# *Drainage Calculations and Stormwater Management Plan*

In Support of a

## *A Comprehensive Permit*

For:

## *The Cottages at Old Oaken Bucket*

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

## *Town of Scituate Zoning Board of Appeals*

Dated: February 16, 2023

Prepared By
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COMMONWEALTH OF MASSACHUSETTS
ANTHONY A.
ESPOSITO
CIVIL
No. 39782
REGISTERED
PROFESSIONAL ENGINEER

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Zoning Board of Appeals
Town of Scituate
600 Chief Justice Cushing Highway
Scituate, MA 02066

RE: Project Drainage Summary for The Cottages at Old Oaken Bucket
A Comprehensive Permit
279-281 Old Oaken Bucket Rd. Scituate, MA

Members of the Board,

We hereby submit these drainage calculations to accompany the site plans to support the construction of the proposed 24-unit Comprehensive Permit at 279-281 Old Oaken Bucket Rd. Scituate, MA.

We have complied with DEP Stormwater Management requirements as detailed in the following…

<u>Standard 1 – No New Untreated Discharges</u>

The proposed improvements to the property are designed so that new stormwater conveyances do not discharge untreated pavement runoff into or cause erosion to wetlands.

<u>Standard 2 – Peak Rate Attenuation</u>

The drainage study was completed using the SCS TR-20 computer program (HydroCAD) with the use of the Rainfall Depths of the Cornell method. The depths were provided for the 2, 10 and 100 year storms as required by MassDEP

The rainfall depths of the Cornell Method Rainfall Intensity Atlas were provided by the Northeast Regional Climate Center's Extreme Precipitation Estimates.

There is one Pre-Development watershed. The watershed on the east side of the site discharges west to Bordering Vegetated Wetland. This watershed is the Pre-development watershed considered in the calculations.

The Post-Development watershed plan details the proposed grading and construction of the development and drainage systems. It shows that drainage mitigation of peak runoff for the aforementioned storms will be provided by infiltration chambers.

Routing each of the storms through the Hydrocad model shows the following results…

***Pre-Development vs. Post-Development to wetlands***

| storm | Exist. (CFS) | Prop. runoff (CFS |
|---|---|---|
| 2-yr, 3.36 inches | 1.78 | 1.75 |
| 10-yr, 4.98 inches | 7.41 | 7.00 |
| 25-yr, 6.24 inches | 13.24 | 12.20 |
| 100-yr, 8.80 inches | 27.19 | 22.89 |

The results above show that the proposed runoff discharging off-site will not exceed the discharge under existing conditions. Mounding and drawdown calculations are also included.

Standard 3 – Groundwater Recharge

Runoff from impervious areas will be infiltrated by the use of infiltration chambers and rain gardens, which will meet the Stormwater Guidelines to include:

- Utilize the "Simple Dynamic method for sizing the storage volume, which takes into account the fact that stormwater is exfiltrating from the infiltration basin at the same time that the basin is filling.
- Hydraulic conductivity are based on soil survey information and values developed from Rawls, Brakensiek and Saxton, 1982, Estimation of Soil Water Properties, *Transactions of the American Society of Agricultural Engineers*, vol. 25, no.5. The Rawls rate for A soils were used to determine the required infiltration volumes. The Rawls rate for B soils were used to determine the provided infiltration volumes.
- Refer to the detail sheets for soil testing results.

Standard 4 – Water Quality

The proposed stormwater management system includes deep sump catch basins, proprietary separators, infiltration chambers to collect runoff. Stormwater runoff from the cul-de-sac is routed to a Oil & Water Separator and then to a rain garden.

Removal rates for all paved surfaces are:

| | |
|---|---|
| Deep sump catch basins | 25% |
| Proprietary Treatment units | 50% |
| Infiltration chambers | 80% |

The proposed infiltration beds for the roof runoff do not require further water treatment.

The Standard is met.

Standard 5 – Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The proposed project is not in a land use with higher potential pollutant loads. The standard is met

Standard 6 – Critical Areas

The proposed project is partially located within a critical area. A Zone 2 Aquifer Protection District

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

The proposed project is not a Redevelopment project. Not applicable.

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

Filtermitt will be used for erosion control devices in place of haybales and siltation fence and will be placed at the down-gradient limit of work prior to the commencement of any construction activity. The integrity of the wattles will be maintained by periodic inspection and replacement as necessary. The wattles will remain in place for the duration of the project. Refer to the plans for the locations of the erosion and sedimentation controls as well as the construction details.

Also, a Construction Phase Pollution Prevention and Erosion and Sedimentation Plan has been developed for the project and is attached to this report, see the Appendices. The Standard is met.

Standard 9 – Operation and Maintenance Plan

The Long-Term Pollution Prevention Plan has been incorporated into the Post-Development Operation and Maintenance Plan. Refer to Appendices for BMP Operation and Maintenance Plans.

The Standard is met.

Standard 10 – Prohibition of Illicit Discharges

No illicit discharges have been observed on site. Furthermore, measures to prevent illicit discharges are included in the Long-Term Pollution Prevention Plan. Therefore, provisions have been made to prevent illicit discharges.

The Standard is met.

If you have any questions, please contact us.

Very Truly Yours,
*Anthony Esposito*

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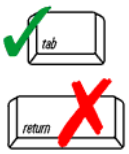
**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection - Wetlands Program

# 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.

## 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
ANTHONY A. ESPOSITO
CIVIL
No. 39782
REGISTERED PROFESSIONAL ENGINEER

Anthony Esposito

Signature and Date

## Checklist

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

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

## Checklist (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** (continued)

**Standard 4: Water Quality** (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

**Standard 6: Critical Areas**

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

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

# Checklist for Stormwater Report

## Checklist (continued)

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

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

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

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

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

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

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

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

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

## **Checklist** (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.

Soil Map—Plymouth County, Massachusetts
(279 OLD OAKEN BUCKET RD. SCITUATE MA)


Map Scale: 1:1,760 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 25, 50, 100, 150

Feet: 0, 50, 100, 200, 300

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 Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

**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 1:12,000.

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: Plymouth County, Massachusetts
Survey Area Data: Version 13, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 31, 2019—Sep 1, 2019

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.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 49A | Norwell mucky fine sandy loam, 0 to 3 percent slopes, extremely stony | 1.9 | 13.1% |
| 289C | Hinckley gravelly sandy loam, 8 to 15 percent slopes, bouldery | 0.8 | 5.2% |
| 421B | Canton fine sandy loam, 0 to 8 percent slopes, very stony | 2.4 | 16.1% |
| 427B | Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony | 9.6 | 65.6% |
| **Totals for Area of Interest** | | **14.7** | **100.0%** |

# Plymouth County, Massachusetts

## 421B—Canton fine sandy loam, 0 to 8 percent slopes, very stony

### Map Unit Setting

*National map unit symbol:* 2w81l
*Elevation:* 0 to 1,180 feet
*Mean annual precipitation:* 36 to 71 inches
*Mean annual air temperature:* 39 to 55 degrees F
*Frost-free period:* 140 to 240 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Canton, very stony, and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Canton, Very Stony

#### Setting

*Landform:* Ridges, hills, moraines
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Side slope, crest, nose slope
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex
*Parent material:* Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

#### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 5 inches:* fine sandy loam
*Bw1 - 5 to 16 inches:* fine sandy loam
*Bw2 - 16 to 22 inches:* gravelly fine sandy loam
*2C - 22 to 67 inches:* gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* 19 to 39 inches to strongly contrasting textural stratification
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.14 to 14.17 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water capacity:* Low (about 3.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Ecological site:* F144AY034CT - Well Drained Till Uplands
*Hydric soil rating:* No

**Minor Components**

**Scituate, very stony**

*Percent of map unit:* 9 percent
*Landform:* Ground moraines, drumlins, hills
*Landform position (two-dimensional):* Footslope, backslope, summit
*Landform position (three-dimensional):* Side slope, crest
*Down-slope shape:* Linear, convex
*Across-slope shape:* Convex
*Hydric soil rating:* No

**Montauk, very stony**

*Percent of map unit:* 5 percent
*Landform:* Drumlins, hills, ground moraines, recessionial moraines
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Side slope, crest
*Down-slope shape:* Linear, convex
*Across-slope shape:* Convex
*Hydric soil rating:* No

**Gloucester, very stony**

*Percent of map unit:* 4 percent
*Landform:* Ridges, hills, moraines
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Side slope, crest
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex
*Hydric soil rating:* No

**Swansea**

*Percent of map unit:* 2 percent
*Landform:* Depressions, marshes, kettles, swamps, bogs
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

# Data Source Information

Soil Survey Area: Plymouth County, Massachusetts
Survey Area Data: Version 13, Jun 9, 2020

# Plymouth County, Massachusetts

## 427B—Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony

### Map Unit Setting

*National map unit symbol:* bcxt
*Elevation:* 10 to 400 feet
*Mean annual precipitation:* 41 to 54 inches
*Mean annual air temperature:* 43 to 54 degrees F
*Frost-free period:* 145 to 240 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Newfields, extremely stony, and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Newfields, Extremely Stony

#### Setting

*Landform:* Hills, till plains, moraines
*Landform position (two-dimensional):* Footslope, shoulder
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Linear
*Across-slope shape:* Concave
*Parent material:* Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout till

#### Typical profile

*Oe - 0 to 2 inches:* moderately decomposed plant material
*A - 2 to 3 inches:* fine sandy loam
*Bs - 3 to 4 inches:* fine sandy loam
*Bw1 - 4 to 16 inches:* fine sandy loam
*Bw2 - 16 to 28 inches:* gravelly fine sandy loam
*2C - 28 to 63 inches:* gravelly loamy coarse sand

#### Properties and qualities

*Slope:* 3 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 9.0 percent
*Depth to restrictive feature:* 15 to 36 inches to strongly contrasting textural stratification
*Drainage class:* Moderately well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* About 18 to 30 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Low (about 3.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* B
*Ecological site:* F144AY008CT - Moist Till Uplands
*Hydric soil rating:* No

**Minor Components**

**Barnstable, very stony**

*Percent of map unit:* 8 percent
*Landform:* Moraines
*Landform position (two-dimensional):* Summit, shoulder
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Hydric soil rating:* No

**Norwell, extremely stony**

*Percent of map unit:* 7 percent
*Landform:* Depressions, drainageways
*Landform position (two-dimensional):* Footslope, toeslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

**Scituate, very stony**

*Percent of map unit:* 5 percent
*Landform:* Ridges, drumlins
*Landform position (two-dimensional):* Footslope, shoulder
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* No

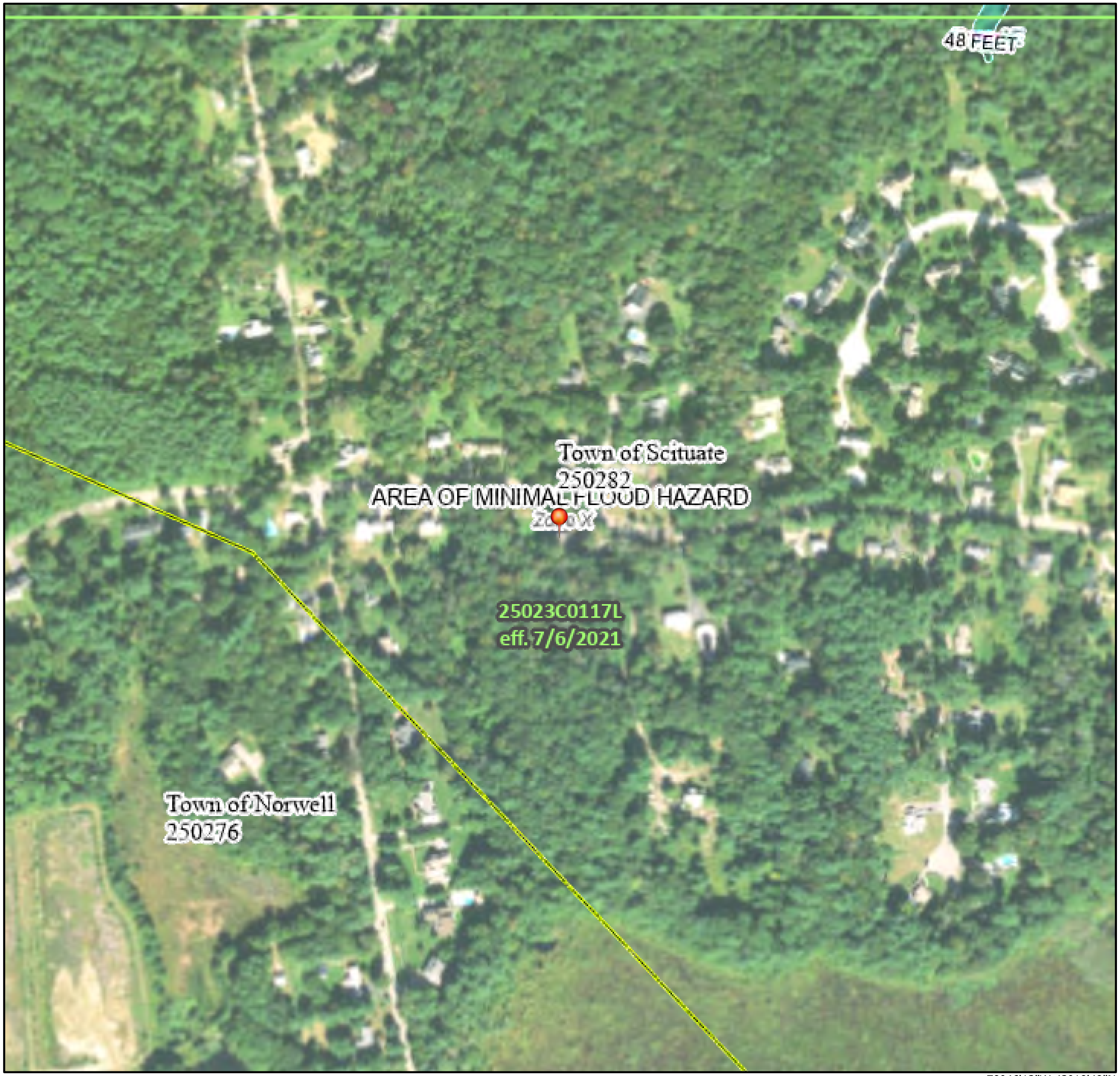
# Data Source Information

Soil Survey Area: Plymouth County, Massachusetts
Survey Area Data: Version 13, Jun 9, 2020

# National Flood Hazard Layer FIRMette

FEMA

70°46'49"W 42°11'15"N




70°46'12"W 42°10'49"N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

*Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- B 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

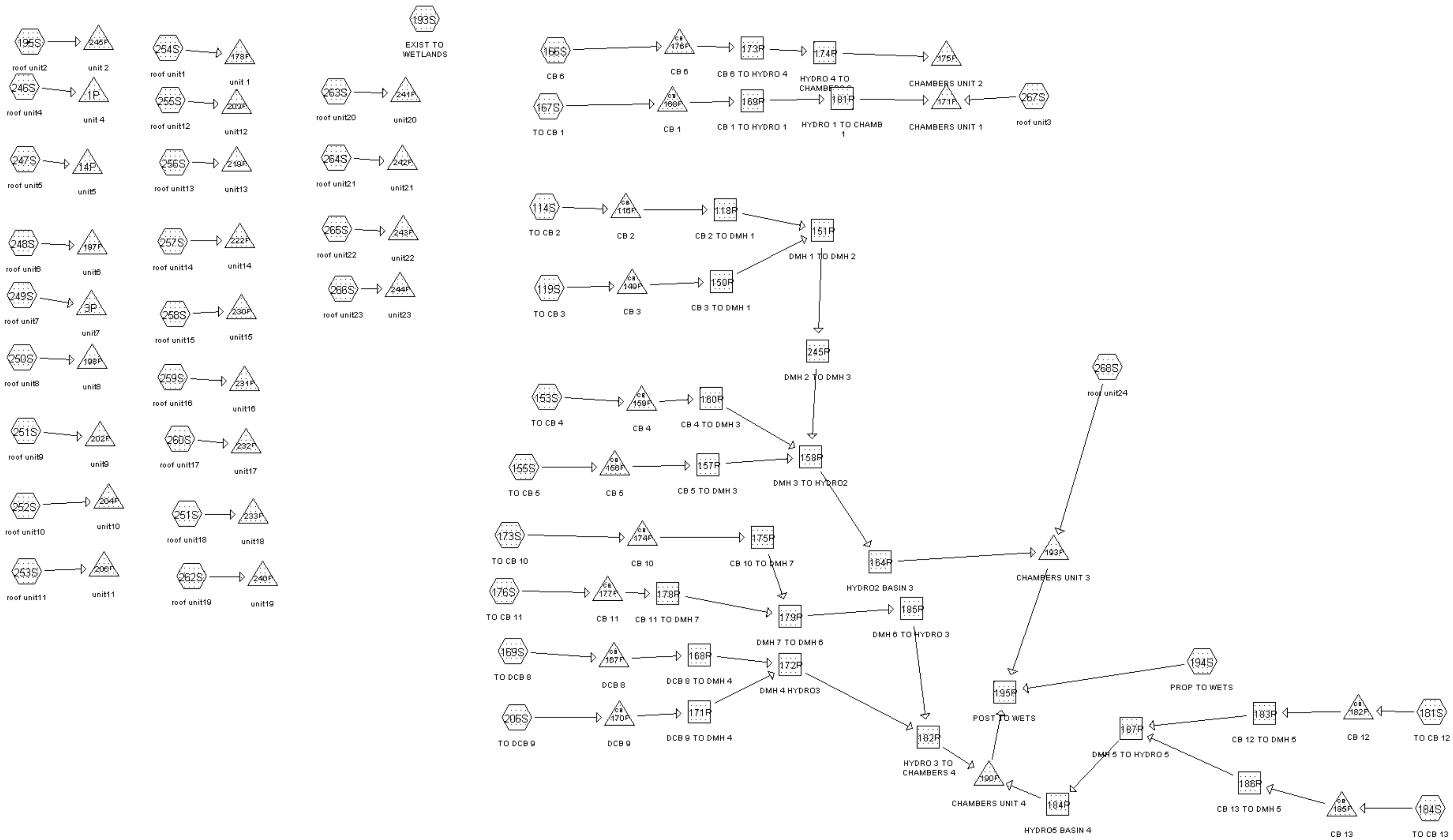
N

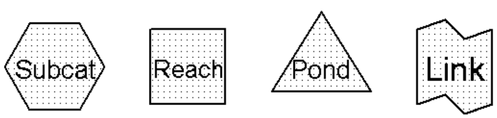
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/8/2022 at 4:34 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.




**Routing Diagram for oldoakenbucket3**

Prepared by ANTHONY A. ESPOSITO, Printed 2/15/2023

## Summary for Subcatchment 114S: TO CB 2

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,432 | 98 | IMPERVIOUS |
| | 3,990 | 61 | >75% Grass cover, Good, HSG B |
| | 8,422 | 80 | Weighted Average |
| | 3,990 | | 47.38% Pervious Area |
| | 4,432 | | 52.62% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,099 | 98 | IMPERVIOUS |
| | 1,273 | 61 | >75% Grass cover, Good, HSG B |
| | 4,372 | 87 | Weighted Average |
| | 1,273 | | 29.12% Pervious Area |
| | 3,099 | | 70.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN.** |

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.33 cfs @ 12.19 hrs, Volume= 0.030 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,248 | 98 | IMPERVIOUS |
| | 4,913 | 61 | >75% Grass cover, Good, HSG B |
| | 10,161 | 80 | Weighted Average |
| | 4,913 | | 48.35% Pervious Area |
| | 5,248 | | 51.65% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** |
| | | | | | Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** |
| | | | | | Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,126 | 98 | IMPERVIOUS |
| | 4,126 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 166S: CB 6

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,978 | 61 | >75% Grass cover, Good, HSG B |
| * | 7,190 | 98 | PAVEMENT, HSG B |
| | 16,168 | 77 | Weighted Average |
| | 8,978 | | 55.53% Pervious Area |
| | 7,190 | | 44.47% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,271 | 98 | IMPERVIOUS |
| | 636 | 61 | >75% Grass cover, Good, HSG B |
| | 2,907 | 90 | Weighted Average |
| | 636 | | 21.88% Pervious Area |
| | 2,271 | | 78.12% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 29,612 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 83,065 | 61 | >75% Grass cover, Good, HSG B |
| | 30,334 | 55 | Woods, Good, HSG B |
| * | 183 | 98 | WALL |
| | 145,537 | 68 | Weighted Average |
| | 113,399 | | 77.92% Pervious Area |
| | 32,138 | | 22.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.6 | 50 | 0.0100 | 0.03 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 0.5 | 51 | 0.0100 | 1.61 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.2 | 35 | 0.0570 | 3.84 | | **Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps |
| 0.9 | 127 | 0.0150 | 2.49 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 0.2 | 83 | 0.1210 | 5.60 | | **Shallow Concentrated Flow, EF** Unpaved Kv= 16.1 fps |
| 0.9 | 72 | 0.0070 | 1.35 | | **Shallow Concentrated Flow, FG** Unpaved Kv= 16.1 fps |
| 0.0 | 6 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, GH** Paved Kv= 20.3 fps |
| 1.5 | 319 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, HI** Paved Kv= 20.3 fps |
| 31.8 | 743 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,525 | 98 | IMPERVIOUS |
| | 3,596 | 61 | >75% Grass cover, Good, HSG B |
| | 7,121 | 79 | Weighted Average |
| | 3,596 | | 50.50% Pervious Area |
| | 3,525 | | 49.50% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,269 | 98 | IMPERVIOUS |
| | 1,010 | 61 | >75% Grass cover, Good, HSG B |
| | 2,279 | 82 | Weighted Average |
| | 1,010 | | 44.32% Pervious Area |
| | 1,269 | | 55.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 181S: TO CB 12

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,631 | 98 | IMPERVIOUS |
| | 4,102 | 61 | >75% Grass cover, Good, HSG B |
| | 10,733 | 84 | Weighted Average |
| | 4,102 | | 38.22% Pervious Area |
| | 6,631 | | 61.78% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,712 | 98 | IMPERVIOUS |
| | 1,844 | 61 | >75% Grass cover, Good, HSG B |
| | 4,556 | 83 | Weighted Average |
| | 1,844 | | 40.47% Pervious Area |
| | 2,712 | | 59.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 1.78 cfs @ 12.45 hrs, Volume= 0.317 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 299,351 | 55 | Woods, Good, HSG B |
| | 8,364 | 98 | Roofs, HSG B |
| * | 436 | 98 | CONCRETE, HSG B |
| | 9,975 | 96 | Gravel surface, HSG B |
| | 44,126 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,160 | 98 | PAVEMENT, HSG B |
| | 44,910 | 48 | Brush, Good, HSG B |
| | 415,322 | 58 | Weighted Average |
| | 398,362 | | 95.92% Pervious Area |
| | 16,960 | | 4.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 0.78 cfs @ 12.24 hrs, Volume= 0.113 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 65,276 | 55 | Woods, Good, HSG B |
| | 66,872 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,550 | 98 | WALLS, HSG B |
| | 307 | 96 | Gravel surface, HSG B |
| * | 2,299 | 98 | PAVEMENT |
| | 136,304 | 59 | Weighted Average |
| | 132,455 | | 97.18% Pervious Area |
| | 3,849 | | 2.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** |
| | | | | | Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** |
| | | | | | Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** |
| | | | | | Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 0.80 cfs @ 12.14 hrs, Volume= 0.065 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,583 | 98 | pavement |
| | 8,032 | 61 | >75% Grass cover, Good, HSG B |
| | 19,615 | 83 | Weighted Average |
| | 8,032 | | 40.95% Pervious Area |
| | 11,583 | | 59.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 246S: roof unit4

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 247S: roof unit5

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 248S: roof unit6

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 249S: roof unit7

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 250S: roof unit8

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 251S: roof unit9

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 252S: roof unit10

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 253S: roof unit11

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 254S: roof unit1

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 255S: roof unit12

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 256S: roof unit13

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 257S: roof unit14

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 258S: roof unit15

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 259S: roof unit16

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 260S: roof unit17

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 261S: roof unit18

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 262S: roof unit19

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 263S: roof unit20

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 264S: roof unit21

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 265S: roof unit22

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 266S: roof unit23

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 267S: roof unit3

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 268S: roof unit24

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

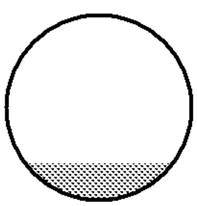
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 1.53" for cornell 002 event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.03 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



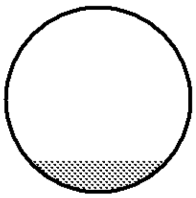
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.73 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



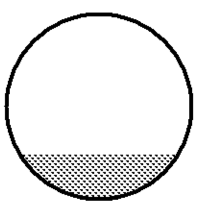
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 1.71" for cornell 002 event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.58 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.83 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 1.7 min

