-year event				
Inflow =	2.03 cfs @ 12.09 hrs, Volume=	0.159 af			
Outflow =	2.03 cfs @ 12.09 hrs, Volume=	0.159 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.03 cfs @ 12.09 hrs, Volume=	0.159 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.79' @ 12.14 hrs
Flood Elev= 319.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.65'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.65' / 314.90' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.09 hrs HW=316.58' TW=316.39' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.26 cfs @ 1.65 fps)

Summary for Pond 10P: CB-4

Inflow Area =	0.486 ac, 82.05% Impervious, Inflow Depth = 4.37" for 25-year event				
Inflow =	2.32 cfs @ 12.09 hrs, Volume=	0.177 af			
Outflow =	2.32 cfs @ 12.09 hrs, Volume=	0.177 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.32 cfs @ 12.09 hrs, Volume=	0.177 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.92' @ 12.09 hrs
Flood Elev= 318.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.82'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.82' / 314.40' S= 0.0168 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=315.89' TW=313.34' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.26 cfs @ 2.88 fps)

Summary for Pond 11P: DMH-3

Inflow Area =	3.820 ac, 42.71% Impervious, Inflow Depth = 2.64" for 25-year event				
Inflow =	10.71 cfs @	12.10 hrs,	Volume=	0.839 af	
Outflow =	10.71 cfs @	12.10 hrs,	Volume=	0.839 af,	Atten= 0%, Lag= 0.0 min
Primary =	10.71 cfs @	12.10 hrs,	Volume=	0.839 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.90' @ 12.10 hrs
Flood Elev= 321.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.10'	**24.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.10' / 314.90' S= 0.0349 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=10.61 cfs @ 12.10 hrs HW=318.88' TW=316.46' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 10.61 cfs @ 3.59 fps)

Summary for Pond 12P: DMH-4

Inflow Area =	3.355 ac, 39.90% Impervious, Inflow Depth = 2.50" for 25-year event				
Inflow =	8.81 cfs @	12.11 hrs,	Volume=	0.698 af	
Outflow =	8.81 cfs @	12.11 hrs,	Volume=	0.698 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.81 cfs @	12.11 hrs,	Volume=	0.698 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.52' @ 12.11 hrs
Flood Elev= 326.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.96'	**24.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.96' / 317.20' S= 0.0481 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=8.67 cfs @ 12.11 hrs HW=323.50' TW=318.87' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.67 cfs @ 3.34 fps)

Summary for Pond 13P: DMH-6

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 3.83" for 25-year event				
Inflow =	3.93 cfs @	12.09 hrs, Volume=	0.291 af		
Outflow =	3.93 cfs @	12.09 hrs, Volume=	0.291 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.93 cfs @	12.09 hrs, Volume=	0.291 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.35' @ 12.09 hrs
Flood Elev= 340.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.25'	**18.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.25' / 328.11' S= 0.0576 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.84 cfs @ 12.09 hrs HW=336.34' TW=329.10' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.84 cfs @ 2.80 fps)

Summary for Pond 14P: CB-8

Inflow Area =	0.336 ac, 81.36% Impervious, Inflow Depth = 4.16" for 25-year event				
Inflow =	1.55 cfs @	12.09 hrs, Volume=	0.116 af		
Outflow =	1.55 cfs @	12.09 hrs, Volume=	0.116 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.55 cfs @	12.09 hrs, Volume=	0.116 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.33' @ 12.09 hrs
Flood Elev= 340.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.55'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.55' / 335.75' S= 0.0571 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.09 hrs HW=337.31' TW=336.33' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.51 cfs @ 2.35 fps)

Summary for Pond 15P: CB-7

Inflow Area =	0.576 ac, 74.55% Impervious, Inflow Depth = 3.64" for 25-year event				
Inflow =	2.38 cfs @	12.09 hrs, Volume=	0.175 af		
Outflow =	2.38 cfs @	12.09 hrs, Volume=	0.175 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.38 cfs @	12.09 hrs, Volume=	0.175 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.08' @ 12.09 hrs
Flood Elev= 339.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.95'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.95' / 335.75' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.33 cfs @ 12.09 hrs HW=337.06' TW=336.34' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.33 cfs @ 2.96 fps)

Summary for Pond 16P: DMH-5

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 3.83" for 25-year event				
Inflow =	3.93 cfs @	12.09 hrs, Volume=	0.291 af		
Outflow =	3.93 cfs @	12.09 hrs, Volume=	0.291 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.93 cfs @	12.09 hrs, Volume=	0.291 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 329.11' @ 12.09 hrs
Flood Elev= 332.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.01'	**18.0" Round Culvert** L= 91.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 328.01' / 322.56' S= 0.0599 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.84 cfs @ 12.09 hrs HW=329.10' TW=323.48' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.84 cfs @ 2.80 fps)

Summary for Pond 17P: DMH-15

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 3.73" for 25-year event				
Inflow =	2.06 cfs @	12.09 hrs, Volume=	0.157 af		
Outflow =	2.06 cfs @	12.09 hrs, Volume=	0.157 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.06 cfs @	12.09 hrs, Volume=	0.157 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.52' @ 12.09 hrs
Flood Elev= 340.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.55'	**12.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.55' / 334.86' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.01 cfs @ 12.09 hrs HW=336.50' TW=335.71' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.01 cfs @ 2.62 fps)

Summary for Pond 18P: CB-17

Inflow Area =	0.154 ac, 98.52% Impervious, Inflow Depth = 5.05" for 25-year event				
Inflow =	0.79 cfs @	12.09 hrs, Volume=	0.065 af		
Outflow =	0.79 cfs @	12.09 hrs, Volume=	0.065 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.79 cfs @	12.09 hrs, Volume=	0.065 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.59' @ 12.13 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=336.51' TW=336.49' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.31 cfs @ 0.73 fps)

Summary for Pond 19P: CB-16

Inflow Area =	0.351 ac, 48.14% Impervious, Inflow Depth = 3.15" for 25-year event				
Inflow =	1.27 cfs @	12.09 hrs, Volume=	0.092 af		
Outflow =	1.27 cfs @	12.09 hrs, Volume=	0.092 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.27 cfs @	12.09 hrs, Volume=	0.092 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.68' @ 12.12 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.97 cfs @ 12.09 hrs HW=336.64' TW=336.50' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.97 cfs @ 1.39 fps)

Summary for Pond 20P: DMH-14

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 3.73" for 25-year event				
Inflow =	2.06 cfs @	12.09 hrs, Volume=	0.157 af		
Outflow =	2.06 cfs @	12.09 hrs, Volume=	0.157 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.06 cfs @	12.09 hrs, Volume=	0.157 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.73' @ 12.09 hrs
Flood Elev= 341.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.76'	**12.0" Round Culvert** L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.76' / 333.88' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.01 cfs @ 12.09 hrs HW=335.71' TW=334.55' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.01 cfs @ 2.62 fps)

Summary for Pond 21P: DMH-13

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 3.90" for 25-year event			
Inflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af		
Outflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af, Atten= 0%, Lag= 0.0 min		
Primary =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 334.57' @ 12.09 hrs
Flood Elev= 342.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.38'	**18.0" Round Culvert** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.38' / 330.66' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.32 cfs @ 12.09 hrs HW=334.55' TW=331.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.32 cfs @ 2.91 fps)

Summary for Pond 22P: CB-14

Inflow Area =	0.373 ac, 76.57% Impervious, Inflow Depth = 3.64" for 25-year event			
Inflow =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af		
Outflow =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.54 cfs @ 12.09 hrs, Volume=	0.113 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.98' @ 12.09 hrs
Flood Elev= 342.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.21'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.21' / 338.00' S= 0.0124 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.09 hrs HW=338.97' TW=334.55' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.51 cfs @ 2.35 fps)

Summary for Pond 23P: CB-15

Inflow Area =	0.161 ac, 98.59% Impervious, Inflow Depth = 5.05" for 25-year event				
Inflow =	0.83 cfs @ 12.09 hrs, Volume=	0.068 af			
Outflow =	0.83 cfs @ 12.09 hrs, Volume=	0.068 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.83 cfs @ 12.09 hrs, Volume=	0.068 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.84' @ 12.09 hrs
Flood Elev= 342.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.31'	**12.0" Round Culvert** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.31' / 338.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.80 cfs @ 12.09 hrs HW=338.83' TW=334.55' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.80 cfs @ 1.94 fps)

Summary for Pond 24P: DMH-12

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 3.90" for 25-year event				
Inflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af			
Outflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af, Atten= 0%, Lag= 0.0 min			
Primary =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 331.75' @ 12.09 hrs
Flood Elev= 338.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	330.56'	**18.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.56' / 327.84' S= 0.0275 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.32 cfs @ 12.09 hrs HW=331.73' TW=328.91' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.32 cfs @ 2.91 fps)

Summary for Pond 25P: DMH-11

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 3.90" for 25-year event				
Inflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af			
Outflow =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af, Atten= 0%, Lag= 0.0 min			
Primary =	4.42 cfs @ 12.09 hrs, Volume=	0.337 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.93' @ 12.09 hrs
Flood Elev= 332.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	327.74'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 327.74' / 322.02' S= 0.0753 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.32 cfs @ 12.09 hrs HW=328.91' TW=323.89' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.32 cfs @ 2.91 fps)

Summary for Pond 26P: DMH-10

Inflow Area =	1.707 ac, 77.06% Impervious, Inflow Depth = 4.09" for 25-year event				
Inflow =	7.59 cfs @	12.09 hrs,	Volume=	0.582 af	
Outflow =	7.59 cfs @	12.09 hrs,	Volume=	0.582 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.59 cfs @	12.09 hrs,	Volume=	0.582 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.94' @ 12.09 hrs
Flood Elev= 327.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.92'	**18.0" Round Culvert** L= 174.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.92' / 316.81' S= 0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=7.41 cfs @ 12.09 hrs HW=323.89' TW=318.20' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 7.41 cfs @ 4.20 fps)

Summary for Pond 27P: CB-13

Inflow Area =	0.182 ac, 98.50% Impervious, Inflow Depth = 5.05" for 25-year event				
Inflow =	0.93 cfs @	12.09 hrs,	Volume=	0.077 af	
Outflow =	0.93 cfs @	12.09 hrs,	Volume=	0.077 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.93 cfs @	12.09 hrs,	Volume=	0.077 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.12' @ 12.13 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.70 cfs @ 12.09 hrs HW=324.07' TW=323.88' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.70 cfs @ 2.25 fps)

Summary for Pond 28P: CB-12

Inflow Area =	0.486 ac, 76.42% Impervious, Inflow Depth = 4.16" for 25-year event				
Inflow =	2.24 cfs @	12.09 hrs, Volume=	0.168 af		
Outflow =	2.24 cfs @	12.09 hrs, Volume=	0.168 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.24 cfs @	12.09 hrs, Volume=	0.168 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.57' @ 12.09 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.18 cfs @ 12.09 hrs HW=324.54' TW=323.89' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.18 cfs @ 2.77 fps)

Summary for Pond 29P: DMH-9

Inflow Area =	2.440 ac, 76.17% Impervious, Inflow Depth = 4.08" for 25-year event				
Inflow =	10.91 cfs @	12.09 hrs, Volume=	0.830 af		
Outflow =	10.91 cfs @	12.09 hrs, Volume=	0.830 af, Atten= 0%, Lag= 0.0 min		
Primary =	10.91 cfs @	12.09 hrs, Volume=	0.830 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.23' @ 12.09 hrs
Flood Elev= 322.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	316.31'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 316.31' / 316.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=10.64 cfs @ 12.09 hrs HW=318.20' TW=316.04' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 10.64 cfs @ 4.48 fps)

Summary for Pond 30P: CB-11

Inflow Area =	0.734 ac, 74.09% Impervious, Inflow Depth = 4.05" for 25-year event				
Inflow =	3.31 cfs @	12.09 hrs, Volume=	0.248 af		
Outflow =	3.31 cfs @	12.09 hrs, Volume=	0.248 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.31 cfs @	12.09 hrs, Volume=	0.248 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.51' @ 12.12 hrs
Flood Elev= 321.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.30'	**18.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.30' / 316.81' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.53 cfs @ 12.09 hrs HW=318.44' TW=318.20' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.53 cfs @ 2.42 fps)

Summary for Pond 31P: PROP. CULVERT

Inflow Area =	2.338 ac, 19.03% Impervious, Inflow Depth = 1.77" for 25-year event				
Inflow =	2.95 cfs @	12.33 hrs, Volume=	0.345 af		
Outflow =	2.95 cfs @	12.33 hrs, Volume=	0.345 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.95 cfs @	12.33 hrs, Volume=	0.345 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 315.56' @ 12.47 hrs
Flood Elev= 318.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**15.0" Round Culvert** L= 75.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 313.00' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.08 cfs @ 12.33 hrs HW=315.27' TW=315.05' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.08 cfs @ 2.08 fps)