Peak Storage= 21 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



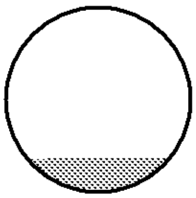
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.095 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



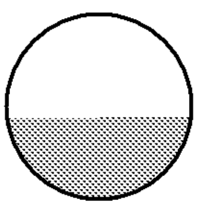
## Summary for Reach 158R: DMH 3 TO HYDRO2

| | | | |
|---|---|---|---|
| Inflow Area = | 0.622 ac, 62.42% Impervious, Inflow Depth = 1.86" | for cornell 002 event | |
| Inflow = | 1.13 cfs @ 12.11 hrs, Volume= | 0.096 af | |
| Outflow = | 1.13 cfs @ 12.11 hrs, Volume= | 0.096 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.37 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.6 min

Peak Storage= 13 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



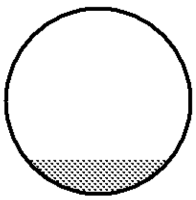
## Summary for Reach 160R: CB 4 TO DMH 3

| | | | |
|---|---|---|---|
| Inflow Area = | 0.233 ac, 51.65% Impervious, Inflow Depth = 1.53" | for cornell 002 event | |
| Inflow = | 0.33 cfs @ 12.19 hrs, Volume= | 0.030 af | |
| Outflow = | 0.33 cfs @ 12.19 hrs, Volume= | 0.030 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



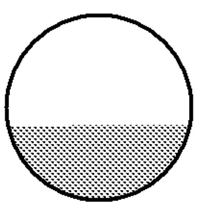
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.622 ac, 62.42% Impervious, Inflow Depth = 1.86" for cornell 002 event
Inflow = 1.13 cfs @ 12.11 hrs, Volume= 0.096 af
Outflow = 1.13 cfs @ 12.12 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.77 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



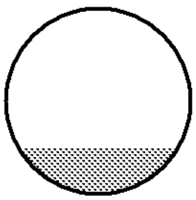
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.341 ac, 22.08% Impervious, Inflow Depth = 0.82" for cornell 002 event
Inflow = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af
Outflow = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.39 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



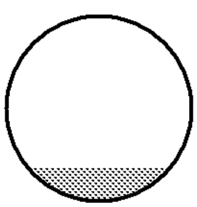
## Summary for Reach 169R: CB 1 TO HYDRO 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, | 78.12% Impervious, Inflow Depth = 2.32" | for cornell 002 event | |
| Inflow = | 0.18 cfs @ | 12.09 hrs, Volume= | 0.013 af | |
| Outflow = | 0.18 cfs @ | 12.09 hrs, Volume= | 0.013 af, | Atten= 0%, Lag= 0.2 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.84 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 0.6 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



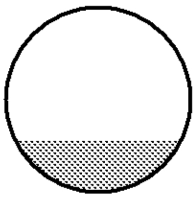
## Summary for Reach 171R: DCB 9 TO DMH 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.450 ac, | 59.05% Impervious, Inflow Depth = 1.74" | for cornell 002 event | |
| Inflow = | 0.80 cfs @ | 12.14 hrs, Volume= | 0.065 af | |
| Outflow = | 0.80 cfs @ | 12.14 hrs, Volume= | 0.065 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.43 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



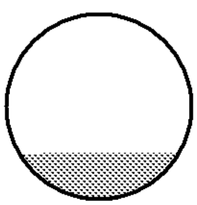
## Summary for Reach 172R: DMH 4 HYDRO3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.791 ac, | 26.47% Impervious, Inflow Depth = 0.93" | for cornell 002 event | |
| Inflow = | 1.85 cfs @ | 12.46 hrs, Volume= | 0.294 af | |
| Outflow = | 1.85 cfs @ | 12.46 hrs, Volume= | 0.294 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.30 fps, Avg. Travel Time= 0.4 min

Peak Storage= 17 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.29 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0160 '/'
Inlet Invert= 79.05', Outlet Invert= 78.25'



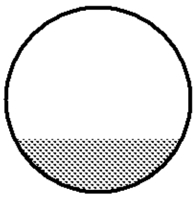
## Summary for Reach 173R: CB 6 TO HYDRO 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.371 ac, | 44.47% Impervious, Inflow Depth = 1.33" | for cornell 002 event | |
| Inflow = | 0.56 cfs @ | 12.09 hrs, Volume= | 0.041 af | |
| Outflow = | 0.56 cfs @ | 12.10 hrs, Volume= | 0.041 af, | Atten= 0%, Lag= 0.1 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.07 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 27.0' Slope= 0.0074 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



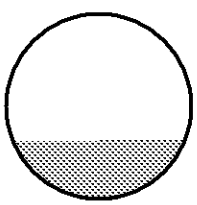
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.371 ac, | 44.47% Impervious, | Inflow Depth = 1.33" | for cornell 002 event |
| Inflow = | 0.56 cfs @ | 12.10 hrs, Volume= | 0.041 af | |
| Outflow = | 0.56 cfs @ | 12.10 hrs, Volume= | 0.041 af, | Atten= 0%, Lag= 0.1 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.56 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 20.0' Slope= 0.0050 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



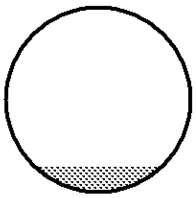
## Summary for Reach 175R: CB 10 TO DMH 7

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.163 ac, | 49.50% Impervious, | Inflow Depth = 1.46" | for cornell 002 event |
| Inflow = | 0.27 cfs @ | 12.09 hrs, Volume= | 0.020 af | |
| Outflow = | 0.27 cfs @ | 12.09 hrs, Volume= | 0.020 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



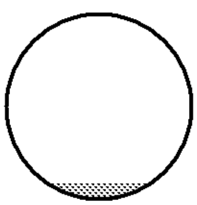
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.052 ac, 55.68% Impervious, Inflow Depth = 1.67" for cornell 002 event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 0.2 min

Peak Storage= 0 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



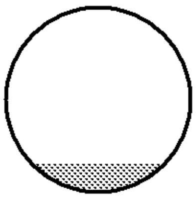
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.216 ac, 51.00% Impervious, Inflow Depth = 1.51" for cornell 002 event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.37 cfs @ 12.10 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.9 min

Peak Storage= 7 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



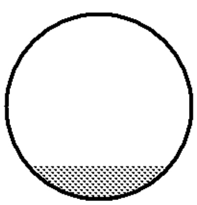
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 2.32" for cornell 002 event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.78 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



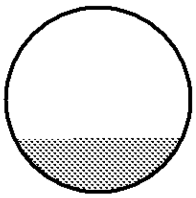
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 4

Inflow Area = 4.007 ac, 27.79% Impervious, Inflow Depth = 0.96" for cornell 002 event
Inflow = 1.97 cfs @ 12.44 hrs, Volume= 0.321 af
Outflow = 1.97 cfs @ 12.44 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0100 '/'
Inlet Invert= 78.15', Outlet Invert= 78.10'



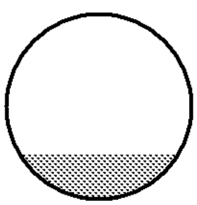
## Summary for Reach 183R: CB 12 TO DMH 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.246 ac, 61.78% Impervious, Inflow Depth = 1.82" for cornell 002 event | | | |
| Inflow = | 0.52 cfs @ | 12.09 hrs, Volume= | 0.037 af | |
| Outflow = | 0.52 cfs @ | 12.09 hrs, Volume= | 0.037 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.58 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



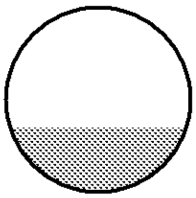
## Summary for Reach 184R: HYDRO5 BASIN 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.351 ac, 61.11% Impervious, Inflow Depth = 1.79" for cornell 002 event | | | |
| Inflow = | 0.73 cfs @ | 12.09 hrs, Volume= | 0.052 af | |
| Outflow = | 0.73 cfs @ | 12.09 hrs, Volume= | 0.052 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



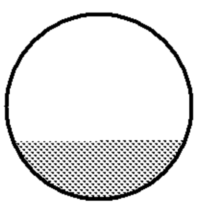
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.216 ac, 51.00% Impervious, Inflow Depth = 1.51" for cornell 002 event
Inflow = 0.37 cfs @ 12.10 hrs, Volume= 0.027 af
Outflow = 0.37 cfs @ 12.10 hrs, Volume= 0.027 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 1.0 min

Peak Storage= 8 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



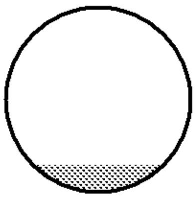
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 59.53% Impervious, Inflow Depth = 1.74" for cornell 002 event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



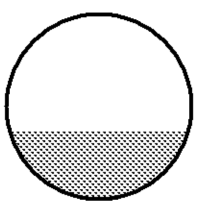
## Summary for Reach 187R: DMH 5 TO HYDRO 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.351 ac, | 61.11% Impervious, Inflow Depth = 1.79" | for cornell 002 event | |
| Inflow = | 0.73 cfs @ | 12.09 hrs, Volume= | 0.052 af | |
| Outflow = | 0.73 cfs @ | 12.09 hrs, Volume= | 0.052 af, | Atten= 0%, Lag= 0.2 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 0.5 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 8.152 ac, | 22.67% Impervious, Inflow Depth = 0.43" | for cornell 002 event | |
| Inflow = | 1.75 cfs @ | 12.72 hrs, Volume= | 0.295 af | |
| Outflow = | 1.75 cfs @ | 12.72 hrs, Volume= | 0.295 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

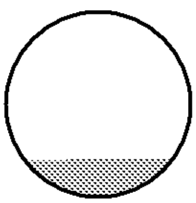
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 1.71" for cornell 002 event
Inflow = 0.58 cfs @ 12.10 hrs, Volume= 0.042 af
Outflow = 0.57 cfs @ 12.11 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.84 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 1.0 min

Peak Storage= 12 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 95.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=96.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=100.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.29 hrs, Volume= 0.011 af, Atten= 93%, Lag= 72.4 min
Discarded = 0.01 cfs @ 13.29 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 104.43' @ 13.29 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 181.3 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 181.2 min ( 936.6 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.010 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 1 Chambers |

Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.019 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.29 hrs HW=104.43' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 1.53" for cornell 002 event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.16' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.33 cfs @ 12.09 hrs HW=96.16' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.33 cfs @ 1.71 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.09 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.15' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.23 cfs @ 12.09 hrs HW=96.15' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.23 cfs @ 1.66 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.095 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af
Outflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.13' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.30 cfs @ 12.08 hrs HW=91.13' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.77 fps)

## Summary for Pond 159P: CB 4

Inflow Area = 0.233 ac, 51.65% Impervious, Inflow Depth = 1.53" for cornell 002 event
Inflow = 0.33 cfs @ 12.19 hrs, Volume= 0.030 af
Outflow = 0.33 cfs @ 12.19 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.19 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.14' @ 12.19 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.32 cfs @ 12.19 hrs HW=91.14' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.32 cfs @ 1.80 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.341 ac, 22.08% Impervious, Inflow Depth = 0.82" for cornell 002 event
Inflow = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af
Outflow = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.51 hrs, Volume= 0.229 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.33' @ 12.51 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.55 cfs @ 12.51 hrs HW=80.33' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.55 cfs @ 2.56 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 2.32" for cornell 002 event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.47' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.17 cfs @ 12.09 hrs HW=102.47' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.17 cfs @ 1.53 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 1.74" for cornell 002 event
Inflow = 0.80 cfs @ 12.14 hrs, Volume= 0.065 af
Outflow = 0.80 cfs @ 12.14 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 12.14 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.73' @ 12.14 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.79 cfs @ 12.14 hrs HW=80.72' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.79 cfs @ 2.29 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.110 ac, 86.70% Impervious, Inflow Depth = 2.63" for cornell 002 event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.03 cfs @ 13.07 hrs, Volume= 0.024 af, Atten= 92%, Lag= 59.0 min
Discarded = 0.03 cfs @ 13.07 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.88' @ 13.07 hrs Surf.Area= 0.023 ac Storage= 0.010 af

Plug-Flow detention time= 131.4 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 131.3 min ( 913.7 - 782.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid** |
| | | | 0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 4 Rows of 7 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 13.07 hrs HW=99.88' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.163 ac, 49.50% Impervious, Inflow Depth = 1.46" for cornell 002 event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.05' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.27 cfs @ 12.09 hrs HW=85.04' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.71 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 1.33" for cornell 002 event
Inflow = 0.56 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.05 cfs @ 13.58 hrs, Volume= 0.041 af, Atten= 91%, Lag= 89.1 min
Discarded = 0.05 cfs @ 13.58 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.21' @ 13.58 hrs Surf.Area= 0.045 ac Storage= 0.017 af

Plug-Flow detention time= 141.8 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 141.6 min ( 991.8 - 850.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.055 af | **28.60'W x 69.00'L x 5.00'H Prismatoid**<br>0.227 af Overall - 0.090 af Embedded = 0.137 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.145 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.05 cfs @ 13.58 hrs HW=96.21' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 1.33" for cornell 002 event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.87' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.55 cfs @ 12.09 hrs HW=97.87' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.55 cfs @ 2.07 fps)

## Summary for Pond 177P: CB 11

| | | | |
|---|---|---|---|
| Inflow Area = | 0.052 ac, 55.68% Impervious, | Inflow Depth = 1.67" | for cornell 002 event |
| Inflow = | 0.10 cfs @ 12.09 hrs, | Volume= | 0.007 af |
| Outflow = | 0.10 cfs @ 12.09 hrs, | Volume= | 0.007 af, Atten= 0%, Lag= 0.0 min |
| Primary = | 0.10 cfs @ 12.09 hrs, | Volume= | 0.007 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.94' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.10 cfs @ 12.09 hrs HW=84.94' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 1.32 fps)

## Summary for Pond 178P: unit 1

| | | | |
|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 3.13" | for cornell 002 event |
| Inflow = | 0.14 cfs @ 12.08 hrs, | Volume= | 0.011 af |
| Outflow = | 0.01 cfs @ 13.28 hrs, | Volume= | 0.011 af, Atten= 93%, Lag= 71.7 min |
| Discarded = | 0.01 cfs @ 13.28 hrs, | Volume= | 0.011 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.75' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 96.00' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=96.75' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

| | | | |
|---|---|---|---|
| Inflow Area = | 0.246 ac, 61.78% Impervious, Inflow Depth = 1.82" for cornell 002 event | | |
| Inflow = | 0.52 cfs @ 12.09 hrs, Volume= | 0.037 af | |
| Outflow = | 0.52 cfs @ 12.09 hrs, Volume= | 0.037 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.52 cfs @ 12.09 hrs, Volume= | 0.037 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.41' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.51 cfs @ 12.09 hrs HW=79.41' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.03 fps)

## Summary for Pond 185P: CB 13

| | | | |
|---|---|---|---|
| Inflow Area = | 0.105 ac, 59.53% Impervious, Inflow Depth = 1.74" for cornell 002 event | | |
| Inflow = | 0.21 cfs @ 12.09 hrs, Volume= | 0.015 af | |
| Outflow = | 0.21 cfs @ 12.09 hrs, Volume= | 0.015 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.21 cfs @ 12.09 hrs, Volume= | 0.015 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.27' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.21 cfs @ 12.09 hrs HW=79.27' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.21 cfs @ 1.60 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

| | | | |
|---|---|---|---|
| Inflow Area = | 4.358 ac, 30.48% Impervious, Inflow Depth = 1.03" for cornell 002 event | | |
| Inflow = | 2.24 cfs @ 12.13 hrs, Volume= | 0.374 af | |
| Outflow = | 1.54 cfs @ 12.73 hrs, Volume= | 0.312 af, | Atten= 31%, Lag= 36.1 min |
| Discarded = | 0.09 cfs @ 12.73 hrs, Volume= | 0.131 af | |
| Primary = | 1.45 cfs @ 12.73 hrs, Volume= | 0.182 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.01' @ 12.73 hrs Surf.Area= 0.064 ac Storage= 0.113 af

Plug-Flow detention time= 203.7 min calculated for 0.312 af (84% of inflow)
Center-of-Mass det. time= 131.5 min ( 1,007.9 - 876.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.085 af | **24.50'W x 75.50'L x 5.00'H Prismatoid** |
| | | | 0.212 af Overall x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 5 Rows of 11 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.167 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.50' | **21.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.09 cfs @ 12.73 hrs HW=79.01' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

**Primary OutFlow** Max=1.44 cfs @ 12.73 hrs HW=79.01' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 1.44 cfs @ 2.44 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.665 ac, | 64.86% Impervious, | Inflow Depth = 1.94" | for cornell 002 event |
| Inflow = | 1.26 cfs @ | 12.11 hrs, Volume= | 0.107 af | |
| Outflow = | 0.07 cfs @ | 15.31 hrs, Volume= | 0.102 af, | Atten= 95%, Lag= 191.7 min |
| Discarded = | 0.07 cfs @ | 15.31 hrs, Volume= | 0.102 af | |
| Primary = | 0.00 cfs @ | 0.00 hrs, Volume= | 0.000 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.57' @ 15.31 hrs Surf.Area= 0.057 ac Storage= 0.055 af

Plug-Flow detention time= 359.6 min calculated for 0.102 af (95% of inflow)
Center-of-Mass det. time= 331.8 min ( 1,143.0 - 811.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid** |
| | | | 0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 13 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 15.31 hrs HW=88.57' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=87.10' (Free Discharge)
└─**2=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond 197P: unit6

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=100.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 94.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=95.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.85' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 91.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=91.85' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 88.65' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.40' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.90' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.40' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=88.65' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

| | | | |
|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 3.13" | for cornell 002 event |
| Inflow = | 0.14 cfs @ 12.08 hrs, | Volume= | 0.011 af |
| Outflow = | 0.01 cfs @ 13.28 hrs, | Volume= | 0.011 af, Atten= 93%, Lag= 71.7 min |
| Discarded = | 0.01 cfs @ 13.28 hrs, | Volume= | 0.011 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.85' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=90.85' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.55' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 92.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=93.55' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.08 cfs @ 12.19 hrs, Volume= 0.011 af, Atten= 40%, Lag= 6.6 min
Discarded = 0.08 cfs @ 12.19 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.65' @ 12.19 hrs Surf.Area= 0.087 ac Storage= 0.002 af

Plug-Flow detention time= 14.2 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 14.1 min ( 769.5 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.170 af | **90.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.434 af Overall - 0.009 af Embedded = 0.425 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.179 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.09 cfs @ 12.19 hrs HW=89.65' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.25' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=88.25' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 87.25' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 86.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=87.25' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.85' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=82.85' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 80.05' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 79.30' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=80.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 3.13" | for cornell 002 event | |
| Inflow = | 0.14 cfs @ | 12.08 hrs, Volume= | 0.011 af | |
| Outflow = | 0.01 cfs @ | 13.09 hrs, Volume= | 0.011 af, | Atten= 92%, Lag= 60.4 min |
| Discarded = | 0.01 cfs @ | 13.09 hrs, Volume= | 0.011 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 76.06' @ 13.09 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 158.3 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 158.1 min ( 913.5 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.011 af | **7.10'W x 22.50'L x 5.00'H Prismatoid** x 2 |
| | | | 0.037 af Overall - 0.009 af Embedded = 0.028 af x 40.0% Voids |
| #2 | 75.40' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 2 Rows of 3 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 2 rows = 11.0 cf |
| | | 0.020 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.09 hrs HW=76.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 77.55' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 76.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=77.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 77.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=78.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.35' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 80.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=81.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.85' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=82.85' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.85' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=82.85' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 2

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af, Atten= 93%, Lag= 71.7 min
Discarded = 0.01 cfs @ 13.28 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 99.25' @ 13.28 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 180.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 180.4 min ( 935.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 98.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.28 hrs HW=99.25' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,432 | 98 | IMPERVIOUS |
| | 3,990 | 61 | >75% Grass cover, Good, HSG B |
| | 8,422 | 80 | Weighted Average |
| | 3,990 | | 47.38% Pervious Area |
| | 4,432 | | 52.62% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,099 | 98 | IMPERVIOUS |
| | 1,273 | 61 | >75% Grass cover, Good, HSG B |
| | 4,372 | 87 | Weighted Average |
| | 1,273 | | 29.12% Pervious Area |
| | 3,099 | | 70.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN.** |

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.62 cfs @ 12.18 hrs, Volume= 0.056 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,248 | 98 | IMPERVIOUS |
| | 4,913 | 61 | >75% Grass cover, Good, HSG B |
| | 10,161 | 80 | Weighted Average |
| | 4,913 | | 48.35% Pervious Area |
| | 5,248 | | 51.65% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** |
| | | | | | Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** |
| | | | | | Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.46 cfs @ 12.08 hrs, Volume= 0.037 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,126 | 98 | IMPERVIOUS |
| | 4,126 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 166S: CB 6

Runoff = 1.12 cfs @ 12.09 hrs, Volume= 0.081 af, Depth= 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,978 | 61 | >75% Grass cover, Good, HSG B |
| * | 7,190 | 98 | PAVEMENT, HSG B |
| | 16,168 | 77 | Weighted Average |
| | 8,978 | | 55.53% Pervious Area |
| | 7,190 | | 44.47% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,271 | 98 | IMPERVIOUS |
| | 636 | 61 | >75% Grass cover, Good, HSG B |
| | 2,907 | 90 | Weighted Average |
| | 636 | | 21.88% Pervious Area |
| | 2,271 | | 78.12% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,**<br>Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 3.89 cfs @ 12.47 hrs, Volume= 0.519 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 29,612 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 83,065 | 61 | >75% Grass cover, Good, HSG B |
| | 30,334 | 55 | Woods, Good, HSG B |
| * | 183 | 98 | WALL |
| | 145,537 | 68 | Weighted Average |
| | 113,399 | | 77.92% Pervious Area |
| | 32,138 | | 22.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.6 | 50 | 0.0100 | 0.03 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 0.5 | 51 | 0.0100 | 1.61 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.2 | 35 | 0.0570 | 3.84 | | **Shallow Concentrated Flow, CD**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 127 | 0.0150 | 2.49 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 0.2 | 83 | 0.1210 | 5.60 | | **Shallow Concentrated Flow, EF**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 72 | 0.0070 | 1.35 | | **Shallow Concentrated Flow, FG**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 6 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, GH**<br>Paved Kv= 20.3 fps |
| 1.5 | 319 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, HI**<br>Paved Kv= 20.3 fps |
| 31.8 | 743 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,525 | 98 | IMPERVIOUS |
| | 3,596 | 61 | >75% Grass cover, Good, HSG B |
| | 7,121 | 79 | Weighted Average |
| | 3,596 | | 50.50% Pervious Area |
| | 3,525 | | 49.50% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,269 | 98 | IMPERVIOUS |
| | 1,010 | 61 | >75% Grass cover, Good, HSG B |
| | 2,279 | 82 | Weighted Average |
| | 1,010 | | 44.32% Pervious Area |
| | 1,269 | | 55.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 181S: TO CB 12

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,631 | 98 | IMPERVIOUS |
| | 4,102 | 61 | >75% Grass cover, Good, HSG B |
| | 10,733 | 84 | Weighted Average |
| | 4,102 | | 38.22% Pervious Area |
| | 6,631 | | 61.78% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,712 | 98 | IMPERVIOUS |
| | 1,844 | 61 | >75% Grass cover, Good, HSG B |
| | 4,556 | 83 | Weighted Average |
| | 1,844 | | 40.47% Pervious Area |
| | 2,712 | | 59.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 7.41 cfs @ 12.33 hrs, Volume= 0.920 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 299,351 | 55 | Woods, Good, HSG B |
| | 8,364 | 98 | Roofs, HSG B |
| * | 436 | 98 | CONCRETE, HSG B |
| | 9,975 | 96 | Gravel surface, HSG B |
| | 44,126 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,160 | 98 | PAVEMENT, HSG B |
| | 44,910 | 48 | Brush, Good, HSG B |
| | 415,322 | 58 | Weighted Average |
| | 398,362 | | 95.92% Pervious Area |
| | 16,960 | | 4.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 3.28 cfs @ 12.18 hrs, Volume= 0.319 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 65,276 | 55 | Woods, Good, HSG B |
| | 66,872 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,550 | 98 | WALLS, HSG B |
| | 307 | 96 | Gravel surface, HSG B |
| * | 2,299 | 98 | PAVEMENT |
| | 136,304 | 59 | Weighted Average |
| | 132,455 | | 97.18% Pervious Area |
| | 3,849 | | 2.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** |
| | | | | | Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** |
| | | | | | Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** |
| | | | | | Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 1.46 cfs @ 12.14 hrs, Volume= 0.118 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,583 | 98 | pavement |
| | 8,032 | 61 | >75% Grass cover, Good, HSG B |
| | 19,615 | 83 | Weighted Average |
| | 8,032 | | 40.95% Pervious Area |
| | 11,583 | | 59.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,**<br>Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 246S: roof unit4

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 247S: roof unit5

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 248S: roof unit6

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 249S: roof unit7

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 250S: roof unit8

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 251S: roof unit9

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 252S: roof unit10

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 253S: roof unit11

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 254S: roof unit1

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 255S: roof unit12

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 256S: roof unit13

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 257S: roof unit14

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 258S: roof unit15

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 259S: roof unit16

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 260S: roof unit17

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 261S: roof unit18

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 262S: roof unit19

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 263S: roof unit20

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 264S: roof unit21

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 265S: roof unit22

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 266S: roof unit23

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 267S: roof unit3

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 268S: roof unit24

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

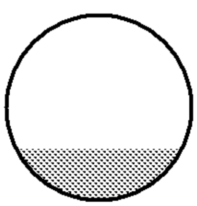
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 2.88" for cornell 010 event
Inflow = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.65 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



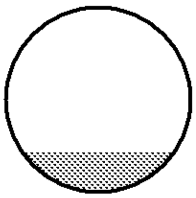
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



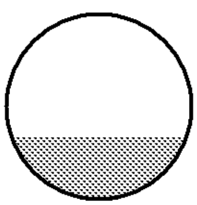
## Summary for Reach 151R: DMH 1 TO DMH 2

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.294 ac, 58.86% Impervious, | Inflow Depth = | 3.11" | for cornell 010 event | |
| Inflow = | 1.05 cfs @ | 12.09 hrs, Volume= | 0.076 af | | |
| Outflow = | 1.05 cfs @ | 12.10 hrs, Volume= | 0.076 af, | Atten= 0%, | Lag= 0.4 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.55 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 1.5 min

Peak Storage= 32 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



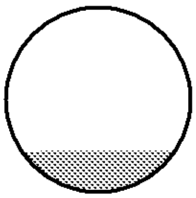
## Summary for Reach 157R: CB 5 TO DMH 3

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.095 ac,100.00% Impervious, | Inflow Depth = | 4.74" | for cornell 010 event | |
| Inflow = | 0.46 cfs @ | 12.08 hrs, Volume= | 0.037 af | | |
| Outflow = | 0.46 cfs @ | 12.08 hrs, Volume= | 0.037 af, | Atten= 0%, | Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



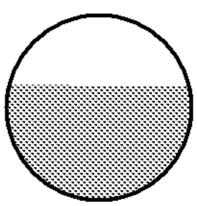
## Summary for Reach 158R: DMH 3 TO HYDRO2

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.622 ac, 62.42% Impervious, Inflow Depth = 3.27" | for cornell 010 event | | |
| Inflow = | 1.99 cfs @ | 12.11 hrs, Volume= | 0.169 af | |
| Outflow = | 1.99 cfs @ | 12.11 hrs, Volume= | 0.169 af, | Atten= 0%, Lag= 0.2 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.5 min

Peak Storage= 20 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



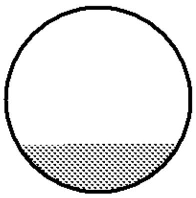
## Summary for Reach 160R: CB 4 TO DMH 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.233 ac, 51.65% Impervious, Inflow Depth = 2.88" | for cornell 010 event | | |
| Inflow = | 0.62 cfs @ | 12.18 hrs, Volume= | 0.056 af | |
| Outflow = | 0.62 cfs @ | 12.19 hrs, Volume= | 0.056 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



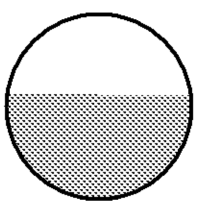
## Summary for Reach 164R: HYDRO2 BASIN 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.622 ac, 62.42% Impervious, Inflow Depth = | 3.27" | for cornell 010 event | |
| Inflow = | 1.99 cfs @ | 12.11 hrs, Volume= | 0.169 af | |
| Outflow = | 1.99 cfs @ | 12.11 hrs, Volume= | 0.169 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.35 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



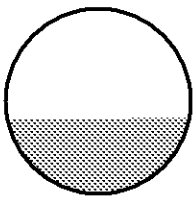
## Summary for Reach 168R: DCB 8 TO DMH 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.341 ac, 22.08% Impervious, Inflow Depth = | 1.87" | for cornell 010 event | |
| Inflow = | 3.89 cfs @ | 12.47 hrs, Volume= | 0.519 af | |
| Outflow = | 3.89 cfs @ | 12.47 hrs, Volume= | 0.519 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.68 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.48 fps, Avg. Travel Time= 0.1 min

Peak Storage= 8 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



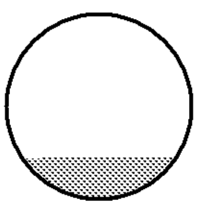
## Summary for Reach 169R: CB 1 TO HYDRO 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, 78.12% Impervious, Inflow Depth = 3.86" | | | for cornell 010 event |
| Inflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af | |
| Outflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.12 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 0.6 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



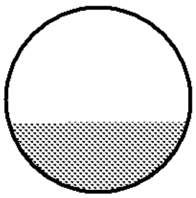
## Summary for Reach 171R: DCB 9 TO DMH 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.450 ac, 59.05% Impervious, Inflow Depth = 3.16" | | | for cornell 010 event |
| Inflow = | 1.46 cfs @ | 12.14 hrs, Volume= | 0.118 af | |
| Outflow = | 1.46 cfs @ | 12.14 hrs, Volume= | 0.118 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.23 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



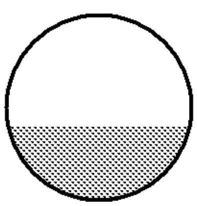
## Summary for Reach 172R: DMH 4 HYDRO3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.791 ac, 26.47% Impervious, Inflow Depth = 2.02" | for cornell 010 event | | |
| Inflow = | 4.44 cfs @ | 12.43 hrs, Volume= | 0.638 af | |
| Outflow = | 4.44 cfs @ | 12.44 hrs, Volume= | 0.638 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 0.3 min

Peak Storage= 33 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.29 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0160 '/'
Inlet Invert= 79.05', Outlet Invert= 78.25'



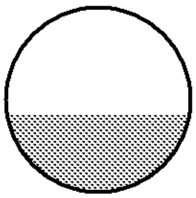
## Summary for Reach 173R: CB 6 TO HYDRO 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.371 ac, 44.47% Impervious, Inflow Depth = 2.61" | for cornell 010 event | | |
| Inflow = | 1.12 cfs @ | 12.09 hrs, Volume= | 0.081 af | |
| Outflow = | 1.12 cfs @ | 12.09 hrs, Volume= | 0.081 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.3 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.07 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 27.0' Slope= 0.0074 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



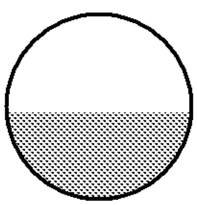
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.371 ac, 44.47% Impervious, Inflow Depth = 2.61" | | for cornell 010 event | |
| Inflow = | 1.12 cfs @ | 12.09 hrs, Volume= | 0.081 af | |
| Outflow = | 1.12 cfs @ | 12.09 hrs, Volume= | 0.081 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.11 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 20.0' Slope= 0.0050 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



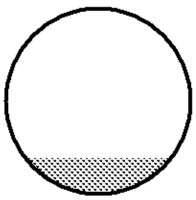
## Summary for Reach 175R: CB 10 TO DMH 7

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.163 ac, 49.50% Impervious, Inflow Depth = 2.78" | | for cornell 010 event | |
| Inflow = | 0.53 cfs @ | 12.09 hrs, Volume= | 0.038 af | |
| Outflow = | 0.53 cfs @ | 12.09 hrs, Volume= | 0.038 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.87 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



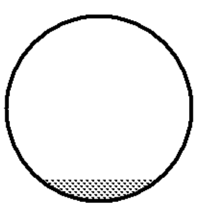
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.052 ac, 55.68% Impervious, Inflow Depth = 3.06" for cornell 010 event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.57 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



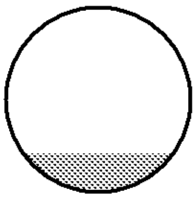
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.216 ac, 51.00% Impervious, Inflow Depth = 2.85" for cornell 010 event
Inflow = 0.71 cfs @ 12.09 hrs, Volume= 0.051 af
Outflow = 0.71 cfs @ 12.09 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.78 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 0.8 min

Peak Storage= 11 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



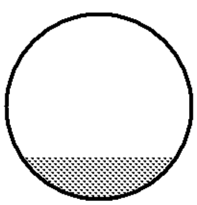
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, 78.12% Impervious, Inflow Depth = | 3.86" | for cornell 010 event | |
| Inflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af | |
| Outflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



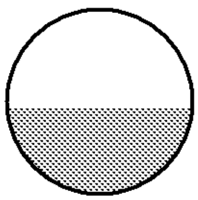
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 4.007 ac, 27.79% Impervious, Inflow Depth = | 2.06" | for cornell 010 event | |
| Inflow = | 4.67 cfs @ | 12.42 hrs, Volume= | 0.689 af | |
| Outflow = | 4.67 cfs @ | 12.42 hrs, Volume= | 0.689 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.77 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.34 fps, Avg. Travel Time= 0.0 min

Peak Storage= 4 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0100 '/'
Inlet Invert= 78.15', Outlet Invert= 78.10'



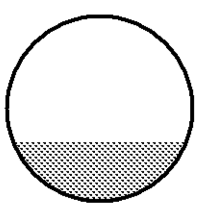
## Summary for Reach 183R: CB 12 TO DMH 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.246 ac, 61.78% Impervious, Inflow Depth = 3.25" | for cornell 010 event | | |
| Inflow = | 0.92 cfs @ | 12.09 hrs, Volume= | 0.067 af | |
| Outflow = | 0.92 cfs @ | 12.09 hrs, Volume= | 0.067 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.22 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



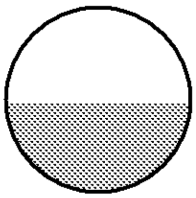
## Summary for Reach 184R: HYDRO5 BASIN 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.351 ac, 61.11% Impervious, Inflow Depth = 3.22" | for cornell 010 event | | |
| Inflow = | 1.31 cfs @ | 12.09 hrs, Volume= | 0.094 af | |
| Outflow = | 1.30 cfs @ | 12.09 hrs, Volume= | 0.094 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



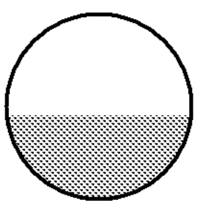
## Summary for Reach 185R: DMH 6 TO HYDRO 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.216 ac, 51.00% Impervious, Inflow Depth = 2.85" | | for cornell 010 event | |
| Inflow = | 0.71 cfs @ | 12.09 hrs, Volume= | 0.051 af | |
| Outflow = | 0.71 cfs @ | 12.10 hrs, Volume= | 0.051 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.04 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 0.8 min

Peak Storage= 13 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



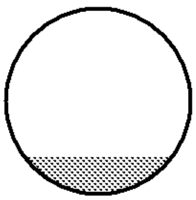
## Summary for Reach 186R: CB 13 TO DMH 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.105 ac, 59.53% Impervious, Inflow Depth = 3.16" | | for cornell 010 event | |
| Inflow = | 0.38 cfs @ | 12.09 hrs, Volume= | 0.028 af | |
| Outflow = | 0.38 cfs @ | 12.09 hrs, Volume= | 0.028 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.37 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



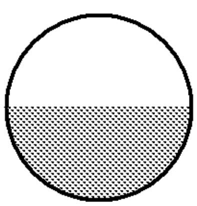
## Summary for Reach 187R: DMH 5 TO HYDRO 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.351 ac, 61.11% Impervious, Inflow Depth = | 3.22" | for cornell 010 event | |
| Inflow = | 1.31 cfs @ | 12.09 hrs, Volume= | 0.094 af | |
| Outflow = | 1.31 cfs @ | 12.09 hrs, Volume= | 0.094 af, | Atten= 0%, Lag= 0.1 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 8.152 ac, 22.67% Impervious, Inflow Depth = | 1.32" | for cornell 010 event | |
| Inflow = | 7.00 cfs @ | 12.36 hrs, Volume= | 0.898 af | |
| Outflow = | 7.00 cfs @ | 12.36 hrs, Volume= | 0.898 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

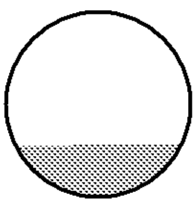
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 3.11" for cornell 010 event
Inflow = 1.05 cfs @ 12.10 hrs, Volume= 0.076 af
Outflow = 1.04 cfs @ 12.10 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.73 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.9 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 95.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=97.12' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=101.12' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.89 hrs, Volume= 0.017 af, Atten= 94%, Lag= 108.2 min
Discarded = 0.01 cfs @ 13.89 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 105.18' @ 13.89 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 288.1 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 287.9 min ( 1,036.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.010 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 1 Chambers |

Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.019 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.89 hrs HW=105.18' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 2.88" for cornell 010 event
Inflow = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.26' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.63 cfs @ 12.09 hrs HW=96.26' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.63 cfs @ 2.02 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.23' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.40 cfs @ 12.09 hrs HW=96.22' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.40 cfs @ 1.90 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.095 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.46 cfs @ 12.08 hrs, Volume= 0.037 af
Outflow = 0.46 cfs @ 12.08 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.08 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.20' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.45 cfs @ 12.08 hrs HW=91.19' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 1.97 fps)

## Summary for Pond 159P: CB 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.233 ac, 51.65% Impervious, Inflow Depth = 2.88" for cornell 010 event | | | |
| Inflow = | 0.62 cfs @ | 12.18 hrs, Volume= | 0.056 af | |
| Outflow = | 0.62 cfs @ | 12.18 hrs, Volume= | 0.056 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.62 cfs @ | 12.18 hrs, Volume= | 0.056 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.26' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.61 cfs @ 12.18 hrs HW=91.25' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.61 cfs @ 2.14 fps)

## Summary for Pond 167P: DCB 8

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.341 ac, 22.08% Impervious, Inflow Depth = 1.87" for cornell 010 event | | | |
| Inflow = | 3.89 cfs @ | 12.47 hrs, Volume= | 0.519 af | |
| Outflow = | 3.89 cfs @ | 12.47 hrs, Volume= | 0.519 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 3.89 cfs @ | 12.47 hrs, Volume= | 0.519 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.72' @ 12.47 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=3.88 cfs @ 12.47 hrs HW=80.72' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 3.88 cfs @ 3.31 fps)

## Summary for Pond 168P: CB 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, 78.12% Impervious, Inflow Depth = 3.86" for cornell 010 event | | | |
| Inflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af | |
| Outflow = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.29 cfs @ | 12.09 hrs, Volume= | 0.021 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.53' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.28 cfs @ 12.09 hrs HW=102.53' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.73 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 3.16" for cornell 010 event
Inflow = 1.46 cfs @ 12.14 hrs, Volume= 0.118 af
Outflow = 1.46 cfs @ 12.14 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.14 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.91' @ 12.14 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.43 cfs @ 12.14 hrs HW=80.91' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.43 cfs @ 2.72 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.110 ac, 86.70% Impervious, Inflow Depth = 4.20" for cornell 010 event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.03 cfs @ 13.96 hrs, Volume= 0.038 af, Atten= 94%, Lag= 112.0 min
Discarded = 0.03 cfs @ 13.96 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.35' @ 13.96 hrs Surf.Area= 0.023 ac Storage= 0.018 af

Plug-Flow detention time= 248.6 min calculated for 0.038 af (100% of inflow)
Center-of-Mass det. time= 248.5 min ( 1,020.9 - 772.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid** |
| | | | 0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 4 Rows of 7 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 13.96 hrs HW=100.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.163 ac, | 49.50% Impervious, | Inflow Depth = 2.78" | for cornell 010 event | |
| Inflow = | 0.53 cfs @ | 12.09 hrs, | Volume= | 0.038 af | |
| Outflow = | 0.53 cfs @ | 12.09 hrs, | Volume= | 0.038 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.53 cfs @ | 12.09 hrs, | Volume= | 0.038 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.15' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.52 cfs @ 12.09 hrs HW=85.15' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.04 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.371 ac, | 44.47% Impervious, | Inflow Depth = 2.61" | for cornell 010 event | |
| Inflow = | 1.12 cfs @ | 12.09 hrs, | Volume= | 0.081 af | |
| Outflow = | 0.05 cfs @ | 15.25 hrs, | Volume= | 0.079 af, | Atten= 95%, Lag= 189.6 min |
| Discarded = | 0.05 cfs @ | 15.25 hrs, | Volume= | 0.079 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.94' @ 15.25 hrs Surf.Area= 0.045 ac Storage= 0.043 af

Plug-Flow detention time= 362.0 min calculated for 0.079 af (97% of inflow)
Center-of-Mass det. time= 347.0 min ( 1,177.3 - 830.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.055 af | **28.60'W x 69.00'L x 5.00'H Prismatoid**<br>0.227 af Overall - 0.090 af Embedded = 0.137 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.145 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.05 cfs @ 15.25 hrs HW=96.94' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Summary for Pond 176P: CB 6

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.371 ac, | 44.47% Impervious, | Inflow Depth = 2.61" | for cornell 010 event | |
| Inflow = | 1.12 cfs @ | 12.09 hrs, | Volume= | 0.081 af | |
| Outflow = | 1.12 cfs @ | 12.09 hrs, | Volume= | 0.081 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 1.12 cfs @ | 12.09 hrs, | Volume= | 0.081 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.05' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.10 cfs @ 12.09 hrs HW=98.04' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.10 cfs @ 2.51 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.052 ac, 55.68% Impervious, Inflow Depth = 3.06" for cornell 010 event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.00' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.18 cfs @ 12.09 hrs HW=85.00' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.55 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.52' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 96.00' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=97.52' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

| | | | |
|---|---|---|---|
| Inflow Area = | 0.246 ac, 61.78% Impervious, Inflow Depth = 3.25" | for cornell 010 event | |
| Inflow = | 0.92 cfs @ 12.09 hrs, Volume= | 0.067 af | |
| Outflow = | 0.92 cfs @ 12.09 hrs, Volume= | 0.067 af, Atten= 0%, Lag= 0.0 min | |
| Primary = | 0.92 cfs @ 12.09 hrs, Volume= | 0.067 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.54' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.91 cfs @ 12.09 hrs HW=79.54' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.91 cfs @ 2.38 fps)

## Summary for Pond 185P: CB 13

| | | | |
|---|---|---|---|
| Inflow Area = | 0.105 ac, 59.53% Impervious, Inflow Depth = 3.16" | for cornell 010 event | |
| Inflow = | 0.38 cfs @ 12.09 hrs, Volume= | 0.028 af | |
| Outflow = | 0.38 cfs @ 12.09 hrs, Volume= | 0.028 af, Atten= 0%, Lag= 0.0 min | |
| Primary = | 0.38 cfs @ 12.09 hrs, Volume= | 0.028 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.36' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.37 cfs @ 12.09 hrs HW=79.35' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 1.87 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

| | | | |
|---|---|---|---|
| Inflow Area = | 4.358 ac, 30.48% Impervious, Inflow Depth = 2.16" | for cornell 010 event | |
| Inflow = | 5.09 cfs @ 12.40 hrs, Volume= | 0.783 af | |
| Outflow = | 5.03 cfs @ 12.45 hrs, Volume= | 0.719 af, Atten= 1%, Lag= 3.1 min | |
| Discarded = | 0.09 cfs @ 12.45 hrs, Volume= | 0.140 af | |
| Primary = | 4.93 cfs @ 12.45 hrs, Volume= | 0.579 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.51' @ 12.45 hrs Surf.Area= 0.060 ac Storage= 0.132 af

Plug-Flow detention time= 102.5 min calculated for 0.718 af (92% of inflow)
Center-of-Mass det. time= 61.3 min ( 918.1 - 856.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.085 af | **24.50'W x 75.50'L x 5.00'H Prismatoid** |
| | | | 0.212 af Overall x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 5 Rows of 11 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.167 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.50' | **21.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.09 cfs @ 12.45 hrs HW=79.51' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

**Primary OutFlow** Max=4.92 cfs @ 12.45 hrs HW=79.51' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 4.92 cfs @ 3.42 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

| | | | |
|---|---|---|---|
| Inflow Area = | 0.665 ac, 64.86% Impervious, | Inflow Depth = 3.36" | for cornell 010 event |
| Inflow = | 2.19 cfs @ 12.11 hrs, | Volume= | 0.186 af |
| Outflow = | 0.07 cfs @ 16.54 hrs, | Volume= | 0.118 af, Atten= 97%, Lag= 266.0 min |
| Discarded = | 0.07 cfs @ 16.54 hrs, | Volume= | 0.118 af |
| Primary = | 0.00 cfs @ 0.00 hrs, | Volume= | 0.000 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.94' @ 16.54 hrs Surf.Area= 0.057 ac Storage= 0.114 af

Plug-Flow detention time= 418.4 min calculated for 0.118 af (64% of inflow)
Center-of-Mass det. time= 313.5 min ( 1,113.7 - 800.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid** |
| | | | 0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 13 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 16.54 hrs HW=89.94' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=87.10' (Free Discharge)
└─**2=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond 197P: unit6

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=101.12' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 94.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=96.12' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 202P: unit9

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 4.74" | for cornell 010 event | |
| Inflow = | 0.21 cfs @ | 12.08 hrs, Volume= | 0.017 af | |
| Outflow = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af, | Atten= 94%, Lag= 107.2 min |
| Discarded = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 92.62' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 91.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=92.62' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 4.74" | for cornell 010 event | |
| Inflow = | 0.21 cfs @ | 12.08 hrs, Volume= | 0.017 af | |
| Outflow = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af, | Atten= 94%, Lag= 107.2 min |
| Discarded = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 89.42' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.40' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.90' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.40' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=89.42' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 4.74" | for cornell 010 event | |
| Inflow = | 0.21 cfs @ | 12.08 hrs, Volume= | 0.017 af | |
| Outflow = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af, | Atten= 94%, Lag= 107.2 min |
| Discarded = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.62' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=91.62' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.32' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 92.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=94.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.09 cfs @ 12.27 hrs, Volume= 0.017 af, Atten= 57%, Lag= 11.3 min
Discarded = 0.09 cfs @ 12.27 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.68' @ 12.27 hrs Surf.Area= 0.087 ac Storage= 0.003 af

Plug-Flow detention time= 15.6 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 15.5 min ( 763.6 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.170 af | **90.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.434 af Overall - 0.009 af Embedded = 0.425 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.179 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.09 cfs @ 12.27 hrs HW=89.68' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.02' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=89.02' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.02' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 86.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=88.02' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 4.74" | for cornell 010 event | |
| Inflow = | 0.21 cfs @ | 12.08 hrs, Volume= | 0.017 af | |
| Outflow = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af, | Atten= 94%, Lag= 107.2 min |
| Discarded = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.62' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=83.62' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 4.74" | for cornell 010 event | |
| Inflow = | 0.21 cfs @ | 12.08 hrs, Volume= | 0.017 af | |
| Outflow = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af, | Atten= 94%, Lag= 107.2 min |
| Discarded = | 0.01 cfs @ | 13.87 hrs, Volume= | 0.017 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 80.82' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 79.30' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=80.82' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.67 hrs, Volume= 0.017 af, Atten= 94%, Lag= 95.1 min
Discarded = 0.01 cfs @ 13.67 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 76.76' @ 13.67 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 251.6 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 251.6 min ( 999.6 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.011 af | **7.10'W x 22.50'L x 5.00'H Prismatoid** x 2 |
| | | | 0.037 af Overall - 0.009 af Embedded = 0.028 af x 40.0% Voids |
| #2 | 75.40' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 2 Rows of 3 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 2 rows = 11.0 cf |
| | | 0.020 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.67 hrs HW=76.76' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.32' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 76.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=78.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 77.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=79.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.12' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 80.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=82.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.62' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=83.62' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.62' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=83.62' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 2

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af, Atten= 94%, Lag= 107.2 min
Discarded = 0.01 cfs @ 13.87 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 100.02' @ 13.87 hrs Surf.Area= 0.007 ac Storage= 0.008 af

Plug-Flow detention time= 286.0 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 285.9 min ( 1,034.0 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 98.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.87 hrs HW=100.02' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,432 | 98 | IMPERVIOUS |
| | 3,990 | 61 | >75% Grass cover, Good, HSG B |
| | 8,422 | 80 | Weighted Average |
| | 3,990 | | 47.38% Pervious Area |
| | 4,432 | | 52.62% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 4.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,099 | 98 | IMPERVIOUS |
| | 1,273 | 61 | >75% Grass cover, Good, HSG B |
| | 4,372 | 87 | Weighted Average |
| | 1,273 | | 29.12% Pervious Area |
| | 3,099 | | 70.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN.** |