Summary for Pond 32P: CB-10

Inflow Area =	0.106 ac,100.00% Impervious, Inflow Depth = 5.16" for 25-year event				
Inflow =	0.55 cfs @	12.09 hrs, Volume=	0.046 af		
Outflow =	0.55 cfs @	12.09 hrs, Volume=	0.046 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.55 cfs @	12.09 hrs, Volume=	0.046 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.04' @ 12.23 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.73' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.62' TW=323.77' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 33P: CB-9

Inflow Area =	0.119 ac,100.00% Impervious, Inflow Depth = 5.16" for 25-year event				
Inflow =	0.61 cfs @	12.09 hrs,	Volume=	0.051 af	
Outflow =	0.61 cfs @	12.09 hrs,	Volume=	0.051 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.61 cfs @	12.09 hrs,	Volume=	0.051 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.87' @ 12.19 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.52' S= 0.0686 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.53' TW=323.69' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 34P: CB-18

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 3.64" for 25-year event				
Inflow =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af	
Outflow =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 320.91' @ 12.09 hrs
Flood Elev= 325.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.00' / 319.04' S= 0.0600 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=320.89' TW=319.83' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.88 cfs @ 2.54 fps)

Summary for Pond 35P: DMH-8

Inflow Area =	2.324 ac, 22.24% Impervious, Inflow Depth = 1.84" for 25-year event				
Inflow =	4.42 cfs @	12.13 hrs,	Volume=	0.356 af	
Outflow =	4.42 cfs @	12.13 hrs,	Volume=	0.356 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.42 cfs @	12.13 hrs,	Volume=	0.356 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.04' @ 12.18 hrs
Flood Elev= 327.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.63'	**24.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.63' / 322.52' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=2.84 cfs @ 12.13 hrs HW=323.94' TW=323.82' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.84 cfs @ 1.31 fps)

Summary for Pond 36P: DMH-16

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 3.64" for 25-year event				
Inflow =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af	
Outflow =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.92 cfs @	12.09 hrs,	Volume=	0.141 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.85' @ 12.09 hrs
Flood Elev= 326.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.94'	**12.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 318.94' / 317.20' S= 0.0829 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=319.83' TW=318.85' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.88 cfs @ 2.54 fps)

Summary for Pond 37P: DMH-7

Inflow Area =	2.443 ac, 26.02% Impervious, Inflow Depth = 2.00" for 25-year event				
Inflow =	5.01 cfs @	12.12 hrs,	Volume=	0.407 af	
Outflow =	5.01 cfs @	12.12 hrs,	Volume=	0.407 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.01 cfs @	12.12 hrs,	Volume=	0.407 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.86' @ 12.15 hrs
Flood Elev= 327.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.42'	**24.0" Round Culvert** L= 78.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.42' / 321.96' S= 0.0059 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.55 cfs @ 12.12 hrs HW=323.81' TW=323.47' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.55 cfs @ 2.76 fps)

Summary for Pond 39P: CB-2 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 4.59" for 25-year event				
Inflow =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af			
Outflow =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.42' @ 12.11 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.05'	**12.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.05' / 310.00' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=311.37' TW=310.98' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.88 cfs @ 2.39 fps)

Summary for Pond 40P: CB-1 [EXISTING]

Inflow Area =	0.174 ac, 81.24% Impervious, Inflow Depth = 4.59" for 25-year event				
Inflow =	0.86 cfs @ 12.09 hrs, Volume=	0.067 af			
Outflow =	0.86 cfs @ 12.09 hrs, Volume=	0.067 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.86 cfs @ 12.09 hrs, Volume=	0.067 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.50' @ 12.15 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.75'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.75' / 310.15' S= 0.0353 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.07 cfs @ 12.09 hrs HW=311.37' TW=311.37' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.07 cfs @ 0.19 fps)

Summary for Pond 42P: DMH-1 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 4.59" for 25-year event				
Inflow =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af			
Outflow =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.12 cfs @ 12.09 hrs, Volume=	0.165 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.00' @ 12.09 hrs
Flood Elev= 315.33'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**12.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.00' / 308.02' S= 0.0215 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.08 cfs @ 12.09 hrs HW=310.98' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.08 cfs @ 2.66 fps)

Summary for Pond 43P: SWALE & FIELD BASIN

Inflow Area =	2.218 ac, 18.52% Impervious, Inflow Depth = 1.77" for 25-year event				
Inflow =	4.01 cfs @	12.12 hrs,	Volume=	0.327 af	
Outflow =	3.97 cfs @	12.14 hrs,	Volume=	0.327 af,	Atten= 1%, Lag= 0.8 min
Discarded =	0.02 cfs @	12.14 hrs,	Volume=	0.017 af	
Primary =	3.95 cfs @	12.14 hrs,	Volume=	0.310 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.21' @ 12.14 hrs Surf.Area= 800 sf Storage= 146 cf

Plug-Flow detention time= 1.1 min calculated for 0.327 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (864.4 - 863.3)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	1,150 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	600	119.4	0	0	600
329.00	1,808	444.3	1,150	1,150	15,177

Device	Routing	Invert	Outlet Devices
#1	Discarded	328.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 320.50'
#2	Primary	324.00'	**18.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 324.00' / 322.73' S= 0.0249 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	328.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.02 cfs @ 12.14 hrs HW=328.21' (Free Discharge)
└─**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=3.87 cfs @ 12.14 hrs HW=328.21' TW=323.96' (Dynamic Tailwater)
└─**2=Culvert** (Passes 3.87 cfs of 12.49 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 3.87 cfs @ 1.49 fps)

Summary for Link 4L: DP-A

Inflow Area = 23.100 ac, 27.90% Impervious, Inflow Depth = 1.24" for 25-year event
Inflow = 11.88 cfs @ 12.10 hrs, Volume= 2.394 af
Primary = 11.88 cfs @ 12.10 hrs, Volume= 2.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 0.891 ac, 0.00% Impervious, Inflow Depth = 0.21" for 25-year event
Inflow = 0.03 cfs @ 12.57 hrs, Volume= 0.016 af
Primary = 0.03 cfs @ 12.57 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: POST 1.A Runoff Area=11,232 sf 80.47% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=93 Runoff=1.68 cfs 0.133 af

Subcatchment 2S: POST 2.A Runoff Area=23,362 sf 69.71% Impervious Runoff Depth=5.48"
Tc=6.0 min CN=87 Runoff=3.24 cfs 0.245 af

Subcatchment 5S: POST 6.A Runoff Area=101,865 sf 19.03% Impervious Runoff Depth=2.90"
Flow Length=1,092' Tc=22.1 min CN=63 Runoff=5.03 cfs 0.565 af

Subcatchment 6S: POST 7.A Runoff Area=21,169 sf 82.05% Impervious Runoff Depth=5.94"
Tc=6.0 min CN=91 Runoff=3.09 cfs 0.241 af

Subcatchment 7S: POST 8.A Runoff Area=21,105 sf 5.32% Impervious Runoff Depth=3.10"
Tc=6.0 min UI Adjusted CN=65 Runoff=1.71 cfs 0.125 af

Subcatchment 8S: POST 3.A Runoff Area=5,197 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.80 cfs 0.067 af

Subcatchment 9S: POST 4.A Runoff Area=25,089 sf 74.55% Impervious Runoff Depth=5.14"
Tc=6.0 min CN=84 Runoff=3.32 cfs 0.247 af

Subcatchment 10S: POST 5.A Runoff Area=14,640 sf 81.36% Impervious Runoff Depth=5.71"
Tc=6.0 min CN=89 Runoff=2.09 cfs 0.160 af

Subcatchment 11S: POST 9.A Runoff Area=12,906 sf 81.22% Impervious Runoff Depth=5.94"
Tc=6.0 min CN=91 Runoff=1.89 cfs 0.147 af

Subcatchment 12S: POST 12.A Runoff Area=96,627 sf 18.52% Impervious Runoff Depth=2.90"
Tc=8.0 min UI Adjusted CN=63 Runoff=6.83 cfs 0.536 af

Subcatchment 13S: POST 14.A Runoff Area=7,009 sf 98.59% Impervious Runoff Depth=6.64"
Tc=6.0 min CN=97 Runoff=1.07 cfs 0.089 af

Subcatchment 14S: POST 15.A Runoff Area=16,242 sf 76.57% Impervious Runoff Depth=5.14"
Tc=6.0 min CN=84 Runoff=2.15 cfs 0.160 af

Subcatchment 15S: POST 13.A Runoff Area=15,308 sf 48.14% Impervious Runoff Depth=4.58"
Tc=6.0 min CN=79 Runoff=1.84 cfs 0.134 af

Subcatchment 16S: POST 16.A Runoff Area=6,688 sf 98.52% Impervious Runoff Depth=6.64"
Tc=6.0 min CN=97 Runoff=1.03 cfs 0.085 af

Subcatchment 17S: POST 18.A Runoff Area=7,933 sf 98.50% Impervious Runoff Depth=6.64"
Tc=6.0 min CN=97 Runoff=1.22 cfs 0.101 af

Subcatchment 18S: POST 17.A Runoff Area=21,158 sf 76.42% Impervious Runoff Depth=5.71"
Tc=6.0 min CN=89 Runoff=3.02 cfs 0.231 af

Subcatchment 19S: POST 24.A Runoff Area=45,444 sf 0.00% Impervious Runoff Depth=3.94"
Tc=6.0 min CN=73 Runoff=4.72 cfs 0.342 af

Subcatchment 20S: POST 19.A Runoff Area=31,969 sf 74.09% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=88 Runoff=4.50 cfs 0.342 af

Subcatchment 21S: POST 20.A Runoff Area=54,029 sf 13.37% Impervious Runoff Depth=3.51"
Tc=6.0 min CN=69 Runoff=5.00 cfs 0.363 af

Subcatchment 22S: POST 22.A Runoff Area=165,736 sf 13.02% Impervious Runoff Depth=2.70"
Flow Length=884' Tc=15.2 min CN=61 Runoff=8.78 cfs 0.857 af

Subcatchment 23S: POST 23.A Runoff Area=176,164 sf 0.00% Impervious Runoff Depth=4.04"
Tc=16.7 min CN=74 Runoff=13.82 cfs 1.362 af

Subcatchment 24S: POST 21.A Runoff Area=74,028 sf 1.61% Impervious Runoff Depth=2.70"
Tc=6.0 min UI Adjusted CN=61 Runoff=5.16 cfs 0.383 af

Subcatchment 25S: POST 1.B Runoff Area=38,793 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=106' Tc=11.1 min CN=37 Runoff=0.24 cfs 0.047 af

Subcatchment 26S: POST 10.A Runoff Area=4,620 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.71 cfs 0.060 af

Subcatchment 27S: POST 11.A Runoff Area=5,180 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.80 cfs 0.067 af

Subcatchment 28S: BACK ROOFS OF Runoff Area=13,690 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=2.11 cfs 0.177 af

Subcatchment 38S: POST 25.A Runoff Area=20,255 sf 62.98% Impervious Runoff Depth=5.14"
Tc=6.0 min CN=84 Runoff=2.68 cfs 0.199 af

Subcatchment 41S: POST 26.A Runoff Area=7,581 sf 81.24% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=93 Runoff=1.13 cfs 0.090 af

Pond 5P: INFIL BASIN #1 Peak Elev=315.57' Storage=38,066 cf Inflow=31.27 cfs 2.817 af
Discarded=0.52 cfs 0.891 af Primary=22.76 cfs 1.927 af Outflow=23.27 cfs 2.818 af

Pond 6P: INFIL BASIN #2 Peak Elev=317.74' Storage=64,304 cf Inflow=31.44 cfs 3.361 af
Discarded=1.36 cfs 2.013 af Primary=10.63 cfs 1.348 af Outflow=11.99 cfs 3.361 af

Pond 7P: DMH-2 Peak Elev=318.26' Inflow=21.88 cfs 1.709 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=21.88 cfs 1.709 af

Pond 8P: CB-5 Peak Elev=319.03' Inflow=3.24 cfs 0.245 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0180 '/' Outflow=3.24 cfs 0.245 af

Pond 9P: CB-6 Peak Elev=318.77' Inflow=2.69 cfs 0.214 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0375 '/' Outflow=2.69 cfs 0.214 af

Pond 10P: CB-4 Peak Elev=316.39' Inflow=3.09 cfs 0.241 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0168 '/' Outflow=3.09 cfs 0.241 af

Pond 11P: DMH-3 Peak Elev=319.91' Inflow=16.01 cfs 1.251 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0349 '/' Outflow=16.01 cfs 1.251 af