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.86 cfs @ 12.18 hrs, Volume= 0.078 af, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,248 | 98 | IMPERVIOUS |
| | 4,913 | 61 | >75% Grass cover, Good, HSG B |
| | 10,161 | 80 | Weighted Average |
| | 4,913 | | 48.35% Pervious Area |
| | 5,248 | | 51.65% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,126 | 98 | IMPERVIOUS |
| | 4,126 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 166S: CB 6

Runoff = 1.59 cfs @ 12.09 hrs, Volume= 0.114 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,978 | 61 | >75% Grass cover, Good, HSG B |
| * | 7,190 | 98 | PAVEMENT, HSG B |
| | 16,168 | 77 | Weighted Average |
| | 8,978 | | 55.53% Pervious Area |
| | 7,190 | | 44.47% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 5.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,271 | 98 | IMPERVIOUS |
| | 636 | 61 | >75% Grass cover, Good, HSG B |
| | 2,907 | 90 | Weighted Average |
| | 636 | | 21.88% Pervious Area |
| | 2,271 | | 78.12% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,**<br>Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 5.98 cfs @ 12.46 hrs, Volume= 0.781 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 29,612 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 83,065 | 61 | >75% Grass cover, Good, HSG B |
| | 30,334 | 55 | Woods, Good, HSG B |
| * | 183 | 98 | WALL |
| | 145,537 | 68 | Weighted Average |
| | 113,399 | | 77.92% Pervious Area |
| | 32,138 | | 22.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.6 | 50 | 0.0100 | 0.03 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 0.5 | 51 | 0.0100 | 1.61 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.2 | 35 | 0.0570 | 3.84 | | **Shallow Concentrated Flow, CD**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 127 | 0.0150 | 2.49 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 0.2 | 83 | 0.1210 | 5.60 | | **Shallow Concentrated Flow, EF**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 72 | 0.0070 | 1.35 | | **Shallow Concentrated Flow, FG**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 6 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, GH**<br>Paved Kv= 20.3 fps |
| 1.5 | 319 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, HI**<br>Paved Kv= 20.3 fps |
| 31.8 | 743 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,525 | 98 | IMPERVIOUS |
| | 3,596 | 61 | >75% Grass cover, Good, HSG B |
| | 7,121 | 79 | Weighted Average |
| | 3,596 | | 50.50% Pervious Area |
| | 3,525 | | 49.50% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,269 | 98 | IMPERVIOUS |
| | 1,010 | 61 | >75% Grass cover, Good, HSG B |
| | 2,279 | 82 | Weighted Average |
| | 1,010 | | 44.32% Pervious Area |
| | 1,269 | | 55.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 181S: TO CB 12

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 0.091 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,631 | 98 | IMPERVIOUS |
| | 4,102 | 61 | >75% Grass cover, Good, HSG B |
| | 10,733 | 84 | Weighted Average |
| | 4,102 | | 38.22% Pervious Area |
| | 6,631 | | 61.78% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,712 | 98 | IMPERVIOUS |
| | 1,844 | 61 | >75% Grass cover, Good, HSG B |
| | 4,556 | 83 | Weighted Average |
| | 1,844 | | 40.47% Pervious Area |
| | 2,712 | | 59.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 13.24 cfs @ 12.31 hrs, Volume= 1.516 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 299,351 | 55 | Woods, Good, HSG B |
| | 8,364 | 98 | Roofs, HSG B |
| * | 436 | 98 | CONCRETE, HSG B |
| | 9,975 | 96 | Gravel surface, HSG B |
| | 44,126 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,160 | 98 | PAVEMENT, HSG B |
| | 44,910 | 48 | Brush, Good, HSG B |
| | 415,322 | 58 | Weighted Average |
| | 398,362 | | 95.92% Pervious Area |
| | 16,960 | | 4.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 5.75 cfs @ 12.17 hrs, Volume= 0.520 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 65,276 | 55 | Woods, Good, HSG B |
| | 66,872 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,550 | 98 | WALLS, HSG B |
| | 307 | 96 | Gravel surface, HSG B |
| * | 2,299 | 98 | PAVEMENT |
| | 136,304 | 59 | Weighted Average |
| | 132,455 | | 97.18% Pervious Area |
| | 3,849 | | 2.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB**<br>Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE**<br>Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,583 | 98 | pavement |
| | 8,032 | 61 | >75% Grass cover, Good, HSG B |
| | 19,615 | 83 | Weighted Average |
| | 8,032 | | 40.95% Pervious Area |
| | 11,583 | | 59.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,**<br>Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 246S: roof unit4

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 247S: roof unit5

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 248S: roof unit6

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 249S: roof unit7

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 250S: roof unit8

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 251S: roof unit9

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 252S: roof unit10

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 253S: roof unit11

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 254S: roof unit1

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 255S: roof unit12

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 256S: roof unit13

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 257S: roof unit14

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 258S: roof unit15

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 259S: roof unit16

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 260S: roof unit17

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 261S: roof unit18

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 262S: roof unit19

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 263S: roof unit20

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 264S: roof unit21

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 265S: roof unit22

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 266S: roof unit23

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 267S: roof unit3

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 268S: roof unit24

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

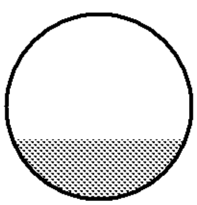
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 4.00" for cornell 025 event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.89 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



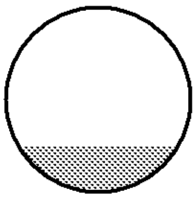
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 4.75" for cornell 025 event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



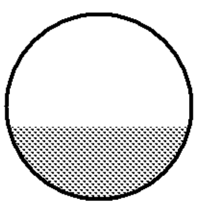
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 4.25" for cornell 025 event
Inflow = 1.43 cfs @ 12.09 hrs, Volume= 0.104 af
Outflow = 1.42 cfs @ 12.09 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.96 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 1.4 min

Peak Storage= 39 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



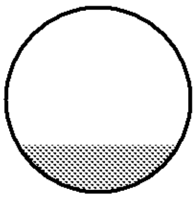
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.095 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.57 cfs @ 12.08 hrs, Volume= 0.047 af
Outflow = 0.57 cfs @ 12.08 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.63 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



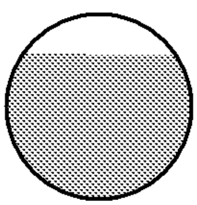
## Summary for Reach 158R: DMH 3 TO HYDRO2

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.622 ac, 62.42% Impervious, Inflow Depth = | 4.42" | for cornell 025 event | |
| Inflow = | 2.67 cfs @ | 12.11 hrs, Volume= | 0.229 af | |
| Outflow = | 2.68 cfs @ | 12.11 hrs, Volume= | 0.229 af, | Atten= 0%, Lag= 0.2 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.37 fps, Avg. Travel Time= 0.5 min

Peak Storage= 26 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



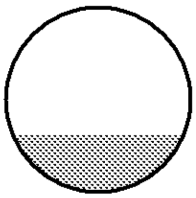
## Summary for Reach 160R: CB 4 TO DMH 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.233 ac, 51.65% Impervious, Inflow Depth = | 4.00" | for cornell 025 event | |
| Inflow = | 0.86 cfs @ | 12.18 hrs, Volume= | 0.078 af | |
| Outflow = | 0.86 cfs @ | 12.18 hrs, Volume= | 0.078 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.06 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



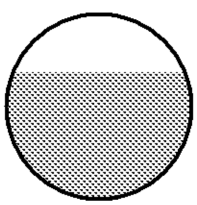
## Summary for Reach 164R: HYDRO2 BASIN 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.622 ac, | 62.42% Impervious, | Inflow Depth = 4.42" | for cornell 025 event |
| Inflow = | 2.68 cfs @ | 12.11 hrs, Volume= | 0.229 af | |
| Outflow = | 2.68 cfs @ | 12.11 hrs, Volume= | 0.229 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.62 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



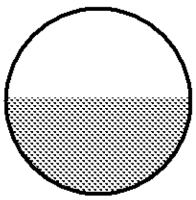
## Summary for Reach 168R: DCB 8 TO DMH 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.341 ac, | 22.08% Impervious, | Inflow Depth = 2.81" | for cornell 025 event |
| Inflow = | 5.98 cfs @ | 12.46 hrs, Volume= | 0.781 af | |
| Outflow = | 5.98 cfs @ | 12.46 hrs, Volume= | 0.781 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.34 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.71 fps, Avg. Travel Time= 0.1 min

Peak Storage= 10 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



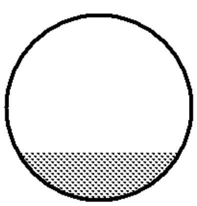
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 5.08" for cornell 025 event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 0.5 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



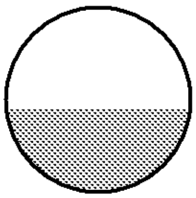
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 4.31" for cornell 025 event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af
Outflow = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.68 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



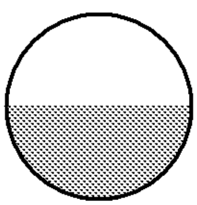
## Summary for Reach 172R: DMH 4 HYDRO3

| | | | |
|---|---|---|---|
| Inflow Area = | 3.791 ac, 26.47% Impervious, Inflow Depth = 2.99" | for cornell 025 event | |
| Inflow = | 6.73 cfs @ 12.42 hrs, Volume= | 0.943 af | |
| Outflow = | 6.74 cfs @ 12.43 hrs, Volume= | 0.943 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.54 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.93 fps, Avg. Travel Time= 0.3 min

Peak Storage= 45 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.29 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0160 '/'
Inlet Invert= 79.05', Outlet Invert= 78.25'



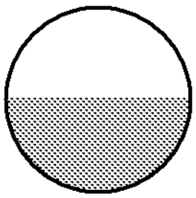
## Summary for Reach 173R: CB 6 TO HYDRO 4

| | | | |
|---|---|---|---|
| Inflow Area = | 0.371 ac, 44.47% Impervious, Inflow Depth = 3.69" | for cornell 025 event | |
| Inflow = | 1.59 cfs @ 12.09 hrs, Volume= | 0.114 af | |
| Outflow = | 1.59 cfs @ 12.09 hrs, Volume= | 0.114 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.07 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 27.0' Slope= 0.0074 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



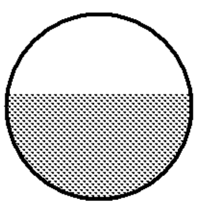
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

| | | | |
|---|---|---|---|
| Inflow Area = | 0.371 ac, 44.47% Impervious, Inflow Depth = 3.69" | for cornell 025 event | |
| Inflow = | 1.59 cfs @ 12.09 hrs, Volume= | 0.114 af | |
| Outflow = | 1.59 cfs @ 12.09 hrs, Volume= | 0.114 af, Atten= 0%, Lag= 0.1 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 20.0' Slope= 0.0050 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



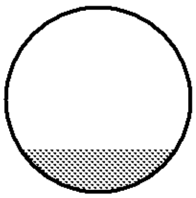
## Summary for Reach 175R: CB 10 TO DMH 7

| | | | |
|---|---|---|---|
| Inflow Area = | 0.163 ac, 49.50% Impervious, Inflow Depth = 3.89" | for cornell 025 event | |
| Inflow = | 0.74 cfs @ 12.09 hrs, Volume= | 0.053 af | |
| Outflow = | 0.74 cfs @ 12.09 hrs, Volume= | 0.053 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.37 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



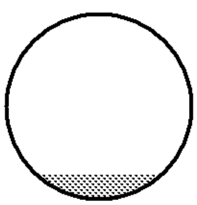
## Summary for Reach 178R: CB 11 TO DMH 7

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.052 ac, 55.68% Impervious, Inflow Depth = 4.21" | | | for cornell 025 event |
| Inflow = | 0.25 cfs @ | 12.09 hrs, Volume= | 0.018 af | |
| Outflow = | 0.25 cfs @ | 12.09 hrs, Volume= | 0.018 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.92 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



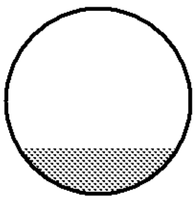
## Summary for Reach 179R: DMH 7 TO DMH 6

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.216 ac, 51.00% Impervious, Inflow Depth = 3.97" | | | for cornell 025 event |
| Inflow = | 0.99 cfs @ | 12.09 hrs, Volume= | 0.071 af | |
| Outflow = | 0.99 cfs @ | 12.09 hrs, Volume= | 0.071 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.36 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.14 fps, Avg. Travel Time= 0.7 min

Peak Storage= 14 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



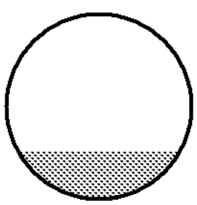
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, | 78.12% Impervious, | Inflow Depth = 5.08" | for cornell 025 event |
| Inflow = | 0.37 cfs @ | 12.09 hrs, Volume= | 0.028 af | |
| Outflow = | 0.37 cfs @ | 12.09 hrs, Volume= | 0.028 af, | Atten= 0%, Lag= 0.1 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



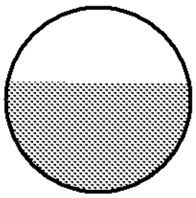
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 4.007 ac, | 27.79% Impervious, | Inflow Depth = 3.04" | for cornell 025 event |
| Inflow = | 7.05 cfs @ | 12.41 hrs, Volume= | 1.015 af | |
| Outflow = | 7.05 cfs @ | 12.41 hrs, Volume= | 1.015 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.37 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.54 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0100 '/'
Inlet Invert= 78.15', Outlet Invert= 78.10'



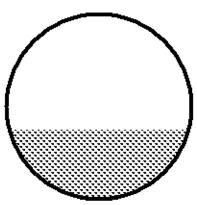
## Summary for Reach 183R: CB 12 TO DMH 5

| | | | |
|---|---|---|---|
| Inflow Area = | 0.246 ac, 61.78% Impervious, Inflow Depth = 4.42" | for cornell 025 event | |
| Inflow = | 1.24 cfs @ 12.09 hrs, Volume= | 0.091 af | |
| Outflow = | 1.24 cfs @ 12.09 hrs, Volume= | 0.091 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.58 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



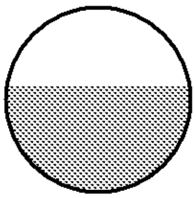
## Summary for Reach 184R: HYDRO5 BASIN 4

| | | | |
|---|---|---|---|
| Inflow Area = | 0.351 ac, 61.11% Impervious, Inflow Depth = 4.39" | for cornell 025 event | |
| Inflow = | 1.76 cfs @ 12.09 hrs, Volume= | 0.128 af | |
| Outflow = | 1.76 cfs @ 12.09 hrs, Volume= | 0.128 af, | Atten= 0%, Lag= 0.0 min |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.72 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



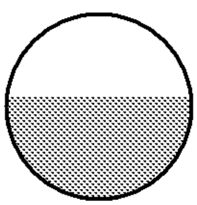
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.216 ac, 51.00% Impervious, Inflow Depth = 3.97" for cornell 025 event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.99 cfs @ 12.10 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.22 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.8 min

Peak Storage= 16 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



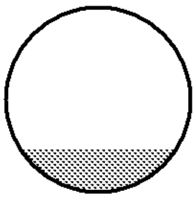
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 59.53% Impervious, Inflow Depth = 4.31" for cornell 025 event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.69 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



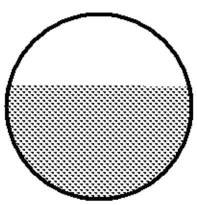
## Summary for Reach 187R: DMH 5 TO HYDRO 5

Inflow Area = 0.351 ac, 61.11% Impervious, Inflow Depth = 4.39" for cornell 025 event
Inflow = 1.76 cfs @ 12.09 hrs, Volume= 0.128 af
Outflow = 1.76 cfs @ 12.09 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 0.4 min

Peak Storage= 16 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

Inflow Area = 8.152 ac, 22.67% Impervious, Inflow Depth = 2.21" for cornell 025 event
Inflow = 12.20 cfs @ 12.19 hrs, Volume= 1.500 af
Outflow = 12.20 cfs @ 12.19 hrs, Volume= 1.500 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

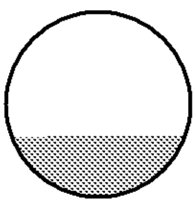
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 4.25" for cornell 025 event
Inflow = 1.42 cfs @ 12.09 hrs, Volume= 0.104 af
Outflow = 1.42 cfs @ 12.10 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.27 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.8 min

Peak Storage= 23 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 95.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=97.77' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=101.77' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.15 hrs, Volume= 0.020 af, Atten= 95%, Lag= 123.7 min
Discarded = 0.01 cfs @ 14.15 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 105.82' @ 14.15 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 342.3 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.8 min ( 1,046.4 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.010 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers |

Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.019 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.15 hrs HW=105.82' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

| | | | |
|---|---|---|---|
| Inflow Area = | 0.193 ac, 52.62% Impervious, Inflow Depth = 4.00" | for cornell 025 event | |
| Inflow = | 0.89 cfs @ 12.09 hrs, Volume= | 0.064 af | |
| Outflow = | 0.89 cfs @ 12.09 hrs, Volume= | 0.064 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.89 cfs @ 12.09 hrs, Volume= | 0.064 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.33' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.88 cfs @ 12.09 hrs HW=96.33' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.88 cfs @ 2.20 fps)

## Summary for Pond 149P: CB 3

| | | | |
|---|---|---|---|
| Inflow Area = | 0.100 ac, 70.88% Impervious, Inflow Depth = 4.75" | for cornell 025 event | |
| Inflow = | 0.54 cfs @ 12.09 hrs, Volume= | 0.040 af | |
| Outflow = | 0.54 cfs @ 12.09 hrs, Volume= | 0.040 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.54 cfs @ 12.09 hrs, Volume= | 0.040 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.28' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.53 cfs @ 12.09 hrs HW=96.27' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.05 fps)

## Summary for Pond 156P: CB 5

| | | | |
|---|---|---|---|
| Inflow Area = | 0.095 ac,100.00% Impervious, Inflow Depth = 6.00" | for cornell 025 event | |
| Inflow = | 0.57 cfs @ 12.08 hrs, Volume= | 0.047 af | |
| Outflow = | 0.57 cfs @ 12.08 hrs, Volume= | 0.047 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.57 cfs @ 12.08 hrs, Volume= | 0.047 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.24' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.57 cfs @ 12.08 hrs HW=91.24' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.57 cfs @ 2.09 fps)

## Summary for Pond 159P: CB 4

Inflow Area = 0.233 ac, 51.65% Impervious, Inflow Depth = 4.00" for cornell 025 event
Inflow = 0.86 cfs @ 12.18 hrs, Volume= 0.078 af
Outflow = 0.86 cfs @ 12.18 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.18 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.33' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.85 cfs @ 12.18 hrs HW=91.33' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.85 cfs @ 2.34 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.341 ac, 22.08% Impervious, Inflow Depth = 2.81" for cornell 025 event
Inflow = 5.98 cfs @ 12.46 hrs, Volume= 0.781 af
Outflow = 5.98 cfs @ 12.46 hrs, Volume= 0.781 af, Atten= 0%, Lag= 0.0 min
Primary = 5.98 cfs @ 12.46 hrs, Volume= 0.781 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.02' @ 12.46 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=5.96 cfs @ 12.46 hrs HW=81.02' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 5.96 cfs @ 3.80 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 5.08" for cornell 025 event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.57' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.36 cfs @ 12.09 hrs HW=102.57' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.86 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 4.31" for cornell 025 event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af
Outflow = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 1.97 cfs @ 12.13 hrs, Volume= 0.162 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.05' @ 12.13 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.94 cfs @ 12.13 hrs HW=81.04' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.94 cfs @ 2.99 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.110 ac, 86.70% Impervious, Inflow Depth = 5.44" for cornell 025 event
Inflow = 0.63 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.03 cfs @ 14.58 hrs, Volume= 0.048 af, Atten= 95%, Lag= 149.8 min
Discarded = 0.03 cfs @ 14.58 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.77' @ 14.58 hrs Surf.Area= 0.023 ac Storage= 0.025 af

Plug-Flow detention time= 340.1 min calculated for 0.048 af (97% of inflow)
Center-of-Mass det. time= 320.9 min ( 1,088.0 - 767.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 14.58 hrs HW=100.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.163 ac, 49.50% Impervious, Inflow Depth = 3.89" for cornell 025 event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af
Outflow = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.23' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.72 cfs @ 12.09 hrs HW=85.22' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.72 cfs @ 2.24 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 3.69" for cornell 025 event
Inflow = 1.59 cfs @ 12.09 hrs, Volume= 0.114 af
Outflow = 0.06 cfs @ 15.90 hrs, Volume= 0.086 af, Atten= 96%, Lag= 228.7 min
Discarded = 0.06 cfs @ 15.90 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.65' @ 15.90 hrs Surf.Area= 0.045 ac Storage= 0.067 af

Plug-Flow detention time= 427.0 min calculated for 0.086 af (76% of inflow)
Center-of-Mass det. time= 340.8 min ( 1,161.1 - 820.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.055 af | **28.60'W x 69.00'L x 5.00'H Prismatoid** |
| | | | 0.227 af Overall - 0.090 af Embedded = 0.137 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 10 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.145 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.06 cfs @ 15.90 hrs HW=97.65' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 3.69" for cornell 025 event
Inflow = 1.59 cfs @ 12.09 hrs, Volume= 0.114 af
Outflow = 1.59 cfs @ 12.09 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.0 min
Primary = 1.59 cfs @ 12.09 hrs, Volume= 0.114 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.18' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.56 cfs @ 12.09 hrs HW=98.17' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.56 cfs @ 2.79 fps)

## Summary for Pond 177P: CB 11

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.052 ac, 55.68% Impervious, | Inflow Depth = 4.21" | for cornell 025 event | |
| Inflow = | 0.25 cfs @ | 12.09 hrs, Volume= | 0.018 af | |
| Outflow = | 0.25 cfs @ | 12.09 hrs, Volume= | 0.018 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.25 cfs @ | 12.09 hrs, Volume= | 0.018 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.04' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.25 cfs @ 12.09 hrs HW=85.03' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.25 cfs @ 1.68 fps)

## Summary for Pond 178P: unit 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 6.00" | for cornell 025 event | |
| Inflow = | 0.26 cfs @ | 12.08 hrs, Volume= | 0.022 af | |
| Outflow = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af, | Atten= 95%, Lag= 121.8 min |
| Discarded = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.17' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 96.00' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=98.17' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

Inflow Area = 0.246 ac, 61.78% Impervious, Inflow Depth = 4.42" for cornell 025 event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 0.091 af
Outflow = 1.24 cfs @ 12.09 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.09 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.64' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.22 cfs @ 12.09 hrs HW=79.63' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.22 cfs @ 2.59 fps)

## Summary for Pond 185P: CB 13

Inflow Area = 0.105 ac, 59.53% Impervious, Inflow Depth = 4.31" for cornell 025 event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.41' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.51 cfs @ 12.09 hrs HW=79.41' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.03 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

Inflow Area = 4.358 ac, 30.48% Impervious, Inflow Depth = 3.15" for cornell 025 event
Inflow = 7.61 cfs @ 12.39 hrs, Volume= 1.143 af
Outflow = 7.55 cfs @ 12.43 hrs, Volume= 1.078 af, Atten= 1%, Lag= 2.4 min
Discarded = 0.10 cfs @ 12.43 hrs, Volume= 0.146 af
Primary = 7.45 cfs @ 12.43 hrs, Volume= 0.932 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.80' @ 12.43 hrs Surf.Area= 0.057 ac Storage= 0.141 af

Plug-Flow detention time= 74.5 min calculated for 1.076 af (94% of inflow)
Center-of-Mass det. time= 44.2 min ( 891.2 - 847.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.085 af | **24.50'W x 75.50'L x 5.00'H Prismatoid** |
| | | | 0.212 af Overall x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 5 Rows of 11 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.167 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.50' | **21.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.10 cfs @ 12.43 hrs HW=79.80' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

**Primary OutFlow** Max=7.44 cfs @ 12.43 hrs HW=79.80' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 7.44 cfs @ 3.88 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.665 ac, 64.86% Impervious, Inflow Depth = 4.53" | | for cornell 025 event | |
| Inflow = | 2.92 cfs @ | 12.11 hrs, Volume= | 0.251 af | |
| Outflow = | 0.35 cfs @ | 12.93 hrs, Volume= | 0.173 af, | Atten= 88%, Lag= 49.3 min |
| Discarded = | 0.07 cfs @ | 12.93 hrs, Volume= | 0.125 af | |
| Primary = | 0.28 cfs @ | 12.93 hrs, Volume= | 0.048 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.30' @ 12.93 hrs Surf.Area= 0.057 ac Storage= 0.128 af

Plug-Flow detention time= 326.1 min calculated for 0.173 af (69% of inflow)
Center-of-Mass det. time= 230.1 min ( 1,024.0 - 793.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid** |
| | | | 0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 13 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 12.93 hrs HW=90.30' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.28 cfs @ 12.93 hrs HW=90.30' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.85 fps)

## Summary for Pond 197P: unit6

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 6.00" | for cornell 025 event | |
| Inflow = | 0.26 cfs @ | 12.08 hrs, Volume= | 0.022 af | |
| Outflow = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af, | Atten= 95%, Lag= 121.8 min |
| Discarded = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=101.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 6.00" | for cornell 025 event | |
| Inflow = | 0.26 cfs @ | 12.08 hrs, Volume= | 0.022 af | |
| Outflow = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af, | Atten= 95%, Lag= 121.8 min |
| Discarded = | 0.01 cfs @ | 14.11 hrs, Volume= | 0.020 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 94.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=96.77' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.27' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 91.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=93.27' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 90.07' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.40' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.90' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.40' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=90.07' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

| | | | |
|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event | | |
| Inflow = | 0.26 cfs @ 12.08 hrs, | Volume= | 0.022 af |
| Outflow = | 0.01 cfs @ 14.11 hrs, | Volume= | 0.020 af, Atten= 95%, Lag= 121.8 min |
| Discarded = | 0.01 cfs @ 14.11 hrs, | Volume= | 0.020 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 92.27' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=92.27' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.97' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 92.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=94.97' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.09 cfs @ 12.35 hrs, Volume= 0.022 af, Atten= 65%, Lag= 16.0 min
Discarded = 0.09 cfs @ 12.35 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.72' @ 12.35 hrs Surf.Area= 0.087 ac Storage= 0.004 af

Plug-Flow detention time= 17.8 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 17.8 min ( 762.3 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.170 af | **90.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.434 af Overall - 0.009 af Embedded = 0.425 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.179 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.09 cfs @ 12.35 hrs HW=89.72' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.67' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=89.67' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.67' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 86.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=88.67' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.27' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=84.27' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 81.47' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 79.30' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=81.47' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

| | | | |
|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event | | |
| Inflow = | 0.26 cfs @ 12.08 hrs, | Volume= | 0.022 af |
| Outflow = | 0.01 cfs @ 13.91 hrs, | Volume= | 0.021 af, Atten= 94%, Lag= 109.7 min |
| Discarded = | 0.01 cfs @ 13.91 hrs, | Volume= | 0.021 af |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 77.36' @ 13.91 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 312.2 min calculated for 0.021 af (98% of inflow)
Center-of-Mass det. time= 298.5 min ( 1,043.1 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.011 af | **7.10'W x 22.50'L x 5.00'H Prismatoid** x 2<br>0.037 af Overall - 0.009 af Embedded = 0.028 af x 40.0% Voids |
| #2 | 75.40' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>2 Rows of 3 Chambers<br>Cap Storage= +2.8 cf x 2 x 2 rows = 11.0 cf |
| | | 0.020 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.91 hrs HW=77.36' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.97' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 76.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=78.97' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 77.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=79.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.77' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 80.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=82.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.27' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=84.27' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.27' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=84.27' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 2

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af, Atten= 95%, Lag= 121.8 min
Discarded = 0.01 cfs @ 14.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 100.67' @ 14.11 hrs Surf.Area= 0.007 ac Storage= 0.011 af

Plug-Flow detention time= 340.0 min calculated for 0.020 af (93% of inflow)
Center-of-Mass det. time= 301.5 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 98.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.11 hrs HW=100.67' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,432 | 98 | IMPERVIOUS |
| | 3,990 | 61 | >75% Grass cover, Good, HSG B |
| | 8,422 | 80 | Weighted Average |
| | 3,990 | | 47.38% Pervious Area |
| | 4,432 | | 52.62% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 7.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,099 | 98 | IMPERVIOUS |
| | 1,273 | 61 | >75% Grass cover, Good, HSG B |
| | 4,372 | 87 | Weighted Average |
| | 1,273 | | 29.12% Pervious Area |
| | 3,099 | | 70.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN.** |

## Summary for Subcatchment 153S: TO CB 4

Runoff = 1.35 cfs @ 12.18 hrs, Volume= 0.124 af, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,248 | 98 | IMPERVIOUS |
| | 4,913 | 61 | >75% Grass cover, Good, HSG B |
| | 10,161 | 80 | Weighted Average |
| | 4,913 | | 48.35% Pervious Area |
| | 5,248 | | 51.65% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD**<br>Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 0.068 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,126 | 98 | IMPERVIOUS |
| | 4,126 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 166S: CB 6

Runoff = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af, Depth= 6.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,978 | 61 | >75% Grass cover, Good, HSG B |
| * | 7,190 | 98 | PAVEMENT, HSG B |
| | 16,168 | 77 | Weighted Average |
| | 8,978 | | 55.53% Pervious Area |
| | 7,190 | | 44.47% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 7.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,271 | 98 | IMPERVIOUS |
| | 636 | 61 | >75% Grass cover, Good, HSG B |
| | 2,907 | 90 | Weighted Average |
| | 636 | | 21.88% Pervious Area |
| | 2,271 | | 78.12% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 10.58 cfs @ 12.44 hrs, Volume= 1.369 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 29,612 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 83,065 | 61 | >75% Grass cover, Good, HSG B |
| | 30,334 | 55 | Woods, Good, HSG B |
| * | 183 | 98 | WALL |
| | 145,537 | 68 | Weighted Average |
| | 113,399 | | 77.92% Pervious Area |
| | 32,138 | | 22.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.6 | 50 | 0.0100 | 0.03 | | **Sheet Flow, AB**<br>Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 0.5 | 51 | 0.0100 | 1.61 | | **Shallow Concentrated Flow, BC**<br>Unpaved Kv= 16.1 fps |
| 0.2 | 35 | 0.0570 | 3.84 | | **Shallow Concentrated Flow, CD**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 127 | 0.0150 | 2.49 | | **Shallow Concentrated Flow, DE**<br>Paved Kv= 20.3 fps |
| 0.2 | 83 | 0.1210 | 5.60 | | **Shallow Concentrated Flow, EF**<br>Unpaved Kv= 16.1 fps |
| 0.9 | 72 | 0.0070 | 1.35 | | **Shallow Concentrated Flow, FG**<br>Unpaved Kv= 16.1 fps |
| 0.0 | 6 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, GH**<br>Paved Kv= 20.3 fps |
| 1.5 | 319 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, HI**<br>Paved Kv= 20.3 fps |
| 31.8 | 743 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,525 | 98 | IMPERVIOUS |
| | 3,596 | 61 | >75% Grass cover, Good, HSG B |
| | 7,121 | 79 | Weighted Average |
| | 3,596 | | 50.50% Pervious Area |
| | 3,525 | | 49.50% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 6.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,269 | 98 | IMPERVIOUS |
| | 1,010 | 61 | >75% Grass cover, Good, HSG B |
| | 2,279 | 82 | Weighted Average |
| | 1,010 | | 44.32% Pervious Area |
| | 1,269 | | 55.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 181S: TO CB 12

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.141 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,631 | 98 | IMPERVIOUS |
| | 4,102 | 61 | >75% Grass cover, Good, HSG B |
| | 10,733 | 84 | Weighted Average |
| | 4,102 | | 38.22% Pervious Area |
| | 6,631 | | 61.78% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,712 | 98 | IMPERVIOUS |
| | 1,844 | 61 | >75% Grass cover, Good, HSG B |
| | 4,556 | 83 | Weighted Average |
| | 1,844 | | 40.47% Pervious Area |
| | 2,712 | | 59.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR 55 MIN** |

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 27.19 cfs @ 12.29 hrs, Volume= 2.943 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 299,351 | 55 | Woods, Good, HSG B |
| | 8,364 | 98 | Roofs, HSG B |
| * | 436 | 98 | CONCRETE, HSG B |
| | 9,975 | 96 | Gravel surface, HSG B |
| | 44,126 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,160 | 98 | PAVEMENT, HSG B |
| | 44,910 | 48 | Brush, Good, HSG B |
| | 415,322 | 58 | Weighted Average |
| | 398,362 | | 95.92% Pervious Area |
| | 16,960 | | 4.08% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 11.59 cfs @ 12.16 hrs, Volume= 0.997 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 65,276 | 55 | Woods, Good, HSG B |
| | 66,872 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,550 | 98 | WALLS, HSG B |
| | 307 | 96 | Gravel surface, HSG B |
| * | 2,299 | 98 | PAVEMENT |
| | 136,304 | 59 | Weighted Average |
| | 132,455 | | 97.18% Pervious Area |
| | 3,849 | | 2.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** |
| | | | | | Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** |
| | | | | | Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** |
| | | | | | Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,583 | 98 | pavement |
| | 8,032 | 61 | >75% Grass cover, Good, HSG B |
| | 19,615 | 83 | Weighted Average |
| | 8,032 | | 40.95% Pervious Area |
| | 11,583 | | 59.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 246S: roof unit4

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 247S: roof unit5

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 248S: roof unit6

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 249S: roof unit7

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

### Summary for Subcatchment 250S: roof unit8

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

### Summary for Subcatchment 251S: roof unit9

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

### Summary for Subcatchment 252S: roof unit10

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 253S: roof unit11

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 254S: roof unit1

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 255S: roof unit12

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 256S: roof unit13

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 257S: roof unit14

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 258S: roof unit15

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 259S: roof unit16

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 260S: roof unit17

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 261S: roof unit18

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 262S: roof unit19

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 263S: roof unit20

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 264S: roof unit21

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 265S: roof unit22

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 266S: roof unit23

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 267S: roof unit3

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

## Summary for Subcatchment 268S: roof unit24

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,875 | 98 | Roofs, HSG B |
| | 1,875 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr-55 min** |

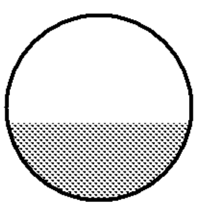
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.193 ac, 52.62% Impervious, Inflow Depth = 6.38" for cornell 100 event
Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af
Outflow = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



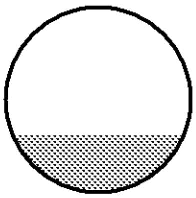
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 70.88% Impervious, Inflow Depth = 7.23" for cornell 100 event
Inflow = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.88 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



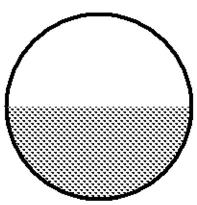
## Summary for Reach 151R: DMH 1 TO DMH 2

| | | | |
|---|---|---|---|
| Inflow Area = | 0.294 ac, 58.86% Impervious, Inflow Depth = 6.67" | for cornell 100 event | |
| Inflow = | 2.20 cfs @ 12.09 hrs, Volume= | 0.163 af | |
| Outflow = | 2.19 cfs @ 12.09 hrs, Volume= | 0.163 af, Atten= 0%, Lag= 0.3 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.56 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 1.3 min

Peak Storage= 54 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



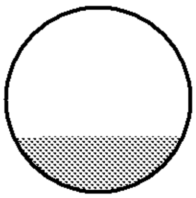
## Summary for Reach 157R: CB 5 TO DMH 3

| | | | |
|---|---|---|---|
| Inflow Area = | 0.095 ac,100.00% Impervious, Inflow Depth = 8.56" | for cornell 100 event | |
| Inflow = | 0.81 cfs @ 12.08 hrs, Volume= | 0.068 af | |
| Outflow = | 0.81 cfs @ 12.08 hrs, Volume= | 0.068 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



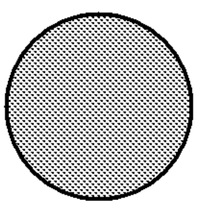
## Summary for Reach 158R: DMH 3 TO HYDRO2

Inflow Area = 0.622 ac, 62.42% Impervious, Inflow Depth = 6.85" for cornell 100 event
Inflow = 4.08 cfs @ 12.11 hrs, Volume= 0.355 af
Outflow = 2.79 cfs @ 12.04 hrs, Volume= 0.355 af, Atten= 31%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.04 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 0.4 min

Peak Storage= 31 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



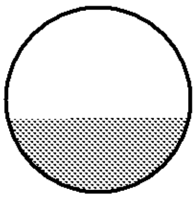
## Summary for Reach 160R: CB 4 TO DMH 3

Inflow Area = 0.233 ac, 51.65% Impervious, Inflow Depth = 6.38" for cornell 100 event
Inflow = 1.35 cfs @ 12.18 hrs, Volume= 0.124 af
Outflow = 1.35 cfs @ 12.18 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.60 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.65 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



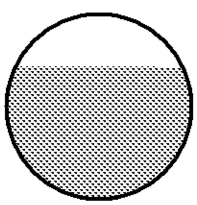
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.622 ac, 62.42% Impervious, Inflow Depth = 6.85" for cornell 100 event
Inflow = 2.79 cfs @ 12.04 hrs, Volume= 0.355 af
Outflow = 2.80 cfs @ 12.08 hrs, Volume= 0.355 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.66 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



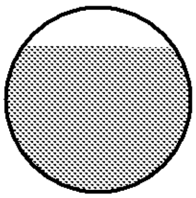
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.341 ac, 22.08% Impervious, Inflow Depth = 4.92" for cornell 100 event
Inflow = 10.58 cfs @ 12.44 hrs, Volume= 1.369 af
Outflow = 10.58 cfs @ 12.44 hrs, Volume= 1.369 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.07 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.07 fps, Avg. Travel Time= 0.1 min

Peak Storage= 16 cf @ 12.44 hrs
Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



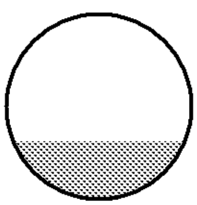
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 7.59" for cornell 100 event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 0.5 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



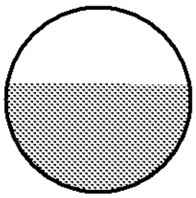
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 6.74" for cornell 100 event
Inflow = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af
Outflow = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.31 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



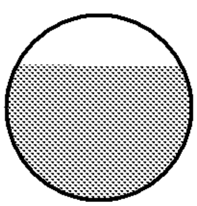
## Summary for Reach 172R: DMH 4 HYDRO3

Inflow Area = 3.791 ac, 26.47% Impervious, Inflow Depth = 5.13" for cornell 100 event
Inflow = 11.77 cfs @ 12.41 hrs, Volume= 1.622 af
Outflow = 11.77 cfs @ 12.42 hrs, Volume= 1.622 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 8.49 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.32 fps, Avg. Travel Time= 0.3 min

Peak Storage= 69 cf @ 12.42 hrs
Average Depth at Peak Storage= 1.10'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.29 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0160 '/'
Inlet Invert= 79.05', Outlet Invert= 78.25'



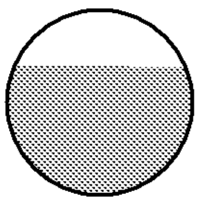
## Summary for Reach 173R: CB 6 TO HYDRO 4

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 6.01" for cornell 100 event
Inflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af
Outflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.37 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.3 min

Peak Storage= 16 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.07 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 27.0' Slope= 0.0074 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



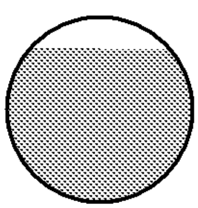
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 6.01" for cornell 100 event
Inflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af
Outflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.66 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.2 min

Peak Storage= 14 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 20.0' Slope= 0.0050 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



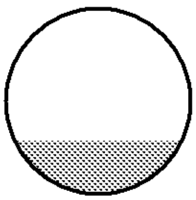
## Summary for Reach 175R: CB 10 TO DMH 7

Inflow Area = 0.163 ac, 49.50% Impervious, Inflow Depth = 6.26" for cornell 100 event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af
Outflow = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.13 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



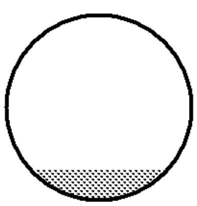
## Summary for Reach 178R: CB 11 TO DMH 7

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.052 ac, 55.68% Impervious, Inflow Depth = 6.62" | | for cornell 100 event | |
| Inflow = | 0.39 cfs @ | 12.09 hrs, Volume= | 0.029 af | |
| Outflow = | 0.39 cfs @ | 12.09 hrs, Volume= | 0.029 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.46 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



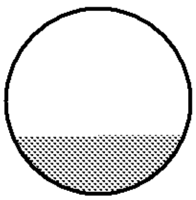
## Summary for Reach 179R: DMH 7 TO DMH 6

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.216 ac, 51.00% Impervious, Inflow Depth = 6.35" | | for cornell 100 event | |
| Inflow = | 1.56 cfs @ | 12.09 hrs, Volume= | 0.114 af | |
| Outflow = | 1.56 cfs @ | 12.09 hrs, Volume= | 0.114 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.25 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.6 min

Peak Storage= 20 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



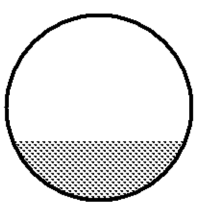
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 78.12% Impervious, Inflow Depth = 7.59" for cornell 100 event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.46 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



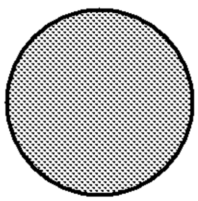
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 4

Inflow Area = 4.007 ac, 27.79% Impervious, Inflow Depth = 5.20" for cornell 100 event
Inflow = 12.26 cfs @ 12.41 hrs, Volume= 1.736 af
Outflow = 11.19 cfs @ 12.28 hrs, Volume= 1.736 af, Atten= 9%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.77 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.85 fps, Avg. Travel Time= 0.0 min

Peak Storage= 9 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0100 '/'
Inlet Invert= 78.15', Outlet Invert= 78.10'



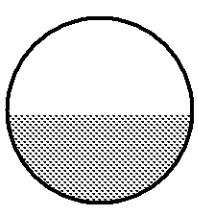
## Summary for Reach 183R: CB 12 TO DMH 5

Inflow Area = 0.246 ac, 61.78% Impervious, Inflow Depth = 6.87" for cornell 100 event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 0.141 af
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.13 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



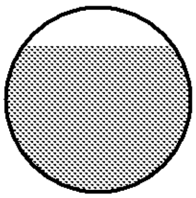
## Summary for Reach 184R: HYDRO5 BASIN 4

Inflow Area = 0.351 ac, 61.11% Impervious, Inflow Depth = 6.83" for cornell 100 event
Inflow = 2.68 cfs @ 12.09 hrs, Volume= 0.200 af
Outflow = 2.68 cfs @ 12.09 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



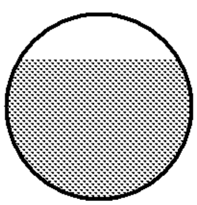
## Summary for Reach 185R: DMH 6 TO HYDRO 3

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.216 ac, 51.00% Impervious, Inflow Depth = 6.35" | for cornell 100 event | | |
| Inflow = | 1.56 cfs @ | 12.09 hrs, Volume= | 0.114 af | |
| Outflow = | 1.55 cfs @ | 12.09 hrs, Volume= | 0.114 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



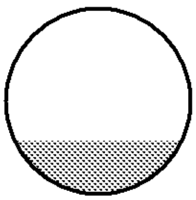
## Summary for Reach 186R: CB 13 TO DMH 5

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.105 ac, 59.53% Impervious, Inflow Depth = 6.74" | for cornell 100 event | | |
| Inflow = | 0.79 cfs @ | 12.09 hrs, Volume= | 0.059 af | |
| Outflow = | 0.79 cfs @ | 12.09 hrs, Volume= | 0.059 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



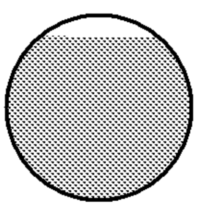
## Summary for Reach 187R: DMH 5 TO HYDRO 5

| | | | |
|---|---|---|---|
| Inflow Area = | 0.351 ac, 61.11% Impervious, Inflow Depth = 6.83" | for cornell 100 event | |
| Inflow = | 2.69 cfs @ 12.09 hrs, Volume= | 0.200 af | |
| Outflow = | 2.68 cfs @ 12.09 hrs, Volume= | 0.200 af, Atten= 0%, Lag= 0.2 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.66 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 0.4 min

Peak Storage= 24 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.89'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

| | | | |
|---|---|---|---|
| Inflow Area = | 8.152 ac, 22.67% Impervious, Inflow Depth = 4.23" | for cornell 100 event | |
| Inflow = | 22.89 cfs @ 12.19 hrs, Volume= | 2.875 af | |
| Outflow = | 22.89 cfs @ 12.19 hrs, Volume= | 2.875 af, Atten= 0%, Lag= 0.0 min | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

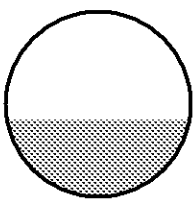
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.294 ac, 58.86% Impervious, Inflow Depth = 6.67" for cornell 100 event
Inflow = 2.19 cfs @ 12.09 hrs, Volume= 0.163 af
Outflow = 2.19 cfs @ 12.10 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 0.8 min

Peak Storage= 32 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 95.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=99.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 103.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=103.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.59 hrs, Volume= 0.025 af, Atten= 96%, Lag= 150.6 min
Discarded = 0.02 cfs @ 14.59 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 107.28' @ 14.59 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 375.8 min calculated for 0.025 af (81% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.010 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 1 Chambers |

Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.019 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.59 hrs HW=107.28' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 116P: CB 2

| | | | |
|---|---|---|---|
| Inflow Area = | 0.193 ac, 52.62% Impervious, Inflow Depth = 6.38" | for cornell 100 event | |
| Inflow = | 1.40 cfs @ 12.09 hrs, Volume= | 0.103 af | |
| Outflow = | 1.40 cfs @ 12.09 hrs, Volume= | 0.103 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 1.40 cfs @ 12.09 hrs, Volume= | 0.103 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.44' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.38 cfs @ 12.09 hrs HW=96.44' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.38 cfs @ 2.48 fps)

## Summary for Pond 149P: CB 3

| | | | |
|---|---|---|---|
| Inflow Area = | 0.100 ac, 70.88% Impervious, Inflow Depth = 7.23" | for cornell 100 event | |
| Inflow = | 0.80 cfs @ 12.09 hrs, Volume= | 0.060 af | |
| Outflow = | 0.80 cfs @ 12.09 hrs, Volume= | 0.060 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.80 cfs @ 12.09 hrs, Volume= | 0.060 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.37' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.79 cfs @ 12.09 hrs HW=96.36' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.79 cfs @ 2.29 fps)

## Summary for Pond 156P: CB 5

| | | | |
|---|---|---|---|
| Inflow Area = | 0.095 ac,100.00% Impervious, Inflow Depth = 8.56" | for cornell 100 event | |
| Inflow = | 0.81 cfs @ 12.08 hrs, Volume= | 0.068 af | |
| Outflow = | 0.81 cfs @ 12.08 hrs, Volume= | 0.068 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.81 cfs @ 12.08 hrs, Volume= | 0.068 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.32' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.80 cfs @ 12.08 hrs HW=91.32' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.80 cfs @ 2.30 fps)

## Summary for Pond 159P: CB 4

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.233 ac, | 51.65% Impervious, | Inflow Depth = 6.38" | for cornell 100 event |
| Inflow = | 1.35 cfs @ | 12.18 hrs, Volume= | 0.124 af | |
| Outflow = | 1.35 cfs @ | 12.18 hrs, Volume= | 0.124 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 1.35 cfs @ | 12.18 hrs, Volume= | 0.124 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.48' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.34 cfs @ 12.18 hrs HW=91.47' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.34 cfs @ 2.66 fps)

## Summary for Pond 167P: DCB 8

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 3.341 ac, | 22.08% Impervious, | Inflow Depth = 4.92" | for cornell 100 event |
| Inflow = | 10.58 cfs @ | 12.44 hrs, Volume= | 1.369 af | |
| Outflow = | 10.58 cfs @ | 12.44 hrs, Volume= | 1.369 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 10.58 cfs @ | 12.44 hrs, Volume= | 1.369 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.07' @ 12.44 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=10.57 cfs @ 12.44 hrs HW=82.06' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 10.57 cfs @ 5.98 fps)

## Summary for Pond 168P: CB 1

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.067 ac, | 78.12% Impervious, | Inflow Depth = 7.59" | for cornell 100 event |
| Inflow = | 0.54 cfs @ | 12.09 hrs, Volume= | 0.042 af | |
| Outflow = | 0.54 cfs @ | 12.09 hrs, Volume= | 0.042 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.54 cfs @ | 12.09 hrs, Volume= | 0.042 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.64' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.53 cfs @ 12.09 hrs HW=102.63' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.06 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.450 ac, 59.05% Impervious, Inflow Depth = 6.74" for cornell 100 event
Inflow = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af
Outflow = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min
Primary = 3.03 cfs @ 12.13 hrs, Volume= 0.253 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.41' @ 12.13 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=2.98 cfs @ 12.13 hrs HW=81.39' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.98 cfs @ 3.80 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.110 ac, 86.70% Impervious, Inflow Depth = 7.97" for cornell 100 event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.073 af
Outflow = 0.03 cfs @ 15.42 hrs, Volume= 0.056 af, Atten= 96%, Lag= 200.0 min
Discarded = 0.03 cfs @ 15.42 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.75' @ 15.42 hrs Surf.Area= 0.023 ac Storage= 0.041 af