Pond 12P: DMH-4 Peak Elev=324.21' Inflow=13.37 cfs 1.051 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0481 '/' Outflow=13.37 cfs 1.051 af

Pond 13P: DMH-6 Peak Elev=336.64' Inflow=5.40 cfs 0.407 af
18.0" Round Culvert n=0.013 L=124.0' S=0.0576 '/' Outflow=5.40 cfs 0.407 af

Pond 14P: CB-8 Peak Elev=337.53' Inflow=2.09 cfs 0.160 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0571 '/' Outflow=2.09 cfs 0.160 af

Pond 15P: CB-7 Peak Elev=337.76' Inflow=3.32 cfs 0.247 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0200 '/' Outflow=3.32 cfs 0.247 af

Pond 16P: DMH-5 Peak Elev=329.40' Inflow=5.40 cfs 0.407 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0599 '/' Outflow=5.40 cfs 0.407 af

Pond 17P: DMH-15 Peak Elev=336.96' Inflow=2.86 cfs 0.219 af
12.0" Round Culvert n=0.013 L=69.0' S=0.0100 '/' Outflow=2.86 cfs 0.219 af

Pond 18P: CB-17 Peak Elev=337.04' Inflow=1.03 cfs 0.085 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=1.03 cfs 0.085 af

Pond 19P: CB-16 Peak Elev=337.24' Inflow=1.84 cfs 0.134 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0100 '/' Outflow=1.84 cfs 0.134 af

Pond 20P: DMH-14 Peak Elev=336.18' Inflow=2.86 cfs 0.219 af
12.0" Round Culvert n=0.013 L=88.0' S=0.0100 '/' Outflow=2.86 cfs 0.219 af

Pond 21P: DMH-13 Peak Elev=334.95' Inflow=6.08 cfs 0.468 af
18.0" Round Culvert n=0.013 L=136.0' S=0.0200 '/' Outflow=6.08 cfs 0.468 af

Pond 22P: CB-14 Peak Elev=339.22' Inflow=2.15 cfs 0.160 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0124 '/' Outflow=2.15 cfs 0.160 af

Pond 23P: CB-15 Peak Elev=338.93' Inflow=1.07 cfs 0.089 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0111 '/' Outflow=1.07 cfs 0.089 af

Pond 24P: DMH-12 Peak Elev=332.13' Inflow=6.08 cfs 0.468 af
18.0" Round Culvert n=0.013 L=99.0' S=0.0275 '/' Outflow=6.08 cfs 0.468 af

Pond 25P: DMH-11 Peak Elev=329.31' Inflow=6.08 cfs 0.468 af
18.0" Round Culvert n=0.013 L=76.0' S=0.0753 '/' Outflow=6.08 cfs 0.468 af

Pond 26P: DMH-10 Peak Elev=325.02' Inflow=10.32 cfs 0.800 af
18.0" Round Culvert n=0.013 L=174.0' S=0.0294 '/' Outflow=10.32 cfs 0.800 af

Pond 27P: CB-13 Peak Elev=325.13' Inflow=1.22 cfs 0.101 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=1.22 cfs 0.101 af

Pond 28P: CB-12 Peak Elev=325.75' Inflow=3.02 cfs 0.231 af
12.0" Round Culvert n=0.013 L=14.0' S=0.0200 '/' Outflow=3.02 cfs 0.231 af

Pond 29P: DMH-9 Peak Elev=318.84' Inflow=14.81 cfs 1.142 af
24.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=14.81 cfs 1.142 af

Pond 30P: CB-11 Peak Elev=319.16' Inflow=4.50 cfs 0.342 af
18.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=4.50 cfs 0.342 af

Pond 31P: PROP. CULVERT Peak Elev=316.69' Inflow=5.03 cfs 0.565 af
15.0" Round Culvert n=0.013 L=75.8' S=0.0132 '/' Outflow=5.03 cfs 0.565 af

Pond 32P: CB-10 Peak Elev=324.89' Inflow=0.71 cfs 0.060 af
18.0" Round Culvert n=0.013 L=55.0' S=0.0049 '/' Outflow=0.71 cfs 0.060 af

Pond 33P: CB-9 Peak Elev=324.64' Inflow=0.80 cfs 0.067 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0686 '/' Outflow=0.80 cfs 0.067 af

Pond 34P: CB-18 Peak Elev=321.30' Inflow=2.68 cfs 0.199 af
12.0" Round Culvert n=0.013 L=16.0' S=0.0600 '/' Outflow=2.68 cfs 0.199 af

Pond 35P: DMH-8 Peak Elev=324.89' Inflow=7.41 cfs 0.578 af
24.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=7.41 cfs 0.578 af

Pond 36P: DMH-16 Peak Elev=320.42' Inflow=2.68 cfs 0.199 af
12.0" Round Culvert n=0.013 L=21.0' S=0.0829 '/' Outflow=2.68 cfs 0.199 af

Pond 37P: DMH-7 Peak Elev=324.64' Inflow=8.15 cfs 0.645 af
24.0" Round Culvert n=0.013 L=78.1' S=0.0059 '/' Outflow=8.15 cfs 0.645 af

Pond 39P: CB-2 [EXISTING] Peak Elev=312.14' Inflow=2.81 cfs 0.222 af
12.0" Round Culvert n=0.013 L=49.0' S=0.0010 '/' Outflow=2.81 cfs 0.222 af

Pond 40P: CB-1 [EXISTING] Peak Elev=312.22' Inflow=1.13 cfs 0.090 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0353 '/' Outflow=1.13 cfs 0.090 af

Pond 42P: DMH-1 [EXISTING] Peak Elev=311.38' Inflow=2.81 cfs 0.222 af
12.0" Round Culvert n=0.013 L=92.0' S=0.0215 '/' Outflow=2.81 cfs 0.222 af

Pond 43P: SWALE & FIELD BASIN Peak Elev=328.30' Storage=222 cf Inflow=6.83 cfs 0.536 af
Discarded=0.02 cfs 0.018 af Primary=6.72 cfs 0.518 af Outflow=6.75 cfs 0.536 af

Link 4L: DP-A Inflow=33.53 cfs 4.585 af
Primary=33.53 cfs 4.585 af

Link 5L: DP-B Inflow=0.24 cfs 0.047 af
Primary=0.24 cfs 0.047 af

Total Runoff Area = 23.990 ac Runoff Volume = 7.553 af Average Runoff Depth = 3.78"
73.13% Pervious = 17.545 ac 26.87% Impervious = 6.446 ac

Summary for Subcatchment 1S: POST 1.A

Runoff = 1.68 cfs @ 12.09 hrs, Volume= 0.133 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
4,679	98	Paved parking, HSG C
1,673	98	Paved parking, HSG B
2,343	98	Unconnected pavement, HSG C
343	98	Unconnected pavement, HSG B
395	61	>75% Grass cover, Good, HSG B
1,799	74	>75% Grass cover, Good, HSG C
11,232	93	Weighted Average
2,194		19.53% Pervious Area
9,038		80.47% Impervious Area
2,686		29.72% Unconnected

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

Summary for Subcatchment 2S: POST 2.A

Runoff = 3.24 cfs @ 12.09 hrs, Volume= 0.245 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
757	98	Unconnected pavement, HSG B
8,275	98	Paved parking, HSG B
7,076	61	>75% Grass cover, Good, HSG B
23,362	87	Weighted Average
7,076		30.29% Pervious Area
16,286		69.71% Impervious Area
757		4.65% Unconnected

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

Summary for Subcatchment 5S: POST 6.A

Runoff = 5.03 cfs @ 12.32 hrs, Volume= 0.565 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
3,460	70	Woods, Good, HSG C
1,929	74	>75% Grass cover, Good, HSG C
11,762	55	Woods, Good, HSG B
43,358	61	>75% Grass cover, Good, HSG B
10,565	98	Roofs, HSG B
1,187	98	Unconnected pavement, HSG B
6,891	98	Roofs, HSG A
741	98	Unconnected pavement, HSG A
21,972	39	>75% Grass cover, Good, HSG A
101,865	63	Weighted Average
82,481		80.97% Pervious Area
19,384		19.03% Impervious Area
1,928		9.95% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0060	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
11.8	859	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	100	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	83	0.0200	10.18	31.99	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
22.1	1,092	Total			

Summary for Subcatchment 6S: POST 7.A

Runoff = 3.09 cfs @ 12.09 hrs, Volume= 0.241 af, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
9,604	98	Paved parking, HSG B
511	98	Unconnected pavement, HSG B
3,800	61	>75% Grass cover, Good, HSG B
21,169	91	Weighted Average
3,800		17.95% Pervious Area
17,369		82.05% Impervious Area
511		2.94% Unconnected

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

Summary for Subcatchment 7S: POST 8.A

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 0.125 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Adj	Description
120	98		Roofs, HSG B
1,579	96		Gravel surface, HSG B
1,003	98		Unconnected pavement, HSG B
18,403	61		>75% Grass cover, Good, HSG B
21,105	66	65	Weighted Average, UI Adjusted
19,982			94.68% Pervious Area
1,123			5.32% Impervious Area
1,003			89.31% Unconnected

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

Summary for Subcatchment 8S: POST 3.A

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
5,197	98	Paved parking, HSG B
5,197		100.00% Impervious Area

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

Summary for Subcatchment 9S: POST 4.A

Runoff = 3.32 cfs @ 12.09 hrs, Volume= 0.247 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,372	98	Roofs, HSG B
150	98	Unconnected pavement, HSG B
2,521	98	Paved parking, HSG B
1,636	61	>75% Grass cover, Good, HSG B
6,091	98	Roofs, HSG A
649	98	Unconnected pavement, HSG A
6,920	98	Paved parking, HSG A
4,750	39	>75% Grass cover, Good, HSG A
25,089	84	Weighted Average
6,386		25.45% Pervious Area
18,703		74.55% Impervious Area
799		4.27% Unconnected

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

Summary for Subcatchment 10S: POST 5.A

Runoff = 2.09 cfs @ 12.09 hrs, Volume= 0.160 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
338	98	Unconnected pavement, HSG B
2,578	98	Paved parking, HSG B
1,011	61	>75% Grass cover, Good, HSG B
2,418	98	Roofs, HSG A
494	98	Unconnected pavement, HSG A
3,665	98	Paved parking, HSG A
1,718	39	>75% Grass cover, Good, HSG A
14,640	89	Weighted Average
2,729		18.64% Pervious Area
11,911		81.36% Impervious Area
832		6.99% Unconnected

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

Summary for Subcatchment 11S: POST 9.A

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.147 af, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
7,363	98	Paved parking, HSG B
701	98	Unconnected pavement, HSG B
2,424	61	>75% Grass cover, Good, HSG B
12,906	91	Weighted Average
2,424		18.78% Pervious Area
10,482		81.22% Impervious Area
701		6.69% Unconnected

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

Summary for Subcatchment 12S: POST 12.A

Runoff = 6.83 cfs @ 12.12 hrs, Volume= 0.536 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Adj	Description
9,152	98		Roofs, HSG B
2,471	98		Unconnected pavement, HSG B
59,845	61		>75% Grass cover, Good, HSG B
4,539	98		Roofs, HSG A
1,734	98		Unconnected pavement, HSG A
18,886	39		>75% Grass cover, Good, HSG A
96,627	64	63	Weighted Average, UI Adjusted
78,731			81.48% Pervious Area
17,896			18.52% Impervious Area
4,205			23.50% Unconnected

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

Summary for Subcatchment 13S: POST 14.A

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
1,784	98	Roofs, HSG A
3,387	98	Paved parking, HSG A
99	39	>75% Grass cover, Good, HSG A
1,105	98	Paved parking, HSG B
634	98	Roofs, HSG B
7,009	97	Weighted Average
99		1.41% Pervious Area
6,910		98.59% Impervious Area

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

Summary for Subcatchment 14S: POST 15.A

Runoff = 2.15 cfs @ 12.09 hrs, Volume= 0.160 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
1,135	98	Paved parking, HSG B
6,045	98	Roofs, HSG A
496	98	Unconnected pavement, HSG A
4,760	98	Paved parking, HSG A
3,806	39	>75% Grass cover, Good, HSG A
16,242	84	Weighted Average
3,806		23.43% Pervious Area
12,436		76.57% Impervious Area
496		3.99% Unconnected

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

Summary for Subcatchment 15S: POST 13.A

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.134 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
1,547	98	Unconnected pavement, HSG B
3,405	98	Paved parking, HSG B
7,938	61	>75% Grass cover, Good, HSG B
15,308	79	Weighted Average
7,938		51.86% Pervious Area
7,370		48.14% Impervious Area
1,547		20.99% Unconnected

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

Summary for Subcatchment 16S: POST 16.A

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
4,171	98	Paved parking, HSG B
99	61	>75% Grass cover, Good, HSG B
6,688	97	Weighted Average
99		1.48% Pervious Area
6,589		98.52% Impervious Area