Plug-Flow detention time= 390.1 min calculated for 0.055 af (76% of inflow)
Center-of-Mass det. time= 306.6 min ( 1,066.2 - 759.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 15.42 hrs HW=101.75' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.163 ac, 49.50% Impervious, Inflow Depth = 6.26" for cornell 100 event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af
Outflow = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.35' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.15 cfs @ 12.09 hrs HW=85.35' (Free Discharge)
**1=Orifice/Grate** (Orifice Controls 1.15 cfs @ 2.55 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 6.01" for cornell 100 event
Inflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af
Outflow = 0.06 cfs @ 17.02 hrs, Volume= 0.103 af, Atten= 97%, Lag= 295.7 min
Discarded = 0.06 cfs @ 17.02 hrs, Volume= 0.103 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.42' @ 17.02 hrs Surf.Area= 0.045 ac Storage= 0.122 af

Plug-Flow detention time= 439.6 min calculated for 0.102 af (55% of inflow)
Center-of-Mass det. time= 331.9 min ( 1,138.3 - 806.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.055 af | **28.60'W x 69.00'L x 5.00'H Prismatoid**<br>0.227 af Overall - 0.090 af Embedded = 0.137 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.145 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.06 cfs @ 17.02 hrs HW=99.42' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.371 ac, 44.47% Impervious, Inflow Depth = 6.01" for cornell 100 event
Inflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af
Outflow = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Primary = 2.56 cfs @ 12.09 hrs, Volume= 0.186 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.45' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=2.52 cfs @ 12.09 hrs HW=98.44' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.52 cfs @ 3.30 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.052 ac, 55.68% Impervious, Inflow Depth = 6.62" for cornell 100 event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.39 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.10' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.39 cfs @ 12.09 hrs HW=85.10' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.39 cfs @ 1.89 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.68' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 96.00' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=99.68' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 182P: CB 12

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.246 ac, | 61.78% Impervious, | Inflow Depth = | 6.87" | for cornell 100 event |
| Inflow = | 1.89 cfs @ | 12.09 hrs, | Volume= | 0.141 af | |
| Outflow = | 1.89 cfs @ | 12.09 hrs, | Volume= | 0.141 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 1.89 cfs @ | 12.09 hrs, | Volume= | 0.141 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.81' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.87 cfs @ 12.09 hrs HW=79.80' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.87 cfs @ 2.95 fps)

## Summary for Pond 185P: CB 13

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 0.105 ac, | 59.53% Impervious, | Inflow Depth = | 6.74" | for cornell 100 event |
| Inflow = | 0.79 cfs @ | 12.09 hrs, | Volume= | 0.059 af | |
| Outflow = | 0.79 cfs @ | 12.09 hrs, | Volume= | 0.059 af, | Atten= 0%, Lag= 0.0 min |
| Primary = | 0.79 cfs @ | 12.09 hrs, | Volume= | 0.059 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.50' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.78 cfs @ 12.09 hrs HW=79.50' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.28 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 4.358 ac, | 30.48% Impervious, | Inflow Depth = | 5.33" | for cornell 100 event |
| Inflow = | 12.37 cfs @ | 12.27 hrs, | Volume= | 1.936 af | |
| Outflow = | 12.01 cfs @ | 12.30 hrs, | Volume= | 1.869 af, | Atten= 3%, Lag= 1.4 min |
| Discarded = | 0.10 cfs @ | 12.30 hrs, | Volume= | 0.157 af | |
| Primary = | 11.91 cfs @ | 12.30 hrs, | Volume= | 1.712 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.43' @ 12.30 hrs Surf.Area= 0.044 ac Storage= 0.158 af

Plug-Flow detention time= 49.5 min calculated for 1.867 af (96% of inflow)
Center-of-Mass det. time= 30.3 min ( 863.7 - 833.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.085 af | **24.50'W x 75.50'L x 5.00'H Prismatoid** |
| | | | 0.212 af Overall x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 5 Rows of 11 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.167 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.50' | **21.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.10 cfs @ 12.30 hrs HW=80.43' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

**Primary OutFlow** Max=11.87 cfs @ 12.30 hrs HW=80.43' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 11.87 cfs @ 4.94 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

Inflow Area = 0.665 ac, 64.86% Impervious, Inflow Depth = 6.96" for cornell 100 event
Inflow = 3.16 cfs @ 12.08 hrs, Volume= 0.386 af
Outflow = 1.78 cfs @ 12.48 hrs, Volume= 0.300 af, Atten= 44%, Lag= 23.7 min
Discarded = 0.08 cfs @ 12.48 hrs, Volume= 0.133 af
Primary = 1.70 cfs @ 12.48 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.36' @ 12.48 hrs Surf.Area= 0.057 ac Storage= 0.166 af

Plug-Flow detention time= 218.4 min calculated for 0.300 af (78% of inflow)
Center-of-Mass det. time= 137.2 min ( 922.3 - 785.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid** |
| | | | 0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 6 Rows of 13 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.08 cfs @ 12.48 hrs HW=91.36' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

**Primary OutFlow** Max=1.70 cfs @ 12.48 hrs HW=91.36' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 1.70 cfs @ 4.88 fps)

## Summary for Pond 197P: unit6

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 103.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 99.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=103.28' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 94.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=98.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.78' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 91.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=94.78' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.58' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.40' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.90' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.40' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=91.58' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 206P: unit11

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.78' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=93.78' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.48' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 92.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=96.48' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.031 af, Atten= 75%, Lag= 22.4 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.80' @ 12.46 hrs Surf.Area= 0.087 ac Storage= 0.007 af

Plug-Flow detention time= 24.4 min calculated for 0.031 af (100% of inflow)
Center-of-Mass det. time= 24.4 min ( 764.4 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.170 af | **90.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.434 af Overall - 0.009 af Embedded = 0.425 af x 40.0% Voids |
| #2 | 90.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.179 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.09 cfs @ 12.46 hrs HW=89.80' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.18' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 87.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=91.18' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.18' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 86.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=90.18' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.78' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=85.78' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 82.98' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 79.30' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=82.98' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 233P: unit18

| | | | | |
|---|---|---|---|---|
| Inflow Area = | 0.043 ac,100.00% Impervious, | Inflow Depth = 8.56" | for cornell 100 event | |
| Inflow = | 0.37 cfs @ | 12.08 hrs, Volume= | 0.031 af | |
| Outflow = | 0.02 cfs @ | 14.22 hrs, Volume= | 0.027 af, | Atten= 95%, Lag= 127.9 min |
| Discarded = | 0.02 cfs @ | 14.22 hrs, Volume= | 0.027 af | |

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.70' @ 14.22 hrs Surf.Area= 0.007 ac Storage= 0.016 af

Plug-Flow detention time= 360.0 min calculated for 0.027 af (87% of inflow)
Center-of-Mass det. time= 298.8 min ( 1,038.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.011 af | **7.10'W x 22.50'L x 5.00'H Prismatoid** x 2 |
| | | | 0.037 af Overall - 0.009 af Embedded = 0.028 af x 40.0% Voids |
| #2 | 75.40' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | 2 Rows of 3 Chambers |
| | | | Cap Storage= +2.8 cf x 2 x 2 rows = 11.0 cf |
| | | 0.020 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.22 hrs HW=78.70' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.48' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 76.80' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=80.48' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 77.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=81.28' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.28' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 80.60' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=84.28' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.78' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=85.78' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.78' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid** |
| | | | 0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 82.10' | 0.009 af | **Cultec R-902HD** x 6 Inside #1 |
| | | | Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf |
| | | | Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | | Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=85.78' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 245P: unit 2

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af, Atten= 95%, Lag= 147.5 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 102.18' @ 14.54 hrs Surf.Area= 0.007 ac Storage= 0.017 af

Plug-Flow detention time= 373.7 min calculated for 0.025 af (82% of inflow)
Center-of-Mass det. time= 300.7 min ( 1,040.7 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.010 af | **7.10'W x 42.00'L x 5.00'H Prismatoid**<br>0.034 af Overall - 0.009 af Embedded = 0.025 af x 40.0% Voids |
| #2 | 98.50' | 0.009 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.019 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.54 hrs HW=102.18' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

# Extreme Precipitation Tables

## Northeast Regional Climate Center

***Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.***

| | |
|---|---|
| **Smoothing** | Yes |
| **State** | Massachusetts |
| **Location** | |
| **Longitude** | 70.717 degrees West |
| **Latitude** | 41.912 degrees North |
| **Elevation** | 0 feet |
| **Date/Time** | Wed, 10 Feb 2021 15:25:45 -0500 |

## Extreme Precipitation Estimates

| | 5min | 10min | 15min | 30min | 60min | 120min |
|---|---|---|---|---|---|---|
| **1yr** | 0.29 | 0.44 | 0.55 | 0.72 | 0.90 | 1.14 |
| **2yr** | 0.36 | 0.55 | 0.69 | 0.91 | 1.14 | 1.44 |
| **5yr** | 0.43 | 0.67 | 0.84 | 1.13 | 1.44 | 1.83 |
| **10yr** | 0.49 | 0.77 | 0.98 | 1.33 | 1.72 | 2.21 |
| **25yr** | 0.58 | 0.93 | 1.18 | 1.64 | 2.18 | 2.81 |
| **50yr** | 0.67 | 1.08 | 1.38 | 1.94 | 2.61 | 3.38 |
| **100yr** | 0.77 | 1.25 | 1.61 | 2.29 | 3.12 | 4.07 |
| **200yr** | 0.89 | 1.45 | 1.89 | 2.70 | 3.74 | 4.89 |
| **500yr** | 1.09 | 1.79 | 2.34 | 3.39 | 4.75 | 6.24 |

| | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr |
|---|---|---|---|---|---|---|---|
| **1yr** | 0.78 | 1.09 | 1.32 | 1.69 | 2.16 | 2.79 | 3.12 |
| **2yr** | 0.99 | 1.35 | 1.67 | 2.11 | 2.66 | 3.37 | 3.74 |
| **5yr** | 1.24 | 1.70 | 2.13 | 2.68 | 3.36 | 4.21 | 4.70 |
| **10yr** | 1.49 | 2.03 | 2.57 | 3.23 | 4.02 | 4.99 | 5.60 |
| **25yr** | 1.88 | 2.56 | 3.28 | 4.11 | 5.09 | 6.24 | 7.06 |
| **50yr** | 2.25 | 3.06 | 3.95 | 4.93 | 6.07 | 7.39 | 8.41 |
| **100yr** | 2.69 | 3.65 | 4.75 | 5.92 | 7.25 | 8.76 | 10.03 |
| **200yr** | 3.22 | 4.37 | 5.72 | 7.10 | 8.65 | 10.39 | 11.96 |
| **500yr** | 4.10 | 5.53 | 7.29 | 9.02 | 10.93 | 13.03 | 15.11 |

| | 1day | 2day | 4day | 7day | 10d |
|---|---|---|---|---|---|
| **1yr** | 2.47 | 3.00 | 3.46 | 4.15 | 4.8 |
| **2yr** | 2.98 | 3.60 | 4.11 | 4.87 | 5.5 |
| **5yr** | 3.73 | 4.52 | 5.16 | 6.06 | 6.7 |
| **10yr** | 4.42 | 5.39 | 6.13 | 7.14 | 7.9 |
| **25yr** | 5.52 | 6.78 | 7.70 | 8.89 | 9.8 |
| **50yr** | 6.54 | 8.09 | 9.16 | 10.49 | 11.4 |
| **100yr** | 7.76 | 9.64 | 10.89 | 12.39 | 13.4 |
| **200yr** | 9.20 | 11.50 | 12.96 | 14.64 | 15. |
| **500yr** | 11.53 | 14.53 | 16.32 | 18.27 | 19.4 |

## Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min |
|---|---|---|---|---|---|---|
| **1yr** | 0.25 | 0.39 | 0.47 | 0.63 | 0.78 | 0.90 |
| **2yr** | 0.35 | 0.53 | 0.66 | 0.89 | 1.10 | 1.33 |
| **5yr** | 0.40 | 0.61 | 0.76 | 1.04 | 1.32 | 1.58 |
| **10yr** | 0.44 | 0.67 | 0.83 | 1.16 | 1.50 | 1.80 |
| **25yr** | 0.50 | 0.76 | 0.95 | 1.35 | 1.78 | 2.14 |
| **50yr** | 0.55 | 0.84 | 1.04 | 1.50 | 2.02 | 2.43 |
| **100yr** | 0.61 | 0.93 | 1.16 | 1.68 | 2.30 | 2.75 |
| **200yr** | 0.68 | 1.02 | 1.29 | 1.87 | 2.61 | 3.13 |
| **500yr** | 0.78 | 1.16 | 1.50 | 2.17 | 3.09 | 3.70 |

| | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr |
|---|---|---|---|---|---|---|---|
| **1yr** | 0.67 | 0.88 | 1.10 | 1.47 | 1.91 | 2.51 | 2.88 |
| **2yr** | 0.95 | 1.30 | 1.54 | 2.04 | 2.58 | 3.30 | 3.66 |
| **5yr** | 1.14 | 1.54 | 1.82 | 2.41 | 3.03 | 3.99 | 4.46 |
| **10yr** | 1.30 | 1.76 | 2.05 | 2.72 | 3.40 | 4.59 | 5.15 |
| **25yr** | 1.53 | 2.09 | 2.36 | 3.18 | 3.95 | 5.53 | 6.23 |
| **50yr** | 1.74 | 2.38 | 2.61 | 3.58 | 4.40 | 6.38 | 7.21 |
| **100yr** | 1.99 | 2.69 | 2.87 | 4.04 | 4.92 | 7.36 | 8.34 |
| **200yr** | 2.25 | 3.06 | 3.15 | 4.54 | 5.49 | 8.49 | 9.67 |
| **500yr** | 2.67 | 3.62 | 3.54 | 5.31 | 6.33 | 10.25 | 11.76 |

| | 1day | 2day | 4day | 7day | 10da |
|---|---|---|---|---|---|
| **1yr** | 2.22 | 2.77 | 3.08 | 3.75 | 4.57 |
| **2yr** | 2.92 | 3.52 | 4.01 | 4.77 | 5.42 |
| **5yr** | 3.53 | 4.29 | 4.88 | 5.78 | 6.48 |
| **10yr** | 4.06 | 4.95 | 5.63 | 6.66 | 7.42 |
| **25yr** | 4.90 | 6.00 | 6.80 | 8.02 | 8.9 |
| **50yr** | 5.65 | 6.93 | 7.82 | 9.23 | 10.2 |
| **100yr** | 6.52 | 8.02 | 9.00 | 10.65 | 11.7 |
| **200yr** | 7.51 | 9.30 | 10.42 | 12.31 | 13.4 |
| **500yr** | 9.07 | 11.31 | 12.65 | 14.93 | 16.2 |

## Upper Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min |
|---|---|---|---|---|---|---|
| **1yr** | 0.32 | 0.49 | 0.60 | 0.81 | 0.99 | 1.21 |
| **2yr** | 0.38 | 0.58 | 0.71 | 0.97 | 1.19 | 1.43 |
| **5yr** | 0.47 | 0.73 | 0.91 | 1.24 | 1.58 | 1.90 |
| **10yr** | 0.58 | 0.89 | 1.10 | 1.54 | 1.98 | 2.36 |
| **25yr** | 0.76 | 1.15 | 1.43 | 2.04 | 2.69 | 3.15 |
| **50yr** | 0.92 | 1.41 | 1.75 | 2.52 | 3.39 | 3.93 |
| **100yr** | 1.14 | 1.72 | 2.16 | 3.11 | 4.27 | 4.90 |
| **200yr** | 1.40 | 2.10 | 2.67 | 3.86 | 5.38 | 6.12 |
| **500yr** | 1.85 | 2.76 | 3.54 | 5.15 | 7.32 | 8.20 |

| | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr |
|---|---|---|---|---|---|---|---|
| **1yr** | 0.86 | 1.18 | 1.44 | 1.92 | 2.42 | 3.02 | 3.32 |
| **2yr** | 1.03 | 1.40 | 1.68 | 2.20 | 2.78 | 3.46 | 3.85 |
| **5yr** | 1.37 | 1.86 | 2.19 | 2.84 | 3.52 | 4.46 | 4.96 |
| **10yr** | 1.71 | 2.31 | 2.70 | 3.46 | 4.25 | 5.40 | 6.03 |
| **25yr** | 2.32 | 3.08 | 3.63 | 4.52 | 5.45 | 6.99 | 7.80 |
| **50yr** | 2.92 | 3.84 | 4.53 | 5.53 | 6.59 | 8.49 | 9.50 |
| **100yr** | 3.69 | 4.79 | 5.67 | 6.77 | 8.00 | 10.30 | 11.57 |
| **200yr** | 4.65 | 5.98 | 7.10 | 8.30 | 9.71 | 12.51 | 14.09 |
| **500yr** | 6.32 | 8.02 | 9.60 | 10.88 | 12.57 | 16.18 | 18.30 |

| | 1day | 2day | 4day | 7day | 10 |
|---|---|---|---|---|---|
| **1yr** | 2.67 | 3.19 | 3.70 | 4.41 | 5. |
| **2yr** | 3.06 | 3.71 | 4.25 | 5.01 | 5. |
| **5yr** | 3.95 | 4.77 | 5.42 | 6.35 | 7. |
| **10yr** | 4.78 | 5.80 | 6.57 | 7.64 | 8. |
| **25yr** | 6.18 | 7.50 | 8.48 | 9.74 | 10 |
| **50yr** | 7.52 | 9.13 | 10.30 | 11.72 | 12 |
| **100yr** | 9.11 | 11.13 | 12.62 | 14.10 | 15 |
| **200yr** | 11.07 | 13.55 | 15.33 | 16.96 | 18 |
| **500yr** | 14.32 | 17.60 | 19.82 | 21.64 | 22 |

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Northeast Regional Climate Center

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD

chamber 1

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.12 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 49.50 | Ft | |
| WIDTH OF APPLICATION= | 20.4 | Ft | |
| CONSTANT HEAD BOUNDARY= | 147 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

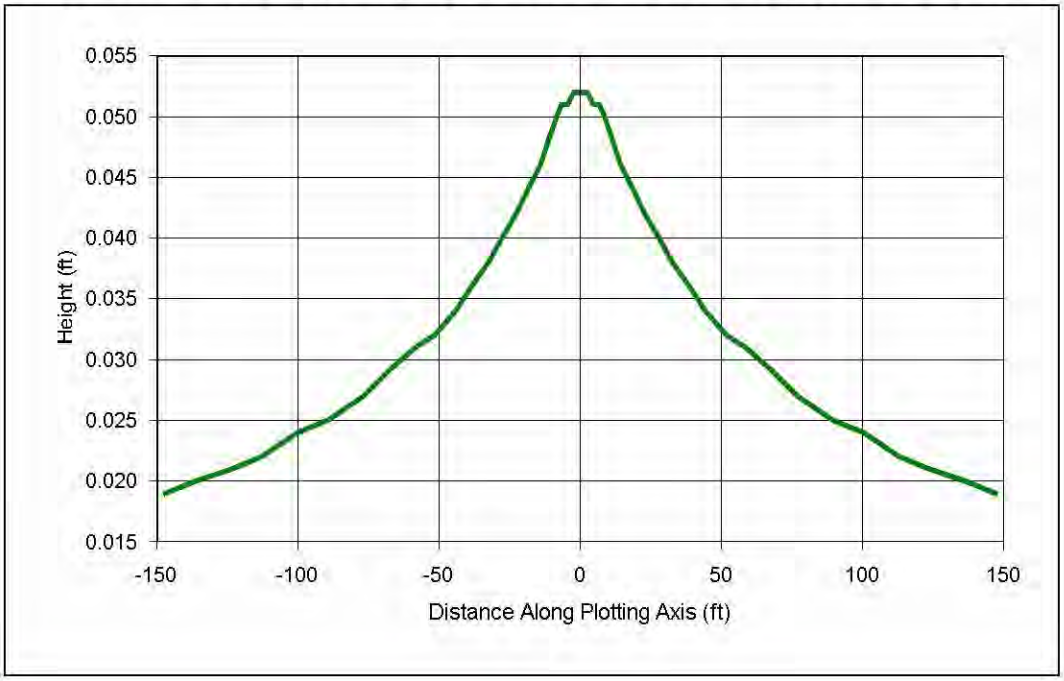
APPLICATION RATE=

**122 CF DESIGN FLOW / $\frac{1}{1,010}$ SF / $\frac{1}{\quad}$ DAY**

= **0.12** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham1

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:28:25 PM

INPUT PARAMETERS

Application rate: 0.12 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 49.5 ft
Width of application area: 20.4 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 10.2 ft
positive Y: 0 ft
Total volume applied: 2908.224 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -147 | 0 | -147 | 0.02 |
| -123.6 | 0 | -124 | 0.02 |
| -100.2 | 0 | -100 | 0.02 |
| -76.9 | 0 | -77 | 0.03 |
| -58.5 | 0 | -58 | 0.03 |
| -44.2 | 0 | -44 | 0.03 |
| -32.6 | 0 | -33 | 0.04 |
| -22.8 | 0 | -23 | 0.04 |
| -14.2 | 0 | -14 | 0.05 |
| -8.5 | 0 | -9 | 0.05 |
| -4.6 | 0 | -5 | 0.05 |
| 0 | 0 | 0 | 0.05 |
| 4.6 | 0 | 5 | 0.05 |
| 8.5 | 0 | 9 | 0.05 |
| 14.2 | 0 | 14 | 0.05 |
| 22.8 | 0 | 23 | 0.04 |
| 32.6 | 0 | 33 | 0.04 |
| 44.2 | 0 | 44 | 0.03 |
| 58.5 | 0 | 58 | 0.03 |
| 76.9 | 0 | 77 | 0.03 |
| 100.2 | 0 | 100 | 0.02 |
| 123.6 | 0 | 124 | 0.02 |
| 147 | 0 | 147 | 0.02 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD

chamber 2

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.11 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 69.00 | Ft | |
| WIDTH OF APPLICATION= | 28.6 | Ft | |
| CONSTANT HEAD BOUNDARY= | 156 | Ft | |
| PLOTTING AXIS= | 0 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**210** **CF** **DESIGN FLOW** / $\frac{\mathbf{1}}{\mathbf{1,973}}$ **SF** / $\frac{\mathbf{1}}{}$ **DAY**

= **0.11** CF/DAY/SF

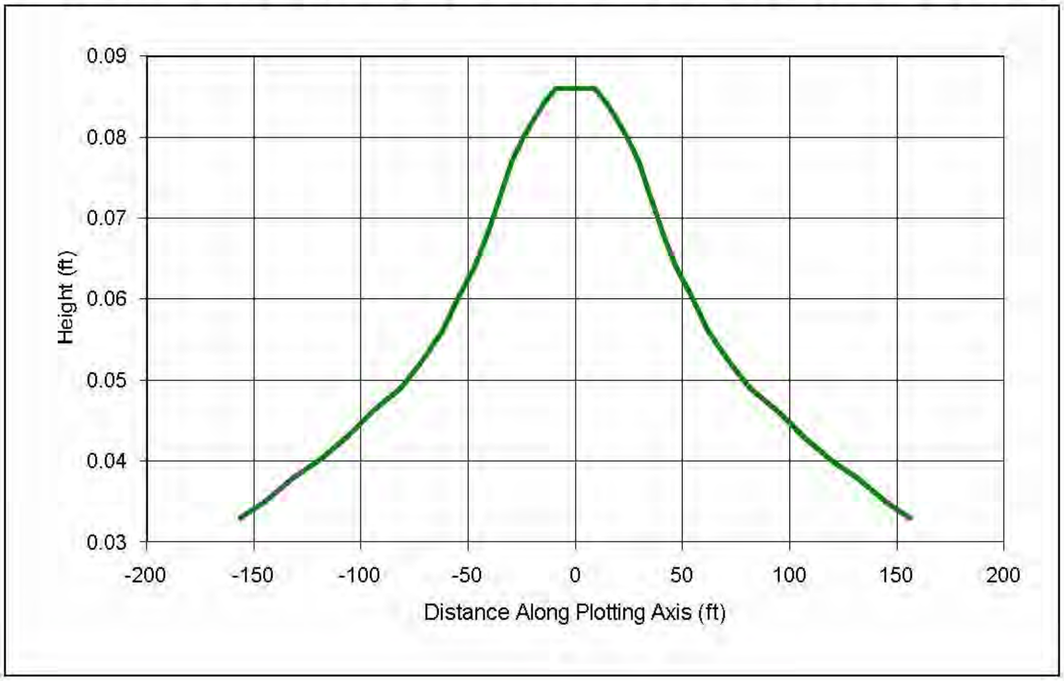
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham2

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:31:41 PM

INPUT PARAMETERS

Application rate: 0.11 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 69 ft
Width of application area: 28.8 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 34.5 ft
Total volume applied: 5246.208 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -156 | -156 | 0.03 |
| 0 | -131.2 | -131 | 0.04 |
| 0 | -106.4 | -106 | 0.04 |
| 0 | -81.6 | -82 | 0.05 |
| 0 | -62.1 | -62 | 0.06 |
| 0 | -47 | -47 | 0.06 |
| 0 | -34.6 | -35 | 0.07 |
| 0 | -24.2 | -24 | 0.08 |
| 0 | -15.1 | -15 | 0.08 |
| 0 | -9 | -9 | 0.09 |
| 0 | -4.9 | -5 | 0.09 |
| 0 | 0 | 0 | 0.09 |
| 0 | 4.9 | 5 | 0.09 |
| 0 | 9 | 9 | 0.09 |
| 0 | 15.1 | 15 | 0.08 |
| 0 | 24.2 | 24 | 0.08 |
| 0 | 34.6 | 35 | 0.07 |
| 0 | 47 | 47 | 0.06 |
| 0 | 62.1 | 62 | 0.06 |
| 0 | 81.6 | 82 | 0.05 |
| 0 | 106.4 | 106 | 0.04 |
| 0 | 131.2 | 131 | 0.04 |
| 0 | 156 | 156 | 0.03 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 3

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.22 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 57.30 | Ft | |
| WIDTH OF APPLICATION= | 43 | Ft | |
| CONSTANT HEAD BOUNDARY= | 99 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

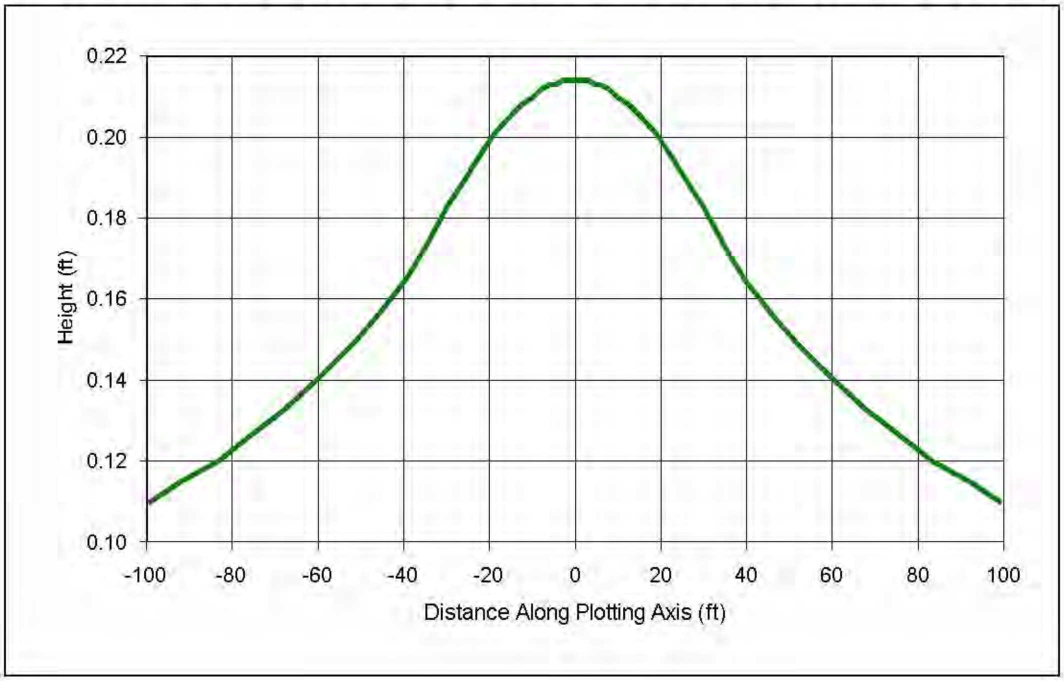
APPLICATION RATE=

**548 CF DESIGN FLOW / 1 / 2,464 SF / 1 DAY**

= **0.22** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham3

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:34:30 PM

INPUT PARAMETERS

Application rate: 0.22 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 57.3 ft
Width of application area: 43 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21.5 ft
positive Y: 21.5 ft
Total volume applied: 13009.39 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -70 | -70 | -99 | 0.11 |
| -58.9 | -58.9 | -83 | 0.12 |
| -47.7 | -47.7 | -68 | 0.13 |
| -36.6 | -36.6 | -52 | 0.15 |
| -27.9 | -27.9 | -39 | 0.16 |
| -21.1 | -21.1 | -30 | 0.18 |
| -15.5 | -15.5 | -22 | 0.2 |
| -10.8 | -10.8 | -15 | 0.2 |
| -6.8 | -6.8 | -10 | 0.21 |
| -4.1 | -4.1 | -6 | 0.21 |
| -2.2 | -2.2 | -3 | 0.21 |
| 0 | 0 | 0 | 0.21 |
| 2.2 | 2.2 | 3 | 0.21 |
| 4.1 | 4.1 | 6 | 0.21 |
| 6.8 | 6.8 | 10 | 0.21 |
| 10.8 | 10.8 | 15 | 0.2 |
| 15.5 | 15.5 | 22 | 0.2 |
| 21.1 | 21.1 | 30 | 0.18 |
| 27.9 | 27.9 | 39 | 0.16 |
| 36.6 | 36.6 | 52 | 0.15 |
| 47.7 | 47.7 | 68 | 0.13 |
| 58.9 | 58.9 | 83 | 0.12 |
| 70 | 70 | 99 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 4

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.91 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 75.50 | Ft | |
| WIDTH OF APPLICATION= | 24.5 | Ft | |
| CONSTANT HEAD BOUNDARY= | 86 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**1,688 CF DESIGN FLOW / $\frac{1}{1{,}850}$ SF / 1 DAY**

= **0.91** CF/DAY/SF

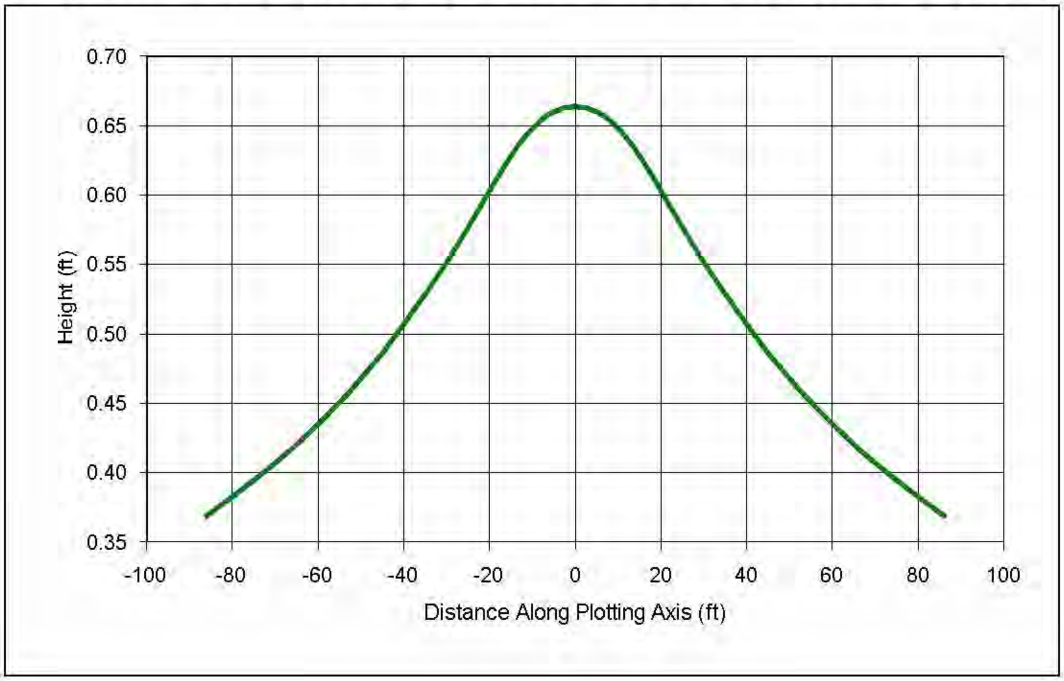
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham4

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:37:07 PM

INPUT PARAMETERS

Application rate: 0.91 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 75.6 ft
Width of application area: 24.5 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 12.2 ft
positive Y: 12.3 ft
Total volume applied: 40452.05 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -60.8 | -60.8 | -86 | 0.37 |
| -51.1 | -51.1 | -72 | 0.4 |
| -41.5 | -41.5 | -59 | 0.44 |
| -31.8 | -31.8 | -45 | 0.49 |
| -24.2 | -24.2 | -34 | 0.53 |
| -18.3 | -18.3 | -26 | 0.57 |
| -13.5 | -13.5 | -19 | 0.61 |
| -9.4 | -9.4 | -13 | 0.64 |
| -5.9 | -5.9 | -8 | 0.65 |
| -3.5 | -3.5 | -5 | 0.66 |
| -1.9 | -1.9 | -3 | 0.66 |
| 0 | 0 | 0 | 0.66 |
| 1.9 | 1.9 | 3 | 0.66 |
| 3.5 | 3.5 | 5 | 0.66 |
| 5.9 | 5.9 | 8 | 0.65 |
| 9.4 | 9.4 | 13 | 0.64 |
| 13.5 | 13.5 | 19 | 0.61 |
| 18.3 | 18.3 | 26 | 0.57 |
| 24.2 | 24.2 | 34 | 0.53 |
| 31.8 | 31.8 | 45 | 0.49 |
| 41.5 | 41.5 | 59 | 0.44 |
| 51.1 | 51.1 | 72 | 0.4 |
| 60.8 | 60.8 | 86 | 0.37 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD

septic 1

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 72.00 | Ft | |
| WIDTH OF APPLICATION= | 51 | Ft | |
| CONSTANT HEAD BOUNDARY= | 187 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**530 CF DESIGN FLOW / $\frac{1}{3{,}672}$ SF / $\frac{1}{\phantom{1}}$ DAY**

= **0.14** CF/DAY/SF

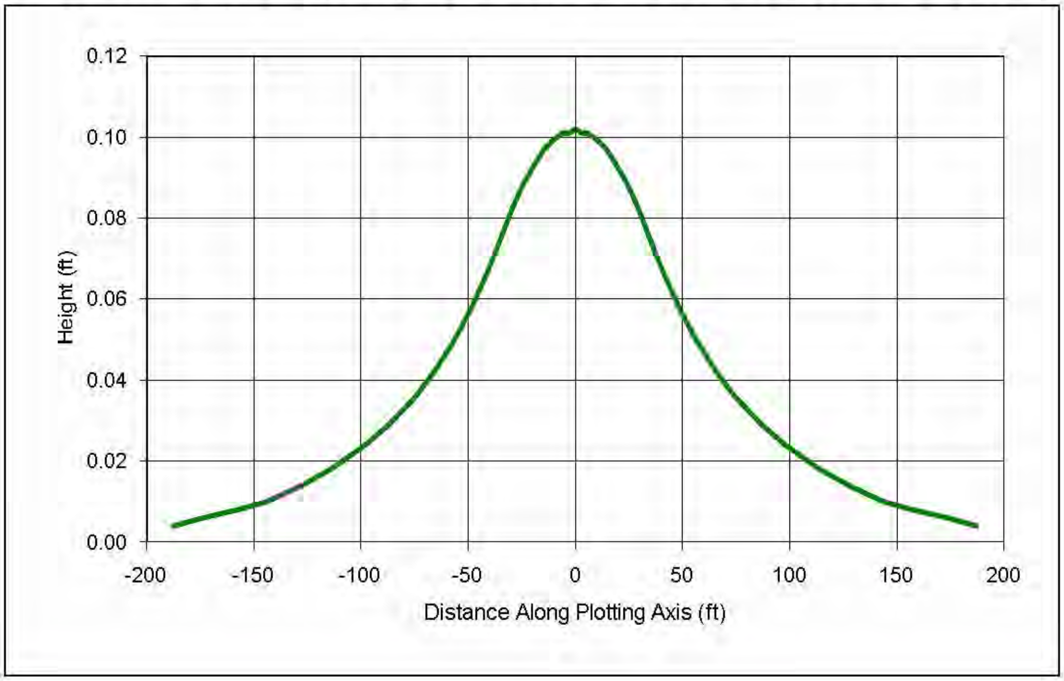
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGE SEPTIC SYSTEM 1

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:40:18 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/year/sq. ft
Duration of application: 1 years
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/year
Initial saturated thickness: 48 ft
Length of application area: 72 ft
Width of application area: 51 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 25.5 ft
positive Y: 25.5 ft
Total volume applied: 514.08 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -132.2 | -132.2 | -187 | 0 |
| -111.2 | -111.2 | -157 | 0.01 |
| -90.2 | -90.2 | -128 | 0.01 |
| -69.1 | -69.1 | -98 | 0.02 |
| -52.6 | -52.6 | -74 | 0.04 |
| -39.8 | -39.8 | -56 | 0.05 |
| -29.3 | -29.3 | -41 | 0.07 |
| -20.5 | -20.5 | -29 | 0.08 |
| -12.8 | -12.8 | -18 | 0.09 |
| -7.7 | -7.7 | -11 | 0.1 |
| -4.2 | -4.2 | -6 | 0.1 |
| 0 | 0 | 0 | 0.1 |
| 4.2 | 4.2 | 6 | 0.1 |
| 7.7 | 7.7 | 11 | 0.1 |
| 12.8 | 12.8 | 18 | 0.09 |
| 20.5 | 20.5 | 29 | 0.08 |
| 29.3 | 29.3 | 41 | 0.07 |
| 39.8 | 39.8 | 56 | 0.05 |
| 52.6 | 52.6 | 74 | 0.04 |
| 69.1 | 69.1 | 98 | 0.02 |
| 90.2 | 90.2 | 128 | 0.01 |
| 111.2 | 111.2 | 157 | 0.01 |
| 132.2 | 132.2 | 187 | 0 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD

septic 2

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.11 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 62.00 | Ft | |
| WIDTH OF APPLICATION= | 75 | Ft | |
| CONSTANT HEAD BOUNDARY= | 161 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**530 CF DESIGN FLOW / $\frac{1}{4,650}$ SF / $\frac{1}{}$ DAY**

= **0.11** CF/DAY/SF

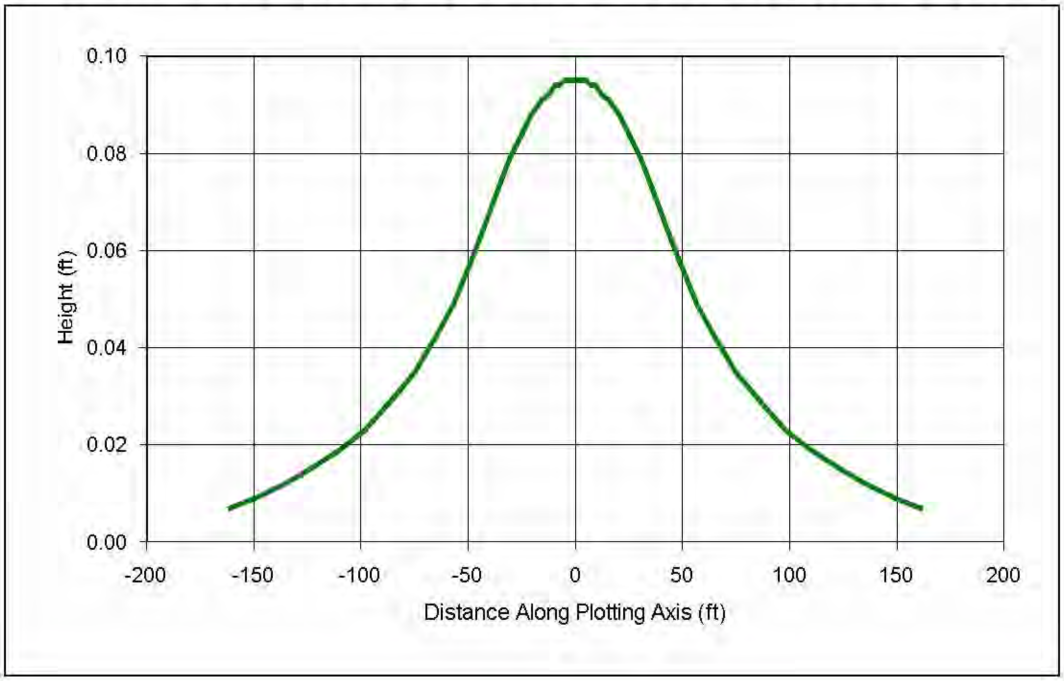
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGE SEPTIC SYSTEM 2

ANALYST: ANTHONY ESPOSITO

DATE: 2/15/2023 TIME: 10:33:46 AM

INPUT PARAMETERS

Application rate: 0.11 c.ft/year/sq. ft
Duration of application: 1 years
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/year
Initial saturated thickness: 48 ft
Length of application area: 62 ft
Width of application area: 75 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 31 ft
positive Y: 31 ft
Total volume applied: 511.5 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -113.8 | -113.8 | -161 | 0.01 |
| -95.7 | -95.7 | -135 | 0.01 |
| -77.6 | -77.6 | -110 | 0.02 |
| -59.5 | -59.5 | -84 | 0.03 |
| -45.3 | -45.3 | -64 | 0.04 |
| -34.3 | -34.3 | -48 | 0.06 |
| -25.3 | -25.3 | -36 | 0.07 |
| -17.6 | -17.6 | -25 | 0.08 |
| -11 | -11 | -16 | 0.09 |
| -6.6 | -6.6 | -9 | 0.09 |
| -3.6 | -3.6 | -5 | 0.1 |
| 0 | 0 | 0 | 0.1 |
| 3.6 | 3.6 | 5 | 0.1 |
| 6.6 | 6.6 | 9 | 0.09 |
| 11 | 11 | 16 | 0.09 |
| 17.6 | 17.6 | 25 | 0.08 |
| 25.3 | 25.3 | 36 | 0.07 |
| 34.3 | 34.3 | 48 | 0.06 |
| 45.3 | 45.3 | 64 | 0.04 |
| 59.5 | 59.5 | 84 | 0.03 |
| 77.6 | 77.6 | 110 | 0.02 |
| 95.7 | 95.7 | 135 | 0.01 |
| 113.8 | 113.8 | 161 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
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**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 2/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M, | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 1

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 66 | Ft | |
| PLOTTING AXIS= | 85 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / 1 DAY**

= **0.18** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U1

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:17:29 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 85 degrees
Edge of recharge area:
positive X: 3.6 ft
positive Y: 0.3 ft
Total volume applied: 1288.224 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -65.7 | -5.8 | -66 | 0.01 |
| -55.3 | -4.8 | -56 | 0.01 |
| -44.8 | -3.9 | -45 | 0.02 |
| -34.4 | -3 | -35 | 0.02 |
| -26.2 | -2.3 | -26 | 0.02 |
| -19.8 | -1.7 | -20 | 0.02 |
| -14.6 | -1.3 | -15 | 0.02 |
| -10.2 | -0.9 | -10 | 0.02 |
| -6.4 | -0.6 | -6 | 0.02 |
| -3.8 | -0.3 | -4 | 0.02 |
| -2.1 | -0.2 | -2 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 2.1 | 0.2 | 2 | 0.02 |
| 3.8 | 0.3 | 4 | 0.02 |
| 6.4 | 0.6 | 6 | 0.02 |
| 10.2 | 0.9 | 10 | 0.02 |
| 14.6 | 1.3 | 15 | 0.02 |
| 19.8 | 1.7 | 20 | 0.02 |
| 26.2 | 2.3 | 26 | 0.02 |
| 34.4 | 3 | 35 | 0.02 |
| 44.8 | 3.9 | 45 | 0.02 |
| 55.3 | 4.8 | 56 | 0.01 |
| 65.7 | 5.8 | 66 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
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**KINGSTON, MA**

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|---|---|---|---|
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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 2

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 87 | Ft | |
| PLOTTING AXIS= | 0 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

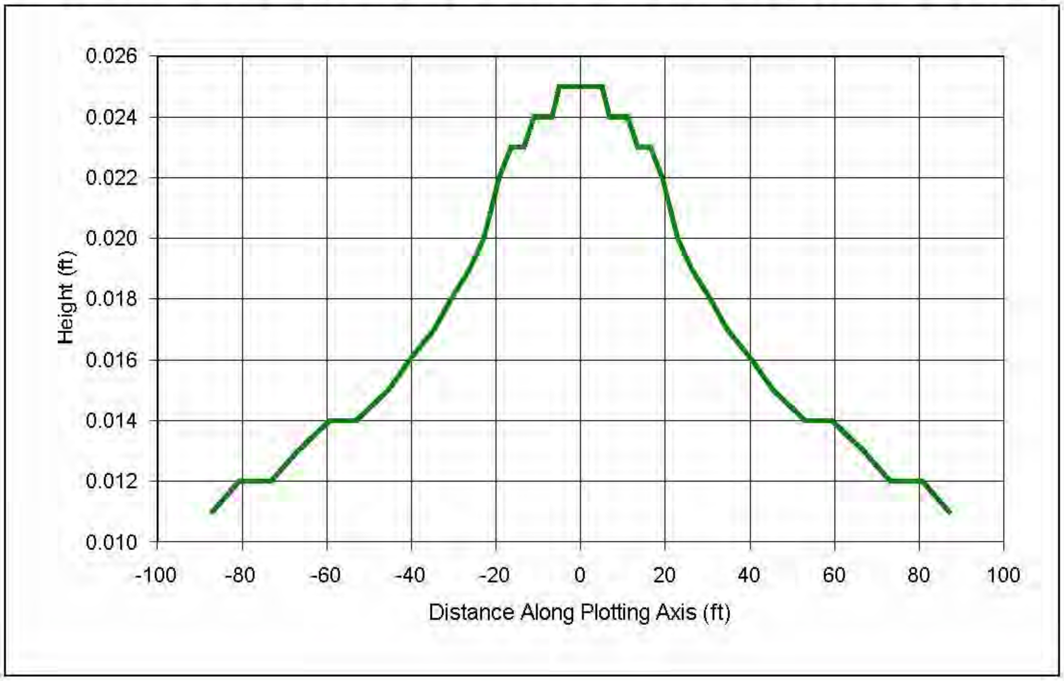
APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\ }$ DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U2

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:16:02 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 21 ft
Total volume applied: 1288.224 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -87 | -87 | 0.01 |
| 0 | -73.2 | -73 | 0.01 |
| 0 | -59.3 | -59 | 0.01 |
| 0 | -45.5 | -45 | 0.02 |
| 0 | -34.6 | -35 | 0.02 |
| 0 | -26.2 | -26 | 0.02 |
| 0 | -19.3 | -19 | 0.02 |
| 0 | -13.5 | -13 | 0.02 |
| 0 | -8.4 | -8 | 0.02 |
| 0 | -5 | -5 | 0.02 |
| 0 | -2.7 | -3 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 0 | 2.7 | 3 | 0.02 |
| 0 | 5 | 5 | 0.02 |
| 0 | 8.4 | 8 | 0.02 |
| 0 | 13.5 | 13 | 0.02 |
| 0 | 19.3 | 19 | 0.02 |
| 0 | 26.2 | 26 | 0.02 |
| 0 | 34.6 | 35 | 0.02 |
| 0 | 45.5 | 45 | 0.02 |
| 0 | 59.3 | 59 | 0.01 |
| 0 | 73.2 | 73 | 0.01 |
| 0 | 87 | 87 | 0.01 |

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**KINGSTON, MA**

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| Location: | 279-281 | Date: | 02/11/2023 |
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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 4

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 69 | Ft | |
| PLOTTING AXIS= | 10 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\phantom{0}}$ DAY**