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

Summary for Subcatchment 17S: POST 18.A

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 0.101 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,418	98	Roofs, HSG B
5,396	98	Paved parking, HSG B
119	61	>75% Grass cover, Good, HSG B
7,933	97	Weighted Average
119		1.50% Pervious Area
7,814		98.50% Impervious Area

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

Summary for Subcatchment 18S: POST 17.A

Runoff = 3.02 cfs @ 12.09 hrs, Volume= 0.231 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
7,406	98	Paved parking, HSG B
1,509	98	Unconnected pavement, HSG B
4,989	61	>75% Grass cover, Good, HSG B
21,158	89	Weighted Average
4,989		23.58% Pervious Area
16,169		76.42% Impervious Area
1,509		9.33% Unconnected

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

Summary for Subcatchment 19S: POST 24.A

Runoff = 4.72 cfs @ 12.09 hrs, Volume= 0.342 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
16,251	77	Woods, Good, HSG D
5,201	96	Gravel surface, HSG D
5,436	80	>75% Grass cover, Good, HSG D
6,221	30	Woods, Good, HSG A
3,810	39	>75% Grass cover, Good, HSG A
4,986	96	Gravel surface, HSG A
1,269	61	>75% Grass cover, Good, HSG B
2,270	96	Gravel surface, HSG B
45,444	73	Weighted Average
45,444		100.00% Pervious Area

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

Summary for Subcatchment 20S: POST 19.A

Runoff = 4.50 cfs @ 12.09 hrs, Volume= 0.342 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
7,254	98	Roofs, HSG B
15,358	98	Paved parking, HSG B
1,073	98	Unconnected pavement, HSG B
8,284	61	>75% Grass cover, Good, HSG B
31,969	88	Weighted Average
8,284		25.91% Pervious Area
23,685		74.09% Impervious Area
1,073		4.53% Unconnected

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

Summary for Subcatchment 21S: POST 20.A

Runoff = 5.00 cfs @ 12.09 hrs, Volume= 0.363 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
5,596	98	Roofs, HSG B
1,630	98	Unconnected pavement, HSG B
1,749	96	Gravel surface, HSG B
40,318	61	>75% Grass cover, Good, HSG B
1,861	96	Gravel surface, HSG D
2,875	80	>75% Grass cover, Good, HSG D
54,029	69	Weighted Average
46,803		86.63% Pervious Area
7,226		13.37% Impervious Area
1,630		22.56% Unconnected

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

Summary for Subcatchment 22S: POST 22.A

Runoff = 8.78 cfs @ 12.22 hrs, Volume= 0.857 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
6,845	98	Roofs, HSG A
819	98	Unconnected pavement, HSG A
5,708	30	Woods, Good, HSG A
30,256	39	>75% Grass cover, Good, HSG A
11,252	98	Roofs, HSG B
2,667	98	Unconnected pavement, HSG B
88,631	61	>75% Grass cover, Good, HSG B
14,680	55	Woods, Good, HSG B
2,251	96	Gravel surface, HSG B
831	96	Gravel surface, HSG D
1,334	80	>75% Grass cover, Good, HSG D
462	77	Woods, Good, HSG D
165,736	61	Weighted Average
144,153		86.98% Pervious Area
21,583		13.02% Impervious Area
3,486		16.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.7	348	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	486	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	884	Total			

Summary for Subcatchment 23S: POST 23.A

Runoff = 13.82 cfs @ 12.23 hrs, Volume= 1.362 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
24,614	55	Woods, Good, HSG B
1,206	96	Gravel surface, HSG D
1,599	80	>75% Grass cover, Good, HSG D
148,745	77	Woods, Good, HSG D
176,164	74	Weighted Average
176,164		100.00% Pervious Area

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

Summary for Subcatchment 24S: POST 21.A

Runoff = 5.16 cfs @ 12.10 hrs, Volume= 0.383 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Adj	Description
1,194	98		Unconnected pavement, HSG B
248	96		Gravel surface, HSG B
72,586	61		>75% Grass cover, Good, HSG B
74,028	62	61	Weighted Average, UI Adjusted
72,834			98.39% Pervious Area
1,194			1.61% Impervious Area
1,194			100.00% Unconnected

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

Summary for Subcatchment 25S: POST 1.B

Runoff = 0.24 cfs @ 12.38 hrs, Volume= 0.047 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
7,624	55	Woods, Good, HSG B
176	61	>75% Grass cover, Good, HSG B
24,732	30	Woods, Good, HSG A
6,261	39	>75% Grass cover, Good, HSG A
38,793	37	Weighted Average
38,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	56	0.2700	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.1	106	Total			

Summary for Subcatchment 26S: POST 10.A

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
4,620	98	Paved parking, HSG B
4,620		100.00% Impervious Area

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

Summary for Subcatchment 27S: POST 11.A

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
5,180	98	Paved parking, HSG B
5,180		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK ROOFS OF UNITS 1-10

Runoff = 2.11 cfs @ 12.09 hrs, Volume= 0.177 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
13,690	98	Roofs, HSG B
13,690		100.00% Impervious Area

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

Summary for Subcatchment 38S: POST 25.A

Runoff = 2.68 cfs @ 12.09 hrs, Volume= 0.199 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
1,914	98	Roofs, HSG A
10,842	98	Unconnected pavement, HSG B
7,499	61	>75% Grass cover, Good, HSG B
20,255	84	Weighted Average
7,499		37.02% Pervious Area
12,756		62.98% Impervious Area
10,842		85.00% Unconnected

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

Summary for Subcatchment 41S: POST 26.A

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.090 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
4,658	98	Paved parking, HSG C
1,501	98	Paved parking, HSG B
352	61	>75% Grass cover, Good, HSG B
1,070	74	>75% Grass cover, Good, HSG C
7,581	93	Weighted Average
1,422		18.76% Pervious Area
6,159		81.24% Impervious Area

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

Summary for Pond 5P: INFIL BASIN #1

Inflow Area = 8.395 ac, 42.27% Impervious, Inflow Depth = 4.03" for 100-year event
Inflow = 31.27 cfs @ 12.10 hrs, Volume= 2.817 af
Outflow = 23.27 cfs @ 12.22 hrs, Volume= 2.818 af, Atten= 26%, Lag= 7.0 min
Discarded = 0.52 cfs @ 12.22 hrs, Volume= 0.891 af
Primary = 22.76 cfs @ 12.22 hrs, Volume= 1.927 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 315.57' @ 12.22 hrs Surf.Area= 9,030 sf Storage= 38,066 cf

Plug-Flow detention time= 288.3 min calculated for 2.816 af (100% of inflow)
Center-of-Mass det. time= 289.2 min (1,098.4 - 809.2)

Volume	Invert	Avail.Storage	Storage Description
#1	309.00'	42,092 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
309.00	2,439	200.1	0	0	2,439
310.00	3,839	242.8	3,113	3,113	3,960
312.00	5,491	281.0	9,281	12,394	5,636
314.00	7,393	320.0	12,837	25,230	7,596
316.00	9,513	355.0	16,862	42,092	9,594

Device	Routing	Invert	Outlet Devices
#1	Primary	309.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 309.00' / 308.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	309.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 306.73'
#3	Primary	315.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	315.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	310.45'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.51 cfs @ 12.22 hrs HW=315.55' (Free Discharge)
└─**2=Exfiltration** (Controls 0.51 cfs)

Primary OutFlow Max=21.95 cfs @ 12.22 hrs HW=315.55' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 21.95 cfs of 28.14 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Weir Controls 21.42 cfs @ 2.43 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 0.53 cfs @ 10.74 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: INFIL BASIN #2

Inflow Area =	10.289 ac, 22.88% Impervious, Inflow Depth = 3.92" for 100-year event				
Inflow =	31.44 cfs @	12.16 hrs,	Volume=	3.361 af	
Outflow =	11.99 cfs @	12.60 hrs,	Volume=	3.361 af,	Atten= 62%, Lag= 26.2 min
Discarded =	1.36 cfs @	12.60 hrs,	Volume=	2.013 af	
Primary =	10.63 cfs @	12.60 hrs,	Volume=	1.348 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 317.74' @ 12.60 hrs Surf.Area= 36,276 sf Storage= 64,304 cf

Plug-Flow detention time= 366.1 min calculated for 3.359 af (100% of inflow)
Center-of-Mass det. time= 366.8 min (1,188.6 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	118,862 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
314.00	2,513	223.0	0	0	2,513
316.00	17,939	667.0	18,111	18,111	33,971
318.00	39,591	937.0	56,120	74,231	68,472
319.00	49,868	1,019.0	44,631	118,862	81,273

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 312.60' S= 0.0280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	314.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 312.00'
#3	Primary	317.80'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	317.40'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Device 1	315.55'	**3.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.36 cfs @ 12.60 hrs HW=317.74' (Free Discharge)
└─**2=Exfiltration** (Controls 1.36 cfs)

Primary OutFlow Max=10.62 cfs @ 12.60 hrs HW=317.74' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 10.62 cfs of 19.76 cfs potential flow)
│ ├─**4=Sharp-Crested Rectangular Weir** (Weir Controls 10.28 cfs @ 1.90 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 0.34 cfs @ 6.92 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: DMH-2

Inflow Area =	4.772 ac, 49.56% Impervious, Inflow Depth = 4.30" for 100-year event			
Inflow =	21.88 cfs @ 12.10 hrs, Volume=	1.709 af		
Outflow =	21.88 cfs @ 12.10 hrs, Volume=	1.709 af, Atten= 0%, Lag= 0.0 min		
Primary =	21.88 cfs @ 12.10 hrs, Volume=	1.709 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.26' @ 12.10 hrs
Flood Elev= 319.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.90'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.90' / 312.70' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=21.46 cfs @ 12.10 hrs HW=318.24' TW=315.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 21.46 cfs @ 6.83 fps)

Summary for Pond 8P: CB-5

Inflow Area =	0.536 ac, 69.71% Impervious, Inflow Depth = 5.48" for 100-year event				
Inflow =	3.24 cfs @	12.09 hrs,	Volume=	0.245 af	
Outflow =	3.24 cfs @	12.09 hrs,	Volume=	0.245 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.24 cfs @	12.09 hrs,	Volume=	0.245 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.03' @ 12.14 hrs
Flood Elev= 319.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.26'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.26' / 314.90' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.09 hrs HW=318.24' TW=318.07' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.26 cfs @ 1.60 fps)

Summary for Pond 9P: CB-6

Inflow Area =	0.416 ac, 86.61% Impervious, Inflow Depth = 6.17" for 100-year event				
Inflow =	2.69 cfs @	12.09 hrs,	Volume=	0.214 af	
Outflow =	2.69 cfs @	12.09 hrs,	Volume=	0.214 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.69 cfs @	12.09 hrs,	Volume=	0.214 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.77' @ 12.14 hrs
Flood Elev= 319.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.65'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.65' / 314.90' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=317.87' TW=318.05' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 10P: CB-4

Inflow Area =	0.486 ac, 82.05% Impervious, Inflow Depth = 5.94" for 100-year event				
Inflow =	3.09 cfs @	12.09 hrs,	Volume=	0.241 af	
Outflow =	3.09 cfs @	12.09 hrs,	Volume=	0.241 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.09 cfs @	12.09 hrs,	Volume=	0.241 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.39' @ 12.09 hrs
Flood Elev= 318.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.82'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.82' / 314.40' S= 0.0168 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.02 cfs @ 12.09 hrs HW=316.34' TW=314.87' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.02 cfs @ 3.84 fps)

Summary for Pond 11P: DMH-3

Inflow Area = 3.820 ac, 42.71% Impervious, Inflow Depth = 3.93" for 100-year event
Inflow = 16.01 cfs @ 12.10 hrs, Volume= 1.251 af
Outflow = 16.01 cfs @ 12.10 hrs, Volume= 1.251 af, Atten= 0%, Lag= 0.0 min
Primary = 16.01 cfs @ 12.10 hrs, Volume= 1.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.91' @ 12.11 hrs
Flood Elev= 321.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.10'	**24.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.10' / 314.90' S= 0.0349 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=15.47 cfs @ 12.10 hrs HW=319.88' TW=318.20' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 15.47 cfs @ 4.92 fps)

Summary for Pond 12P: DMH-4

Inflow Area = 3.355 ac, 39.90% Impervious, Inflow Depth = 3.76" for 100-year event
Inflow = 13.37 cfs @ 12.11 hrs, Volume= 1.051 af
Outflow = 13.37 cfs @ 12.11 hrs, Volume= 1.051 af, Atten= 0%, Lag= 0.0 min
Primary = 13.37 cfs @ 12.11 hrs, Volume= 1.051 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.21' @ 12.11 hrs
Flood Elev= 326.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.96'	**24.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.96' / 317.20' S= 0.0481 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=13.17 cfs @ 12.11 hrs HW=324.18' TW=319.86' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.17 cfs @ 4.19 fps)

Summary for Pond 13P: DMH-6

Inflow Area =	0.912 ac, 77.06% Impervious, Inflow Depth = 5.35" for 100-year event				
Inflow =	5.40 cfs @	12.09 hrs,	Volume=	0.407 af	
Outflow =	5.40 cfs @	12.09 hrs,	Volume=	0.407 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.40 cfs @	12.09 hrs,	Volume=	0.407 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.64' @ 12.09 hrs
Flood Elev= 340.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.25'	**18.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.25' / 328.11' S= 0.0576 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.28 cfs @ 12.09 hrs HW=336.61' TW=329.37' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.28 cfs @ 3.13 fps)

Summary for Pond 14P: CB-8

Inflow Area =	0.336 ac, 81.36% Impervious, Inflow Depth = 5.71" for 100-year event				
Inflow =	2.09 cfs @	12.09 hrs,	Volume=	0.160 af	
Outflow =	2.09 cfs @	12.09 hrs,	Volume=	0.160 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.09 cfs @	12.09 hrs,	Volume=	0.160 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.53' @ 12.09 hrs
Flood Elev= 340.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.55'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.55' / 335.75' S= 0.0571 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.04 cfs @ 12.09 hrs HW=337.51' TW=336.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.04 cfs @ 2.63 fps)

Summary for Pond 15P: CB-7

Inflow Area =	0.576 ac, 74.55% Impervious, Inflow Depth = 5.14" for 100-year event				
Inflow =	3.32 cfs @	12.09 hrs,	Volume=	0.247 af	
Outflow =	3.32 cfs @	12.09 hrs,	Volume=	0.247 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.32 cfs @	12.09 hrs,	Volume=	0.247 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.76' @ 12.10 hrs
Flood Elev= 339.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.95'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.95' / 335.75' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.12 cfs @ 12.09 hrs HW=337.70' TW=336.61' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.12 cfs @ 3.97 fps)

Summary for Pond 16P: DMH-5

Inflow Area = 0.912 ac, 77.06% Impervious, Inflow Depth = 5.35" for 100-year event
Inflow = 5.40 cfs @ 12.09 hrs, Volume= 0.407 af
Outflow = 5.40 cfs @ 12.09 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 5.40 cfs @ 12.09 hrs, Volume= 0.407 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 329.40' @ 12.09 hrs
Flood Elev= 332.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.01'	**18.0" Round Culvert** L= 91.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 328.01' / 322.56' S= 0.0599 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.28 cfs @ 12.09 hrs HW=329.37' TW=324.12' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.28 cfs @ 3.13 fps)

Summary for Pond 17P: DMH-15

Inflow Area = 0.505 ac, 63.46% Impervious, Inflow Depth = 5.21" for 100-year event
Inflow = 2.86 cfs @ 12.09 hrs, Volume= 0.219 af
Outflow = 2.86 cfs @ 12.09 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 12.09 hrs, Volume= 0.219 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.96' @ 12.09 hrs
Flood Elev= 340.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.55'	**12.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.55' / 334.86' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.65 cfs @ 12.09 hrs HW=336.93' TW=336.14' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.65 cfs @ 3.38 fps)

Summary for Pond 18P: CB-17

Inflow Area =	0.154 ac, 98.52% Impervious, Inflow Depth = 6.64" for 100-year event				
Inflow =	1.03 cfs @	12.09 hrs,	Volume=	0.085 af	
Outflow =	1.03 cfs @	12.09 hrs,	Volume=	0.085 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.03 cfs @	12.09 hrs,	Volume=	0.085 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.04' @ 12.14 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=336.83' TW=336.92' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 19P: CB-16

Inflow Area =	0.351 ac, 48.14% Impervious, Inflow Depth = 4.58" for 100-year event				
Inflow =	1.84 cfs @	12.09 hrs,	Volume=	0.134 af	
Outflow =	1.84 cfs @	12.09 hrs,	Volume=	0.134 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.84 cfs @	12.09 hrs,	Volume=	0.134 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.24' @ 12.13 hrs
Flood Elev= 339.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.65' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.09 hrs HW=337.11' TW=336.93' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.26 cfs @ 1.60 fps)

Summary for Pond 20P: DMH-14

Inflow Area =	0.505 ac, 63.46% Impervious, Inflow Depth = 5.21" for 100-year event				
Inflow =	2.86 cfs @	12.09 hrs,	Volume=	0.219 af	
Outflow =	2.86 cfs @	12.09 hrs,	Volume=	0.219 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.86 cfs @	12.09 hrs,	Volume=	0.219 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 336.18' @ 12.09 hrs
Flood Elev= 341.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.76'	**12.0" Round Culvert** L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.76' / 333.88' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.09 hrs HW=336.14' TW=334.91' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.79 cfs @ 3.56 fps)

Summary for Pond 21P: DMH-13

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 5.41" for 100-year event				
Inflow =	6.08 cfs @	12.09 hrs,	Volume=	0.468 af	
Outflow =	6.08 cfs @	12.09 hrs,	Volume=	0.468 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.08 cfs @	12.09 hrs,	Volume=	0.468 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 334.95' @ 12.09 hrs
Flood Elev= 342.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.38'	**18.0" Round Culvert** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.38' / 330.66' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.93 cfs @ 12.09 hrs HW=334.91' TW=332.09' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.93 cfs @ 3.35 fps)

Summary for Pond 22P: CB-14

Inflow Area =	0.373 ac, 76.57% Impervious, Inflow Depth = 5.14" for 100-year event				
Inflow =	2.15 cfs @	12.09 hrs,	Volume=	0.160 af	
Outflow =	2.15 cfs @	12.09 hrs,	Volume=	0.160 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.15 cfs @	12.09 hrs,	Volume=	0.160 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 339.22' @ 12.09 hrs
Flood Elev= 342.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.21'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.21' / 338.00' S= 0.0124 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.10 cfs @ 12.09 hrs HW=339.20' TW=334.91' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.10 cfs @ 2.68 fps)

Summary for Pond 23P: CB-15

Inflow Area =	0.161 ac, 98.59% Impervious, Inflow Depth = 6.64" for 100-year event				
Inflow =	1.07 cfs @	12.09 hrs, Volume=	0.089 af		
Outflow =	1.07 cfs @	12.09 hrs, Volume=	0.089 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.07 cfs @	12.09 hrs, Volume=	0.089 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 338.93' @ 12.09 hrs
Flood Elev= 342.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.31'	**12.0" Round Culvert** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.31' / 338.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.09 hrs HW=338.92' TW=334.90' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.05 cfs @ 2.09 fps)

Summary for Pond 24P: DMH-12

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 5.41" for 100-year event				
Inflow =	6.08 cfs @	12.09 hrs, Volume=	0.468 af		
Outflow =	6.08 cfs @	12.09 hrs, Volume=	0.468 af, Atten= 0%, Lag= 0.0 min		
Primary =	6.08 cfs @	12.09 hrs, Volume=	0.468 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 332.13' @ 12.09 hrs
Flood Elev= 338.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	330.56'	**18.0" Round Culvert** L= 99.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.56' / 327.84' S= 0.0275 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.93 cfs @ 12.09 hrs HW=332.09' TW=329.27' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.93 cfs @ 3.35 fps)

Summary for Pond 25P: DMH-11

Inflow Area =	1.039 ac, 73.61% Impervious, Inflow Depth = 5.41" for 100-year event				
Inflow =	6.08 cfs @	12.09 hrs, Volume=	0.468 af		
Outflow =	6.08 cfs @	12.09 hrs, Volume=	0.468 af, Atten= 0%, Lag= 0.0 min		
Primary =	6.08 cfs @	12.09 hrs, Volume=	0.468 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 329.31' @ 12.09 hrs
Flood Elev= 332.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	327.74'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 327.74' / 322.02' S= 0.0753 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.93 cfs @ 12.09 hrs HW=329.27' TW=324.92' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.93 cfs @ 3.35 fps)

Summary for Pond 26P: DMH-10

Inflow Area = 1.707 ac, 77.06% Impervious, Inflow Depth = 5.62" for 100-year event
Inflow = 10.32 cfs @ 12.09 hrs, Volume= 0.800 af
Outflow = 10.32 cfs @ 12.09 hrs, Volume= 0.800 af, Atten= 0%, Lag= 0.0 min
Primary = 10.32 cfs @ 12.09 hrs, Volume= 0.800 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 325.02' @ 12.09 hrs
Flood Elev= 327.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.92'	**18.0" Round Culvert** L= 174.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.92' / 316.81' S= 0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=10.06 cfs @ 12.09 hrs HW=324.91' TW=318.77' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 10.06 cfs @ 5.69 fps)

Summary for Pond 27P: CB-13

Inflow Area = 0.182 ac, 98.50% Impervious, Inflow Depth = 6.64" for 100-year event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.101 af
Outflow = 1.22 cfs @ 12.09 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.22 cfs @ 12.09 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 325.13' @ 12.14 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=324.64' TW=324.90' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 28P: CB-12

Inflow Area =	0.486 ac, 76.42% Impervious, Inflow Depth = 5.71" for 100-year event				
Inflow =	3.02 cfs @	12.09 hrs, Volume=	0.231 af		
Outflow =	3.02 cfs @	12.09 hrs, Volume=	0.231 af, Atten= 0%, Lag= 0.0 min		
Primary =	3.02 cfs @	12.09 hrs, Volume=	0.231 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 325.75' @ 12.12 hrs
Flood Elev= 327.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.51'	**12.0" Round Culvert** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.51' / 323.23' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.24 cfs @ 12.09 hrs HW=325.48' TW=324.91' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.24 cfs @ 2.85 fps)

Summary for Pond 29P: DMH-9

Inflow Area =	2.440 ac, 76.17% Impervious, Inflow Depth = 5.62" for 100-year event				
Inflow =	14.81 cfs @	12.09 hrs, Volume=	1.142 af		
Outflow =	14.81 cfs @	12.09 hrs, Volume=	1.142 af, Atten= 0%, Lag= 0.0 min		
Primary =	14.81 cfs @	12.09 hrs, Volume=	1.142 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 318.84' @ 12.09 hrs
Flood Elev= 322.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	316.31'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 316.31' / 316.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=14.45 cfs @ 12.09 hrs HW=318.77' TW=316.63' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 14.45 cfs @ 4.60 fps)

Summary for Pond 30P: CB-11

Inflow Area =	0.734 ac, 74.09% Impervious, Inflow Depth = 5.59" for 100-year event				
Inflow =	4.50 cfs @	12.09 hrs, Volume=	0.342 af		
Outflow =	4.50 cfs @	12.09 hrs, Volume=	0.342 af, Atten= 0%, Lag= 0.0 min		
Primary =	4.50 cfs @	12.09 hrs, Volume=	0.342 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 319.16' @ 12.13 hrs
Flood Elev= 321.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.30'	**18.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 317.30' / 316.81' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.69 cfs @ 12.09 hrs HW=318.93' TW=318.77' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.69 cfs @ 1.52 fps)

Summary for Pond 31P: PROP. CULVERT

Inflow Area =	2.338 ac, 19.03% Impervious, Inflow Depth = 2.90" for 100-year event				
Inflow =	5.03 cfs @	12.32 hrs,	Volume=	0.565 af	
Outflow =	5.03 cfs @	12.32 hrs,	Volume=	0.565 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.03 cfs @	12.32 hrs,	Volume=	0.565 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 316.69' @ 12.31 hrs
Flood Elev= 318.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.00'	**15.0" Round Culvert** L= 75.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.00' / 313.00' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=5.07 cfs @ 12.32 hrs HW=316.67' TW=315.49' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.07 cfs @ 4.13 fps)

Summary for Pond 32P: CB-10

Inflow Area =	0.106 ac,100.00% Impervious, Inflow Depth = 6.76" for 100-year event				
Inflow =	0.71 cfs @	12.09 hrs,	Volume=	0.060 af	
Outflow =	0.71 cfs @	12.09 hrs,	Volume=	0.060 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.71 cfs @	12.09 hrs,	Volume=	0.060 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.89' @ 12.24 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.73' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.94' TW=324.23' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 33P: CB-9

Inflow Area =	0.119 ac,100.00% Impervious, Inflow Depth = 6.76" for 100-year event				
Inflow =	0.80 cfs @	12.09 hrs,	Volume=	0.067 af	
Outflow =	0.80 cfs @	12.09 hrs,	Volume=	0.067 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.80 cfs @	12.09 hrs,	Volume=	0.067 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.64' @ 12.20 hrs
Flood Elev= 327.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.00' / 322.52' S= 0.0686 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=323.85' TW=324.18' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 34P: CB-18

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 5.14" for 100-year event				
Inflow =	2.68 cfs @	12.09 hrs,	Volume=	0.199 af	
Outflow =	2.68 cfs @	12.09 hrs,	Volume=	0.199 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.68 cfs @	12.09 hrs,	Volume=	0.199 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 321.30' @ 12.09 hrs
Flood Elev= 325.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.00' / 319.04' S= 0.0600 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.61 cfs @ 12.09 hrs HW=321.27' TW=320.21' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.61 cfs @ 3.33 fps)

Summary for Pond 35P: DMH-8

Inflow Area =	2.324 ac, 22.24% Impervious, Inflow Depth = 2.98" for 100-year event				
Inflow =	7.41 cfs @	12.12 hrs,	Volume=	0.578 af	
Outflow =	7.41 cfs @	12.12 hrs,	Volume=	0.578 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.41 cfs @	12.12 hrs,	Volume=	0.578 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.89' @ 12.19 hrs
Flood Elev= 327.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.63'	**24.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.63' / 322.52' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=1.97 cfs @ 12.12 hrs HW=324.49' TW=324.46' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.97 cfs @ 0.65 fps)

Summary for Pond 36P: DMH-16

Inflow Area =	0.465 ac, 62.98% Impervious, Inflow Depth = 5.14" for 100-year event				
Inflow =	2.68 cfs @	12.09 hrs, Volume=	0.199 af		
Outflow =	2.68 cfs @	12.09 hrs, Volume=	0.199 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.68 cfs @	12.09 hrs, Volume=	0.199 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 320.42' @ 12.14 hrs
Flood Elev= 326.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.94'	**12.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 318.94' / 317.20' S= 0.0829 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.94 cfs @ 12.09 hrs HW=320.21' TW=319.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.94 cfs @ 2.47 fps)

Summary for Pond 37P: DMH-7

Inflow Area =	2.443 ac, 26.02% Impervious, Inflow Depth = 3.17" for 100-year event				
Inflow =	8.15 cfs @	12.12 hrs, Volume=	0.645 af		
Outflow =	8.15 cfs @	12.12 hrs, Volume=	0.645 af, Atten= 0%, Lag= 0.0 min		
Primary =	8.15 cfs @	12.12 hrs, Volume=	0.645 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 324.64' @ 12.15 hrs
Flood Elev= 327.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.42'	**24.0" Round Culvert** L= 78.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.42' / 321.96' S= 0.0059 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.74 cfs @ 12.12 hrs HW=324.43' TW=324.11' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.74 cfs @ 2.15 fps)

Summary for Pond 39P: CB-2 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 6.17" for 100-year event				
Inflow =	2.81 cfs @	12.09 hrs, Volume=	0.222 af		
Outflow =	2.81 cfs @	12.09 hrs, Volume=	0.222 af,	Atten= 0%,	Lag= 0.0 min
Primary =	2.81 cfs @	12.09 hrs, Volume=	0.222 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 312.14' @ 12.11 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.05'	**12.0" Round Culvert** L= 49.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.05' / 310.00' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.42 cfs @ 12.09 hrs HW=311.99' TW=311.34' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.42 cfs @ 3.08 fps)

Summary for Pond 40P: CB-1 [EXISTING]

Inflow Area =	0.174 ac, 81.24% Impervious, Inflow Depth = 6.17" for 100-year event				
Inflow =	1.13 cfs @	12.09 hrs, Volume=	0.090 af		
Outflow =	1.13 cfs @	12.09 hrs, Volume=	0.090 af,	Atten= 0%,	Lag= 0.0 min
Primary =	1.13 cfs @	12.09 hrs, Volume=	0.090 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 312.22' @ 12.16 hrs
Flood Elev= 314.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.75'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.75' / 310.15' S= 0.0353 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=311.67' TW=311.99' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 42P: DMH-1 [EXISTING]

Inflow Area =	0.432 ac, 80.78% Impervious, Inflow Depth = 6.17" for 100-year event				
Inflow =	2.81 cfs @	12.09 hrs, Volume=	0.222 af		
Outflow =	2.81 cfs @	12.09 hrs, Volume=	0.222 af,	Atten= 0%,	Lag= 0.0 min
Primary =	2.81 cfs @	12.09 hrs, Volume=	0.222 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 311.38' @ 12.09 hrs
Flood Elev= 315.33'

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**12.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 310.00' / 308.02' S= 0.0215 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.73 cfs @ 12.09 hrs HW=311.34' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.73 cfs @ 3.48 fps)

Summary for Pond 43P: SWALE & FIELD BASIN

Inflow Area =	2.218 ac, 18.52% Impervious, Inflow Depth = 2.90" for 100-year event				
Inflow =	6.83 cfs @	12.12 hrs,	Volume=	0.536 af	
Outflow =	6.75 cfs @	12.13 hrs,	Volume=	0.536 af,	Atten= 1%, Lag= 0.6 min
Discarded =	0.02 cfs @	12.13 hrs,	Volume=	0.018 af	
Primary =	6.72 cfs @	12.13 hrs,	Volume=	0.518 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 328.30' @ 12.13 hrs Surf.Area= 893 sf Storage= 222 cf

Plug-Flow detention time= 1.0 min calculated for 0.536 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (849.3 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	1,150 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	600	119.4	0	0	600
329.00	1,808	444.3	1,150	1,150	15,177

Device	Routing	Invert	Outlet Devices
#1	Discarded	328.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 320.50'
#2	Primary	324.00'	**18.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 324.00' / 322.73' S= 0.0249 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	328.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.02 cfs @ 12.13 hrs HW=328.29' (Free Discharge)
└─**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=6.57 cfs @ 12.13 hrs HW=328.29' TW=324.53' (Dynamic Tailwater)
└─**2=Culvert** (Passes 6.57 cfs of 12.65 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 6.57 cfs @ 1.78 fps)

Summary for Link 4L: DP-A

Inflow Area = 23.100 ac, 27.90% Impervious, Inflow Depth = 2.38" for 100-year event
Inflow = 33.53 cfs @ 12.20 hrs, Volume= 4.585 af
Primary = 33.53 cfs @ 12.20 hrs, Volume= 4.585 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 0.891 ac, 0.00% Impervious, Inflow Depth = 0.63" for 100-year event
Inflow = 0.24 cfs @ 12.38 hrs, Volume= 0.047 af
Primary = 0.24 cfs @ 12.38 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Appendix F – Stormwater Calculations

INSTRUCTIONS:

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.

Version 1, Automated: Mar. 4, 2008

Location: TSS removal with pretreatment calculation.

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
Sediment Forebay	0.25	0.75	0.19	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56

Total TSS Removal = 44%

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

Project: Enclave at Boxborough
Prepared By: RPV
Date: 15-Jul-19

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

INSTRUCTIONS:

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.

Version 1, Automated: Mar. 4, 2008

Location: TSS removal for overall site.

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
Infiltration Basin	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: Enclave at Boxborough
Prepared By: RPV
Date: 15-Jul-19

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

INSTRUCTIONS:

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.

Version 1, Automated: Mar. 4, 2008

Location: TSS removal for overall site.

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
Proprietary Treatment Practice	0.89	0.75	0.67	0.08
	0.00	0.08	0.00	0.08
	0.00	0.08	0.00	0.08
	0.00	0.08	0.00	0.08

Total TSS Removal = 92%

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

Project: Enclave at Boxborough
Prepared By: RPV
Date: 15-Jul-19

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

Enclave at Boxborough
Boxborough, MA

July 15, 2019
6092

Infiltration Basin #1

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.828	0.6	0.041
B	2.721	0.35	0.079
C		0.25	0.000
Total	**3.549**		**0.121**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Total Recharge Volume Required = 0.038 Ac-ft
Total Recharge Volume Required (Rv) = 1,673 C.ft
***Recharge Vol. Provided (from Infil. Basin 1) = 4,917.5 C.ft**
*Stage Area Storage at elevation of outlet control structure = 310.45 (See HydroCAD Report)

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 3.549 Ac
Required Sediment Forebay vol, Fv= 1,288 C.ft

Sediment Forebay Volume Provided = 1,387 C.ft

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

Drawdown Calculations:

Soil Texture: 3 Sandy Loam

[2] Bottom Surface Area (A): 3,391 SF
Rawls Rate: 1.02 in/hr
Total Recharge Volume Required = 1,673 C.ft
Drawdown: 5.80 hr
Drawdown is less than 72 Hours as Required

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

Stage-Area-Storage for Pond 5P: INFIL BASIN #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
309.00	2,439	0	310.04	3,869	3,267
309.02	2,464	49	310.06	3,884	3,344
309.04	2,489	99	310.08	3,899	3,422
309.06	2,514	149	310.10	3,915	3,500
309.08	2,539	199	310.12	3,930	3,579
309.10	2,565	250	310.14	3,945	3,658
309.12	2,590	302	310.16	3,960	3,737
309.14	2,616	354	310.18	3,976	3,816
309.16	2,642	406	310.20	3,991	3,896
309.18	2,668	459	310.22	4,006	3,976
309.20	2,694	513	310.24	4,022	4,056
309.22	2,720	567	310.26	4,037	4,136
309.24	2,746	622	310.28	4,053	4,217
309.26	2,773	677	310.30	4,068	4,299
309.28	2,799	733	310.32	4,084	4,380
309.30	2,826	789	310.34	4,099	4,462
309.32	2,853	846	310.36	4,115	4,544
309.34	2,880	903	310.38	4,130	4,626
309.36	2,907	961	310.40	4,146	4,709
309.38	2,934	1,019	310.42	4,161	4,792
309.40	2,961	1,078	310.44	4,177	4,876
309.42	2,988	1,138	310.46	4,193	4,959
309.44	3,016	1,198	310.48	4,209	5,043
309.46	3,044	1,258	310.50	4,224	5,128
309.48	3,072	1,320	310.52	4,240	5,212
309.50	3,099	1,381	310.54	4,256	5,297
309.52	3,128	1,444	310.56	4,272	5,383
309.54	3,156	1,506	310.58	4,288	5,468
309.56	3,184	1,570	310.60	4,304	5,554
309.58	3,212	1,634	310.62	4,320	5,640
309.60	3,241	1,698	310.64	4,336	5,727
309.62	3,270	1,763	310.66	4,352	5,814
309.64	3,299	1,829	310.68	4,368	5,901
309.66	3,328	1,895	310.70	4,384	5,988
309.68	3,357	1,962	310.72	4,400	6,076
309.70	3,386	2,030	310.74	4,416	6,164
309.72	3,415	2,098	310.76	4,432	6,253
309.74	3,445	2,166	310.78	4,448	6,342
309.76	3,474	2,235	310.80	4,464	6,431
309.78	3,504	2,305	310.82	4,481	6,520
309.80	3,534	2,376	310.84	4,497	6,610
309.82	3,564	2,447	310.86	4,513	6,700
309.84	3,594	2,518	310.88	4,530	6,791
309.86	3,624	2,590	310.90	4,546	6,881
309.88	3,654	2,663	310.92	4,562	6,972
309.90	3,685	2,736	310.94	4,579	7,064
309.92	3,715	2,810	310.96	4,595	7,156
309.94	3,746	2,885	310.98	4,612	7,248
309.96	3,777	2,960	311.00	4,628	7,340
309.98	3,808	3,036	311.02	4,645	7,433
310.00	3,839	3,113	311.04	4,661	7,526
310.02	3,854	3,190	311.06	4,678	7,619

→ 4917.5 Cf of Storage below 3" orifice @ Inv. = 310.45'

Stage-Area-Storage for Pond 5P: INFIL BASIN #1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
311.08	4,694	7,713	312.12	5,597	13,059
311.10	4,711	7,807	312.14	5,615	13,171
311.12	4,728	7,901	312.16	5,633	13,283
311.14	4,745	7,996	312.18	5,651	13,396
311.16	4,761	8,091	312.20	5,668	13,509
311.18	4,778	8,187	312.22	5,686	13,623
311.20	4,795	8,282	312.24	5,704	13,737
311.22	4,812	8,378	312.26	5,722	13,851
311.24	4,829	8,475	312.28	5,740	13,966
311.26	4,845	8,572	312.30	5,758	14,081
311.28	4,862	8,669	312.32	5,776	14,196
311.30	4,879	8,766	312.34	5,794	14,312
311.32	4,896	8,864	312.36	5,813	14,428
311.34	4,913	8,962	312.38	5,831	14,544
311.36	4,930	9,060	312.40	5,849	14,661
311.38	4,947	9,159	312.42	5,867	14,778
311.40	4,964	9,258	312.44	5,885	14,896
311.42	4,982	9,358	312.46	5,903	15,014
311.44	4,999	9,457	312.48	5,922	15,132
311.46	5,016	9,558	312.50	5,940	15,251
311.48	5,033	9,658	312.52	5,958	15,370
311.50	5,050	9,759	312.54	5,977	15,489
311.52	5,068	9,860	312.56	5,995	15,609
311.54	5,085	9,962	312.58	6,014	15,729
311.56	5,102	10,064	312.60	6,032	15,849
311.58	5,120	10,166	312.62	6,050	15,970
311.60	5,137	10,268	312.64	6,069	16,091
311.62	5,154	10,371	312.66	6,087	16,213
311.64	5,172	10,474	312.68	6,106	16,335
311.66	5,189	10,578	312.70	6,125	16,457
311.68	5,207	10,682	312.72	6,143	16,580
311.70	5,224	10,786	312.74	6,162	16,703
311.72	5,242	10,891	312.76	6,181	16,826
311.74	5,260	10,996	312.78	6,199	16,950
311.76	5,277	11,101	312.80	6,218	17,074
311.78	5,295	11,207	312.82	6,237	17,199
311.80	5,313	11,313	312.84	6,255	17,324
311.82	5,330	11,420	312.86	6,274	17,449
311.84	5,348	11,526	312.88	6,293	17,575
311.86	5,366	11,634	312.90	6,312	17,701
311.88	5,384	11,741	312.92	6,331	17,827
311.90	5,401	11,849	312.94	6,350	17,954
311.92	5,419	11,957	312.96	6,369	18,081
311.94	5,437	12,066	312.98	6,388	18,209
311.96	5,455	12,175	313.00	6,407	18,336
311.98	5,473	12,284	313.02	6,426	18,465
312.00	5,491	12,394	313.04	6,445	18,594
312.02	5,509	12,504	313.06	6,464	18,723
312.04	5,526	12,614	313.08	6,483	18,852
312.06	5,544	12,725	313.10	6,502	18,982
312.08	5,562	12,836	313.12	6,521	19,112
312.10	5,579	12,947	313.14	6,541	19,243

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Infiltration Area #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.554	0.6	0.028
B	1.843	0.35	0.054
Total	**2.397**		**0.081**

Total Recharge Volume Required = 0.045 Ac-ft
Total Recharge Volume Required (Rv) = 1,952 C.ft
***Recharge Vol. Provided (from Infil. Area 2) = 11,121.0 C.ft**
*Stage Area Storage at elevation of outlet control structure = 315.55 (See HydroCAD Report)

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 2.397 Ac
Required Sediment Forebay vol, Fv= 870 C.ft

Sediment Forebay Volume Provided = 3,151.0 C.ft

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

Drawdown Calculations:
Soil Texture: 3 Sandy Loam

[2] Bottom Surface Area (A): 7,174 SF
Rawls Rate: 1.02 in/hr
Total Recharge Volume Required = 1,952 C.ft
Drawdown: 3.20 hr
Drawdown is less than 72 Hours as Required

NOTES:
Input Values
[1] = Refer to Proposed Conditions HydroCAD modeling report

Stage-Area-Storage for Pond 6P: INFIL BASIN #2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
315.04	8,781	5,544	315.56	13,340	11,254
315.05	8,860	5,632	315.57	13,437	11,388
315.06	8,939	5,721	315.58	13,534	11,523
315.07	9,019	5,811	315.59	13,632	11,659
315.08	9,098	5,901	315.60	13,730	11,796
315.09	9,179	5,993	315.61	13,828	11,934
315.10	9,259	6,085	315.62	13,927	12,072
315.11	9,340	6,178	315.63	14,026	12,212
315.12	9,421	6,272	315.64	14,126	12,353
315.13	9,502	6,366	315.65	14,225	12,495
315.14	9,584	6,462	315.66	14,326	12,637
315.15	9,667	6,558	315.67	14,426	12,781
315.16	9,749	6,655	315.68	14,527	12,926
315.17	9,832	6,753	315.69	14,628	13,072
315.18	9,915	6,852	315.70	14,730	13,218
315.19	9,999	6,951	315.71	14,831	13,366
315.20	10,083	7,052	315.72	14,934	13,515
315.21	10,167	7,153	315.73	15,036	13,665
315.22	10,252	7,255	315.74	15,139	13,816
315.23	10,337	7,358	315.75	15,243	13,968
315.24	10,422	7,462	315.76	15,346	14,121
315.25	10,508	7,567	315.77	15,450	14,275
315.26	10,594	7,672	315.78	15,555	14,430
315.27	10,681	7,778	315.79	15,659	14,586
315.28	10,767	7,886	315.80	15,764	14,743
315.29	10,855	7,994	315.81	15,870	14,901
315.30	10,942	8,103	315.82	15,975	15,060
315.31	11,030	8,213	315.83	16,082	15,221
315.32	11,118	8,323	315.84	16,188	15,382
315.33	11,207	8,435	315.85	16,295	15,544
315.34	11,296	8,548	315.86	16,402	15,708
315.35	11,385	8,661	315.87	16,509	15,872
315.36	11,474	8,775	315.88	16,617	16,038
315.37	11,564	8,890	315.89	16,726	16,205
315.38	11,655	9,007	315.90	16,834	16,372
315.39	11,745	9,124	315.91	16,943	16,541
315.40	11,836	9,241	315.92	17,052	16,711
315.41	11,928	9,360	315.93	17,162	16,882
315.42	12,019	9,480	315.94	17,272	17,055
315.43	12,111	9,601	315.95	17,382	17,228
315.44	12,204	9,722	315.96	17,493	17,402
315.45	12,297	9,845	315.97	17,604	17,578
315.46	12,390	9,968	315.98	17,715	17,754
315.47	12,483	10,093	315.99	17,827	17,932
315.48	12,577	10,218	316.00	17,939	18,111
315.49	12,671	10,344	316.01	18,026	18,291
315.50	12,766	10,471	316.02	18,114	18,471
315.51	12,860	10,599	316.03	18,201	18,653
315.52	12,956	10,728	316.04	18,289	18,835
315.53	13,051	10,858	316.05	18,377	19,019
315.54	13,147	10,989	316.06	18,465	19,203
315.55	13,243	11,121	316.07	18,554	19,388

11,121 cf of storage below 3" orifice @ Inv. = 315.55'

Stage-Area-Storage for Pond 6P: INFIL BASIN #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
314.00	2,513	0	314.52	5,172	1,957
314.01	2,555	25	314.53	5,233	2,009
314.02	2,598	51	314.54	5,294	2,062
314.03	2,641	77	314.55	5,355	2,115
314.04	2,684	104	314.56	5,416	2,169
314.05	2,727	131	314.57	5,478	2,223
314.06	2,771	158	314.58	5,540	2,278
314.07	2,816	186	314.59	5,603	2,334
314.08	2,860	215	314.60	5,666	2,390
314.09	2,905	244	314.61	5,729	2,447
314.10	2,951	273	314.62	5,793	2,505
314.11	2,996	303	314.63	5,857	2,563
314.12	3,042	333	314.64	5,921	2,622
314.13	3,089	363	314.65	5,986	2,682
314.14	3,136	395	314.66	6,051	2,742
314.15	3,183	426	314.67	6,116	2,803
314.16	3,230	458	314.68	6,182	2,864
314.17	3,278	491	314.69	6,248	2,926
314.18	3,326	524	314.70	6,314	2,989
314.19	3,375	557	314.71	6,381	3,053
314.20	3,423	591	314.72	6,448	3,117
314.21	3,473	626	314.73	6,516	3,182
314.22	3,522	661	314.74	6,583	3,247
314.23	3,572	696	314.75	6,652	3,313
314.24	3,622	732	314.76	6,720	3,380
314.25	3,673	769	314.77	6,789	3,448
314.26	3,724	806	314.78	6,858	3,516
314.27	3,775	843	314.79	6,928	3,585
314.28	3,827	881	314.80	6,998	3,654
314.29	3,879	920	314.81	7,068	3,725
314.30	3,931	959	314.82	7,139	3,796
314.31	3,984	998	314.83	7,210	3,868
314.32	4,037	1,038	314.84	7,281	3,940
314.33	4,091	1,079	314.85	7,353	4,013
314.34	4,144	1,120	314.86	7,425	4,087
314.35	4,199	1,162	314.87	7,497	4,162
314.36	4,253	1,204	314.88	7,570	4,237
314.37	4,308	1,247	314.89	7,643	4,313
314.38	4,363	1,290	314.90	7,716	4,390
314.39	4,419	1,334	314.91	7,790	4,467
314.40	4,474	1,379	314.92	7,864	4,546
314.41	4,531	1,424	314.93	7,939	4,625
314.42	4,587	1,469	314.94	8,014	4,704
314.43	4,644	1,516	314.95	8,089	4,785
314.44	4,701	1,562	314.96	8,164	4,866
314.45	4,759	1,610	314.97	8,240	4,948
314.46	4,817	1,657	314.98	8,317	5,031
314.47	4,875	1,706	314.99	8,393	5,115
314.48	4,934	1,755	315.00	8,470	5,199
314.49	4,993	1,805	315.01	8,547	5,284
314.50	5,053	1,855	315.02	8,625	5,370
314.51	5,112	1,906	315.03	8,703	5,456

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Adjusted Recharge/WQV Calcs

Stormwater Recharge Calculations

Capture Area Adjustment, Rvadj:

$$R_v adj = \frac{A_t}{A_p} x R_v$$

[1] Imp. area captured by ponds, Ap =	5.946	Ac
Total impervious area on site, AT =	6.446	Ac
Recharge volume required, Rv =	14,039	C.ft
Capture Rate=	**92%**	OK
Capture Area Adjustment Factor=	**1.08**	
Adjusted Recharge Volume Required Rvadj =	**15,220**	**C.ft**
[1] Total Recharge Volume Provided =	16,038.5	**C.ft**

NOTES:

Input Values

[1] = Sum of Recharge Vol. Provided from Infil. Basin 1, Infil. Basin 2

Water Quality Calculations

CALCULATIONS

Water Quality Calculation:

$$V_{WQ} = D_{WQ}(ft) x\ A_T(ft^2)$$

Water Quality Depth =	1	in
Water Quality Depth , DWQ =	**0.08**	**ft.**
Total impervious area on site, AT =	6.446	Ac.
A_T =	**280,788**	**ft^2**
Required Water Quality Volume, VWQ =	**23,399**	**C.ft.**

REFERENCES

1 inch depth
Zone II discharges
IWPA discharges
Critical Area
Runoff from LUHPPL
Infiltration rate >2.4 inches/hour
1/2 inch depth
Discharge to other ares
8 inch
9 inch
10 inch
11 inch

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Groundwater Mound Beneath Rectangular Recharge Area

by Glenn M. Duffield, President, HydroSOLVE, Inc.

Share

Hantush (1967) presented the following equations for predicting the maximum height of the water table beneath a rectangular recharge area:

$$h_m^2 - h_i^2 = Z_m(t) = (2w/K)\nu t S^*(0.5A/(4\nu t)^{1/2}, 0.5B/(4\nu t)^{1/2}) \quad . . . . . (1)$$

$$\nu = K\bar{b}/\varepsilon \quad . . . . . (2)$$

$$\bar{b} = 0.5[h_i(0) + h(t)] \quad . . . . . (3)$$

where h_m is maximum height of mound above aquifer base (i.e., maximum saturated thickness of aquifer beneath recharge area); h_i is initial height of water table above aquifer base (i.e., initial saturated thickness of aquifer); K and ε are hydraulic conductivity and storativity (specific yield) of aquifer, respectively; w is constant rate of percolation from rectangular recharge area of length A and width B; $\bar{b}$ is a constant of linearization; and the function S* is an integral expression (see Hantush 1967). The aquifer is unconfined and assumed to have infinite extent.

If infiltration ends at time $t=t_0$, Hantush (1967) applied the principle of superposition to compute the decay of the mound as follows:

$$h_m^2 - h_i^2 = Z_m(t) - Z_m(t-t_0) \quad . . . . . (4)$$

Equation (1) is nonlinear owing to the definition of $\bar{b}$ in Equation (3); however, the solution is readily obtained by successive approximation.

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	$\bar{b}$	h_m*	% Change
1	10	10.2106052216473	2.10605221647333
2	10.1053026108237	10.210737806324	1.29849968484308E-03
3	10.105368903162	10.2107378889557	8.09262856726889E-07

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
.85	.26	10	58.2	58.2	.085	72	10.2107378889557

maximum water-table rise (h_m - h_i) at time t = 72 is 0.210737888955665
decay of mound computed after time t = 5.8

Infil. Basin #1.
L=Length = ft.
T= time = hours
* Use RAWLS RATE OF 1.02 in/hr (0.085 ft/hr) For W
* K = W x 10
A 0.21ft Rise in GW does not reach bottom of Basin.

Time that pond stops infiltration (see Stormwater Spreadsheet) Calculation

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Groundwater Mound Beneath Rectangular Recharge Area

by Glenn M. Duffield, President, HydroSOLVE, Inc.

Share

Hantush (1967) presented the following equations for predicting the maximum height of the water table beneath a rectangular recharge area:

$$h_m^2 - h_i^2 = Z_m(t) = (2w/K)\nu t S^*(0.5A/(4\nu t)^{1/2}, 0.5B/(4\nu t)^{1/2}) \quad . . . . . (1)$$

$$\nu = K\bar{b}/\varepsilon \quad . . . . . (2)$$

$$\bar{b} = 0.5[h_i(0) + h(t)] \quad . . . . . (3)$$

where h_m is maximum height of mound above aquifer base (i.e., maximum saturated thickness of aquifer beneath recharge area); h_i is initial height of water table above aquifer base (i.e., initial saturated thickness of aquifer); K and ε are hydraulic conductivity and storativity (specific yield) of aquifer, respectively; w is constant rate of percolation from rectangular recharge area of length A and width B; $\bar{b}$ is a constant of linearization; and the function S* is an integral expression (see Hantush 1967). The aquifer is unconfined and assumed to have infinite extent.

If infiltration ends at time $t=t_0$, Hantush (1967) applied the principle of superposition to compute the decay of the mound as follows:

$$h_m^2 - h_i^2 = Z_m(t) - Z_m(t-t_0) \quad . . . . . (4)$$

Equation (1) is nonlinear owing to the definition of $\bar{b}$ in Equation (3); however, the solution is readily obtained by successive approximation.

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	$\bar{b}$	h_m*	% Change
1	10	10.2261258279249	2.26125827924901
2	10.113062913962	10.2264343735486	3.0172288989716E-03
3	10.113217186774	10.2264347902451	4.07469968877194E-06

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
.85	.26	10	84.7	84.7	.085	72	10.2264347902451

maximum water-table rise (h_m - h_i) at time t = 72 is 0.226434790245117
decay of mound computed after time t = 3.2

Infil Basin # 2.
L = Length = ft.
T = Time = hours
* Use RAWLS RATE OF 1.02 in/hr (0.085 ft/hr) For W
* K = W × 10
A 0.22ft Rise in GW does not reach bottom of basin.

Return to Groundwater Mounding Calculator

Time that pond stops infiltration (see Stormwater calculation spreadsheet)

Click here for a benchmark for this calculator.

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Appendix G – Construction Period Pollution Prevention

The project is covered under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit, which will be submitted in place of the Construction Period Pollution Prevention Plan, prior to any land disturbance.

Appendix H - Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE MANUAL

ENCLAVE AT BOXBOROUGH

STOW ROAD
BOXBOROUGH, MASSACHUSETTS

Prepared For: **BOXBOROUGH TOWN CENTER, LLC**
P.O. BOX 985
ACTON, MA

Prepared By: **DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.**
1092 MAIN STREET
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Revised July 15th, 2019
April 16th, 2019
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1.1 Overview of Drainage System
1.2 Routine Operation & Maintenance Tasks
1.3 O&M Schedule

2.0 Appendices

Appendix A – Stormwater Management System Owners/Operators

1.0 Project Narrative

1.1 Proposed Stormwater Management System

The proposed stormwater management system was designed to reduce the peak rate of stormwater leaving the site, promote groundwater recharge, and increase the water quality. Runoff from the proposed development will be conveyed and treated using sedimentation forebays & infiltration basins.

Infiltration Basin with Sediment Forebay

Two infiltration basins with sediment forebays will treat the runoff. The volumes of the infiltration basins were designed to reduce runoff rates up to the 100-year storm event, infiltrate the require recharge volume and sized to handle the appropriate water quality volume. The basins are combined with sediment forebays. The sediment forebays are designed to reduce the velocity of flow which will increase the settlement of heavy solids before emptying to the basins. Riprap will also be installed at the inlet of the sediment forebays to reduce the potential for scouring.

Deep Sump Hooded Catch Basins

Deep sump hooded catch basins are proposed to convey the runoff from the proposed roadway & roofs to the infiltration basins. These catch basins will discharge to manholes and conventional storm drains.

1.2 Operation & Maintenance Tasks

The following activities should be performed routinely to allow for proper functioning of the stormwater system. The following are guidelines referring to each major component of the stormwater management system.

Street Sweeping

Street sweeping should be performed at least semiannually. For most effective results, sweeping should be performed by a vacuum style truck in the early spring before spring rain events can wash silt and sediment into the stormwater system. Silt and sediment should be disposed of in accordance with local, state and federal guidelines for hazardous waste.

Drain Manholes

Manholes shall be inspected semi-annually for signs of wear, settling, cracking or other fatigue. Manhole casting should be inspected for signs of root intrusion, or significant water infiltration. Manhole sumps should be checked for silt /sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Manholes should be resealed as

required and outlets should be inspected incidentally with all structure inspections.

Storm Drain Lines

Storm drainage inlets and outlets should be inspected incidentally with all structure inspections. Evidence of debris intrusion or excessive siltation or sedimentation could result in the need to clean a storm drain line. Flushing or jetting should be performed as required. All flushing and jetting should be performed in the direction away from any outlet devices. A vacuum truck should be used at the opposite end of the flushing or jetting to remove any silt or sediment that is cleaned from the storm drain.

Deep Sump Catch Basins

Deep sump catch basins shall be inspected at least semi-annually for signs of wear, settling, cracking or other fatigue. Catch basin castings should be inspected for signs of root intrusion, or significant water infiltration. Catch basin sump should be check for silt/sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Catch basins should be resealed as required and outlets should be inspected incidentally with all structure inspections.

Infiltration Basins

Infiltration basins are stormwater runoff impoundments that are constructed over permeable soils and require pretreatment from sediment forebays. Runoff from the design storm is stored until it exfiltrates through the soil of the basin floor. The basins were located to capture most of the runoff from the impervious areas of the site.

Infiltration basins are prone to clogging and failure if proper maintenance is not scheduled. The basin should be inspected at least twice per year or after a major storm event to ensure that the basin is operating as intended. The outlet structures should be inspected for clogging or overflow release velocities that are causing scouring or erosion. The upper stage, side slopes, embankments and emergency spillway should be mowed twice a year.

Sediment forebay

A sediment forebay is required as a pretreatment device prior to discharging stormwater to the extended dry detention basin. It will provide pretreatment by slowing stormwater runoff and increasing settlement of the sediment. The sediment forebay should be inspected monthly and cleaned of accumulated sediment on a quarterly basis. After sediment removal, repair any damaged vegetation by reseeding or

resodding. Maintain grass at a height of 4-6 inches.

Stone Rip Rap

The proposed swales have been designed with angular stone riprap. The stone riprap will be placed approximately 1-foot deep over Tencate Mirafi filter fabric.

Rip Rap should be inspected periodically for signs of failure. Such signs would include, undermining, high velocity wear (displacement of stones downstream), sliding, settlement, siltation, etc. Riprap should be repaired immediately upon the observation of such conditions mentioned.

Periodically, rip rap should be cleaned of silt. Siltation will be most prevalent in low velocity areas (such as directly up-stream of outlet control structures). Silt and sediment should be removed from these areas by hand.

Grass Swales

Swales should be checked for scouring, sloughing, erosion and/or accumulation of silt. The vegetation helps reduce velocity of runoff, which helps to maintain the swale, and encourages the sedimentation filtrations prior to exfiltration. Grass should be mowed and kept below 6 inches. Debris and trash should be removed as encountered.

Contech Vortsentry

The Vortsenty should be inspected at a minimum of twice a year for evidence of sediment accumulation. When sediment has accumulated to 2 feet or more in the treatment chamber, the vorsentry should be cleaned. Cleaning of the system should be performed during dry conditions when there is little to no flow entering the system. A vacuum truck should be used to clean the sump area of the basin.

O&M Schedule

	O&M Task	Monthly	Quarterly	Spring	Fall	2-years	As-required
1.	**Infiltration Basin**						
	Inspection			x	x		x
	Mowing	**3-4 times during the growing season**					
	Remove Debris			x	x		x
	Remove Sediment						x
	Re-seed						x
2.	**Sediment Forebay**						
	Inspection	x		x	x		x
	Mowing	**3-4 times during the growing season**					
	Remove Debris		x				x
	Remove Sediment		x				x
	Re-seed						x
3.	**Stone Rip Rap**						
	Inspection			x			
	Remove Debris			x			x
	Remove Silt/Sediment					x	x
	Repair						x
4.							
	Storm drain Lines						
	Inspection			x			x
	Clean						x
5.	**Catchbasins**						
	Inspection			x	x		
	Remove Debris						x
	Remove Silt/Sediment						x
6.	**Grass Swales**						
	Inspection			x			x
	Clean			x			x
7.	**Drain Manholes**						
	Inspect Rims						
	Inspect inside/inlet and outlet pipes			x	x		
	Remove sediment					x	x
8.	**Contech Vortsentry**						
	Inspect inside/inlet and outlet pipes			x	x		
	Remove sediment					x	x

APPENDIX A

Stormwater Management System Owners/Operators

Stormwater Management System Owners/Operators

1.	Stormwater Management System Owners:	TBD
2.	Current and future operators:	TBD
3.	Emergency contact information:	TBD
4.	Change of trustee:	TBD
5.	Financial Responsible Party:	TBD
6.	Routine Maintenance:	TBD
7.	O&M activities:	TBD
8.	Record keeping	TBD

Appendix I - Long Term Pollution Prevention Plan

LONG TERM POLUTION PREVENTION PLAN

ENCLAVE AT BOXBOROUGH

STOW ROAD
BOXBOROUGH, MASSACHUSETTS

Prepared For: **BOXBOROUGH TOWN CENTER, LLC**
P.O. BOX 985
ACTON, MA

Prepared By: **DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.**
1092 MAIN STREET
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Revised July 15th, 2019
April 16th, 2019
6092

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

1.0 Summary

This Long-Term Pollution Prevention Plan (LTPPP) has been prepared by Ducharme & Dillis Civil Design Group, Inc. pursuant to the Massachusetts Stormwater Regulations. The proposed development consists of the construction of a 50-unit Active Adult Home Development on the south side of Route 111 just northerly of Burroughs Road.

The layout of the development including the roadways and the locations of buildings and septic systems has been carefully planned to minimize disturbance to the existing land and natural features. The stormwater management system has been designed in accordance with the Massachusetts Stormwater Regulations to provide pretreatment of the stormwater prior to discharge to the resource areas.

2.0 Spill Prevention Plan

No hazardous materials other than normal and common household items are expected to be stored on site after the construction period has ended (refer to the Stormwater Pollution Prevention Plan for details pertaining to spill prevention during construction).

It is expected that normal DEP notification procedures would be triggered for major spills such as home heating oil or propane and natural gas leaks.

3.0 Stormwater System O&M

A Stormwater Operation & Maintenance plan has been prepared for the proposed stormwater management system. Refer to this document for details pertaining to the required inspections, routine maintenance and operation details.

Implementation of the stormwater operation and maintenance plan is critical in order for the site to function as designed, and for the protection of the downstream areas from the potential for scour and erosion.

Special care should be paid to the protection and maintenance of the existing and proposed catch basins that support the drainage system. Refer to the O&M Plan for specific instructions.

4.0 Fertilizers, herbicides and pesticides

Application of fertilizer, herbicides and pesticides shall be performed in a manner consistent with the industry standards for the application.

No application of chemicals is to be performed within the stormwater management areas on the site.

5.0 Snow/Salt Management

5.1 Snow Plowing

The roadway and driveways are designed to comply with the Town of Boxborough Standards. It is expected that snow plowing practices and procedures will be used similar to those currently employed by Boxborough residents.

5.2 Street Sweeping

The streets should be swept as needed to reduce the potential for silt build up in the drainage pipes and sump catch basins.

6.0 Waste Management

6.1 Septic Systems

An on-site sewage disposal system is proposed to service each of the proposed dwellings. The operation & maintenance of these systems will be in accordance with the requirements of the 310 CMR 15,0 (Title 5) regulations. The septic system has been designed in accordance with Title V regulations, and therefore will provide adequate protection against potential pollution.

On-site portable restrooms will be used during construction. The portable restrooms will be cleaned and maintained on a regular basis and disposal will be performed weekly or as required with a private or public waste removal company. All portable restrooms will be removed after construction.

6.2 Solid Waste

It is expected that the homeowner's will contact directly with a private or public waste removal company.

A dumpster will be located on the site during construction. This area will be the primary area for the on-site storage of solid waste prior to pick-up by a waste management company.

4.0 Plans

Pre-development Watershed Plan

Post-development Watershed Plan