= **0.18** CF/DAY/SF

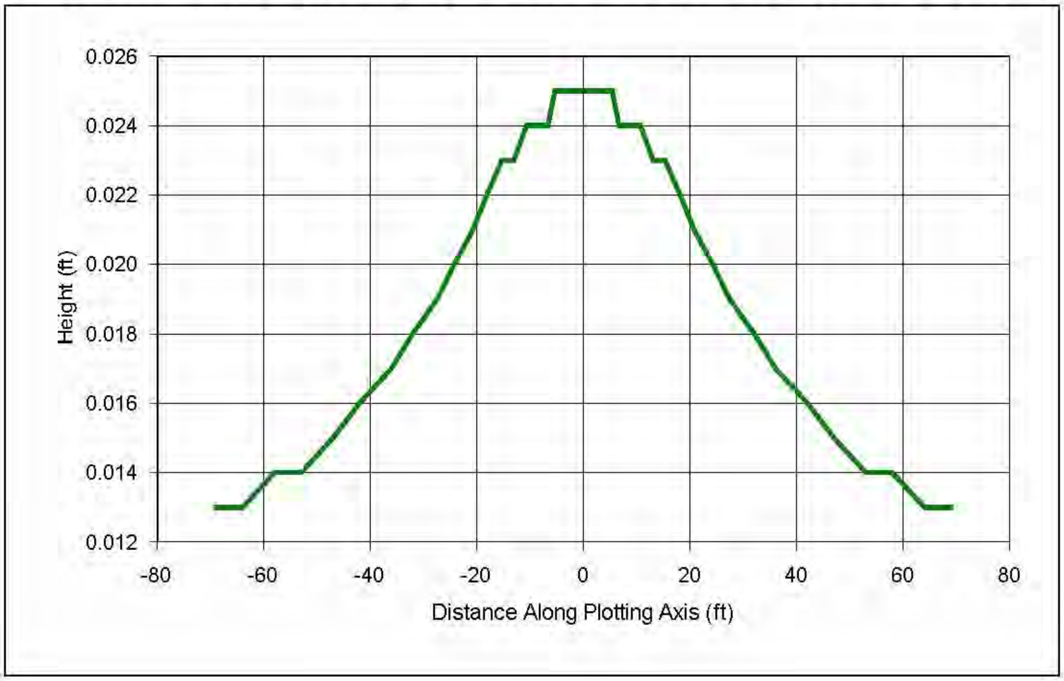
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U4

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:24:04 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 10 degrees
Edge of recharge area:
positive X: 3.6 ft
positive Y: 20.1 ft
Total volume applied: 1288.224 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -12 | -68 | -69 | 0.01 |
| -10.1 | -57.1 | -58 | 0.01 |
| -8.2 | -46.3 | -47 | 0.02 |
| -6.3 | -35.5 | -36 | 0.02 |
| -4.8 | -27 | -27 | 0.02 |
| -3.6 | -20.5 | -21 | 0.02 |
| -2.7 | -15.1 | -15 | 0.02 |
| -1.9 | -10.5 | -11 | 0.02 |
| -1.2 | -6.6 | -7 | 0.02 |
| -0.7 | -3.9 | -4 | 0.02 |
| -0.4 | -2.1 | -2 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 0.4 | 2.1 | 2 | 0.02 |
| 0.7 | 3.9 | 4 | 0.02 |
| 1.2 | 6.6 | 7 | 0.02 |
| 1.9 | 10.5 | 11 | 0.02 |
| 2.7 | 15.1 | 15 | 0.02 |
| 3.6 | 20.5 | 21 | 0.02 |
| 4.8 | 27 | 27 | 0.02 |
| 6.3 | 35.5 | 36 | 0.02 |
| 8.2 | 46.3 | 47 | 0.02 |
| 10.1 | 57.1 | 58 | 0.01 |
| 12 | 68 | 69 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 5

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 188 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / 1/298 SF / 1 DAY**

= **0.18** CF/DAY/SF

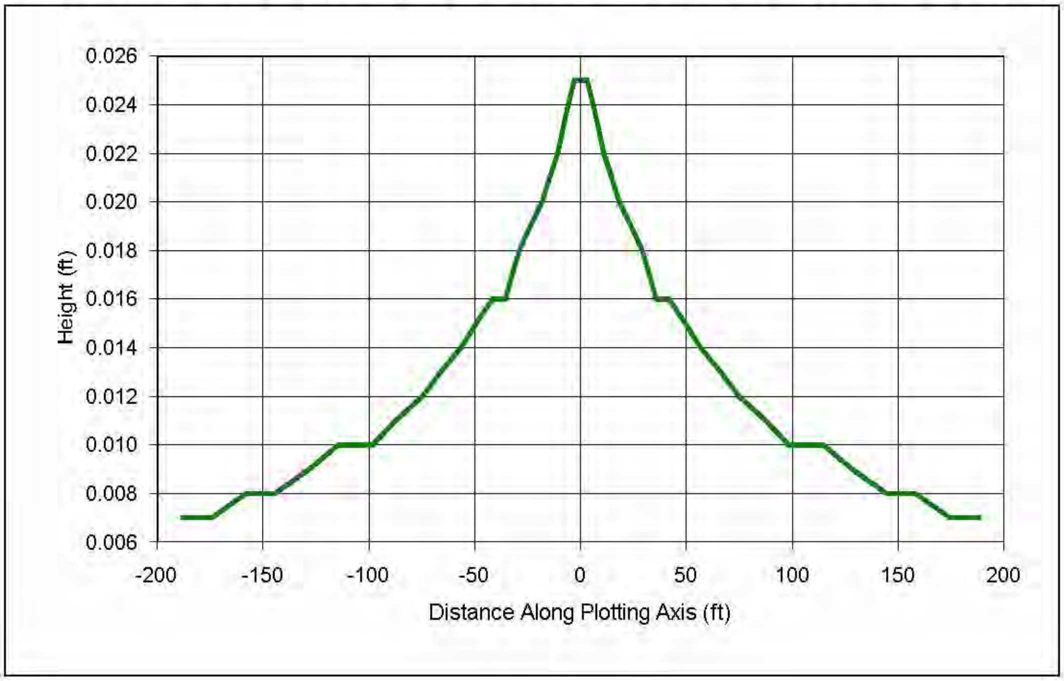
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U5

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:27:12 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 3.6 ft
positive Y: 3.6 ft
Total volume applied: 1288.224 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -132.9 | -132.9 | -188 | 0.01 |
| -111.8 | -111.8 | -158 | 0.01 |
| -90.6 | -90.6 | -128 | 0.01 |
| -69.5 | -69.5 | -98 | 0.01 |
| -52.9 | -52.9 | -75 | 0.01 |
| -40 | -40 | -57 | 0.01 |
| -29.5 | -29.5 | -42 | 0.02 |
| -20.6 | -20.6 | -29 | 0.02 |
| -12.9 | -12.9 | -18 | 0.02 |
| -7.7 | -7.7 | -11 | 0.02 |
| -4.2 | -4.2 | -6 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 4.2 | 4.2 | 6 | 0.02 |
| 7.7 | 7.7 | 11 | 0.02 |
| 12.9 | 12.9 | 18 | 0.02 |
| 20.6 | 20.6 | 29 | 0.02 |
| 29.5 | 29.5 | 42 | 0.02 |
| 40 | 40 | 57 | 0.01 |
| 52.9 | 52.9 | 75 | 0.01 |
| 69.5 | 69.5 | 98 | 0.01 |
| 90.6 | 90.6 | 128 | 0.01 |
| 111.8 | 111.8 | 158 | 0.01 |
| 132.9 | 132.9 | 188 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M, | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 6 and 7

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 14.2 | Ft | |
| CONSTANT HEAD BOUNDARY= | 118 | Ft | |
| PLOTTING AXIS= | 85 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

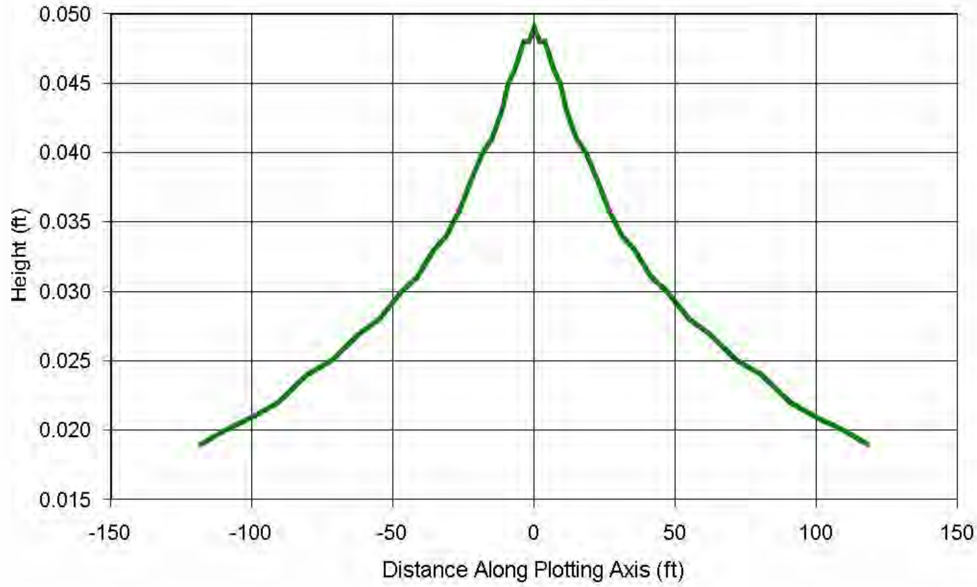
APPLICATION RATE=

**110 CF DESIGN FLOW / 1/596 SF / 1 DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U6 and 7

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:30:13 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 14.2 ft
No constant head boundary used
Plotting axis from Y-Axis: 85 degrees
Edge of recharge area:
positive X: 7.1 ft
positive Y: 0.6 ft
Total volume applied: 2576.448 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -117.6 | -10.3 | -118 | 0.02 |
| -98.9 | -8.6 | -99 | 0.02 |
| -80.2 | -7 | -80 | 0.02 |
| -61.5 | -5.4 | -62 | 0.03 |
| -46.8 | -4.1 | -47 | 0.03 |
| -35.4 | -3.1 | -36 | 0.03 |
| -26.1 | -2.3 | -26 | 0.04 |
| -18.2 | -1.6 | -18 | 0.04 |
| -11.4 | -1 | -11 | 0.04 |
| -6.8 | -0.6 | -7 | 0.05 |
| -3.7 | -0.3 | -4 | 0.05 |
| 0 | 0 | 0 | 0.05 |
| 3.7 | 0.3 | 4 | 0.05 |
| 6.8 | 0.6 | 7 | 0.05 |
| 11.4 | 1 | 11 | 0.04 |
| 18.2 | 1.6 | 18 | 0.04 |
| 26.1 | 2.3 | 26 | 0.04 |
| 35.4 | 3.1 | 36 | 0.03 |
| 46.8 | 4.1 | 47 | 0.03 |
| 61.5 | 5.4 | 62 | 0.03 |
| 80.2 | 7 | 80 | 0.02 |
| 98.9 | 8.6 | 99 | 0.02 |
| 117.6 | 10.3 | 118 | 0.02 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 8

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 98 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

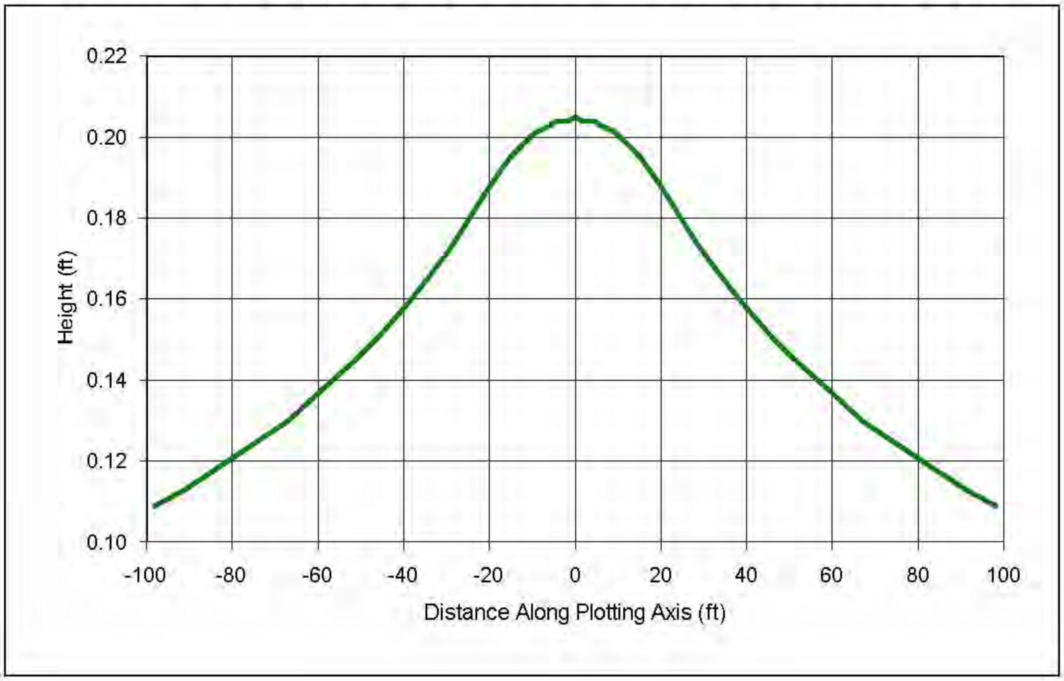
APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\quad}$ DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U8

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:33:28 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -8.5 | -97.6 | -98 | 0.11 |
| -7.2 | -82.1 | -82 | 0.12 |
| -5.8 | -66.6 | -67 | 0.13 |
| -4.5 | -51 | -51 | 0.14 |
| -3.4 | -38.8 | -39 | 0.16 |
| -2.6 | -29.4 | -29 | 0.17 |
| -1.9 | -21.7 | -22 | 0.18 |
| -1.3 | -15.1 | -15 | 0.2 |
| -0.8 | -9.5 | -9 | 0.2 |
| -0.5 | -5.7 | -6 | 0.2 |
| -0.3 | -3.1 | -3 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 0.3 | 3.1 | 3 | 0.2 |
| 0.5 | 5.7 | 6 | 0.2 |
| 0.8 | 9.5 | 9 | 0.2 |
| 1.3 | 15.1 | 15 | 0.2 |
| 1.9 | 21.7 | 22 | 0.18 |
| 2.6 | 29.4 | 29 | 0.17 |
| 3.4 | 38.8 | 39 | 0.16 |
| 4.5 | 51 | 51 | 0.14 |
| 5.8 | 66.6 | 67 | 0.13 |
| 7.2 | 82.1 | 82 | 0.12 |
| 8.5 | 97.6 | 98 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 9

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 135 | Ft | |
| PLOTTING AXIS= | 85 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

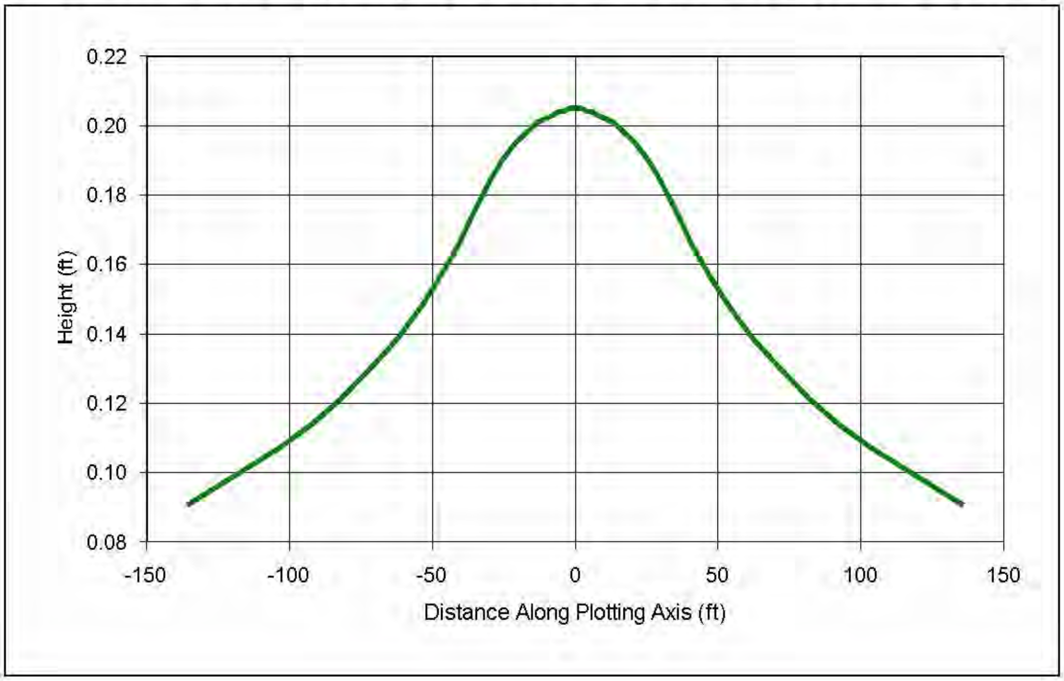
APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{}$ DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U9

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:36:15 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 85 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 3.1 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -134.5 | -11.8 | -135 | 0.09 |
| -113.1 | -9.9 | -114 | 0.1 |
| -91.7 | -8 | -92 | 0.11 |
| -70.3 | -6.2 | -71 | 0.13 |
| -53.5 | -4.7 | -54 | 0.15 |
| -40.5 | -3.5 | -41 | 0.17 |
| -29.8 | -2.6 | -30 | 0.18 |
| -20.8 | -1.8 | -21 | 0.2 |
| -13 | -1.1 | -13 | 0.2 |
| -7.8 | -0.7 | -8 | 0.2 |
| -4.2 | -0.4 | -4 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 4.2 | 0.4 | 4 | 0.2 |
| 7.8 | 0.7 | 8 | 0.2 |
| 13 | 1.1 | 13 | 0.2 |
| 20.8 | 1.8 | 21 | 0.2 |
| 29.8 | 2.6 | 30 | 0.18 |
| 40.5 | 3.5 | 41 | 0.17 |
| 53.5 | 4.7 | 54 | 0.15 |
| 70.3 | 6.2 | 71 | 0.13 |
| 91.7 | 8 | 92 | 0.11 |
| 113.1 | 9.9 | 114 | 0.1 |
| 134.5 | 11.8 | 135 | 0.09 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 10

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 177 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\ }$ DAY**

= **0.18** CF/DAY/SF

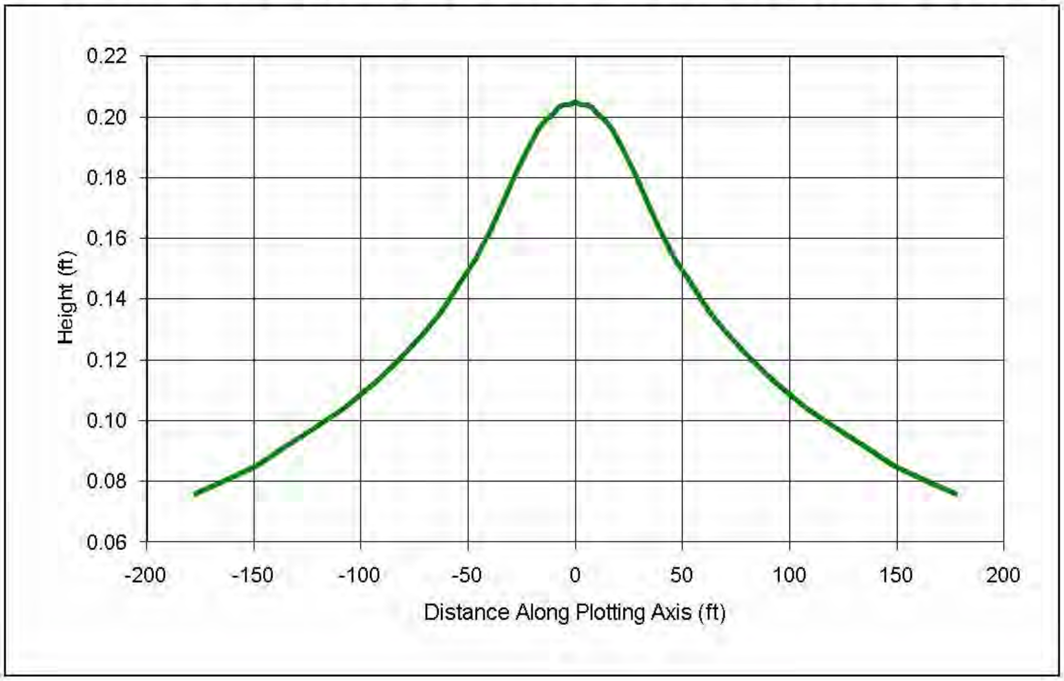
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U10

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:41:02 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -125.2 | -125.2 | -177 | 0.08 |
| -105.3 | -105.3 | -149 | 0.08 |
| -85.3 | -85.3 | -121 | 0.1 |
| -65.4 | -65.4 | -93 | 0.11 |
| -49.8 | -49.8 | -70 | 0.13 |
| -37.7 | -37.7 | -53 | 0.15 |
| -27.8 | -27.8 | -39 | 0.16 |
| -19.4 | -19.4 | -27 | 0.18 |
| -12.1 | -12.1 | -17 | 0.2 |
| -7.3 | -7.3 | -10 | 0.2 |
| -3.9 | -3.9 | -6 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 3.9 | 3.9 | 6 | 0.2 |
| 7.3 | 7.3 | 10 | 0.2 |
| 12.1 | 12.1 | 17 | 0.2 |
| 19.4 | 19.4 | 27 | 0.18 |
| 27.8 | 27.8 | 39 | 0.16 |
| 37.7 | 37.7 | 53 | 0.15 |
| 49.8 | 49.8 | 70 | 0.13 |
| 65.4 | 65.4 | 93 | 0.11 |
| 85.3 | 85.3 | 121 | 0.1 |
| 105.3 | 105.3 | 149 | 0.08 |
| 125.2 | 125.2 | 177 | 0.08 |

SOUTH SHORE SURVEY CONSULTANTS INC.
167R SUMMER ST.
KINGSTON, MA

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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 11

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 252 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\ }$ DAY**

= **0.18** CF/DAY/SF

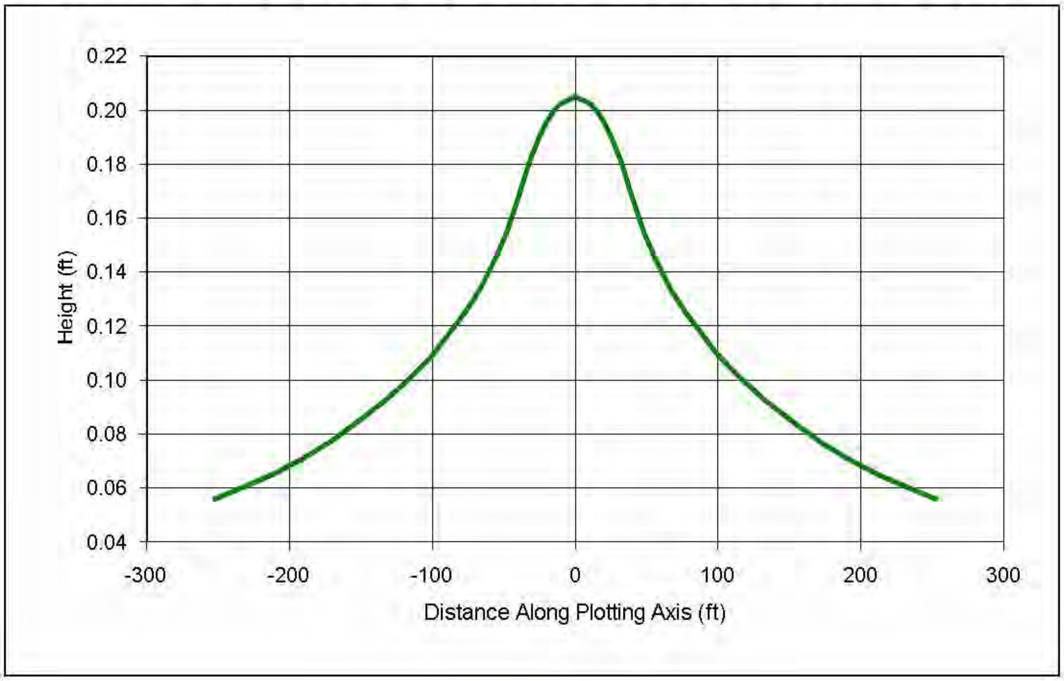
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U11

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:43:19 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -252 | 0 | -252 | 0.06 |
| -211.9 | 0 | -212 | 0.06 |
| -171.8 | 0 | -172 | 0.08 |
| -131.8 | 0 | -132 | 0.09 |
| -100.3 | 0 | -100 | 0.11 |
| -75.9 | 0 | -76 | 0.13 |
| -55.9 | 0 | -56 | 0.14 |
| -39 | 0 | -39 | 0.17 |
| -24.4 | 0 | -24 | 0.19 |
| -14.6 | 0 | -15 | 0.2 |
| -7.9 | 0 | -8 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 7.9 | 0 | 8 | 0.2 |
| 14.6 | 0 | 15 | 0.2 |
| 24.4 | 0 | 24 | 0.19 |
| 39 | 0 | 39 | 0.17 |
| 55.9 | 0 | 56 | 0.14 |
| 75.9 | 0 | 76 | 0.13 |
| 100.3 | 0 | 100 | 0.11 |
| 131.8 | 0 | 132 | 0.09 |
| 171.8 | 0 | 172 | 0.08 |
| 211.9 | 0 | 212 | 0.06 |
| 252 | 0 | 252 | 0.06 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 12

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 67 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{}$ DAY**

= **0.18** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U12

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:46:54 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -67 | 0 | -67 | 0.13 |
| -56.3 | 0 | -56 | 0.14 |
| -45.7 | 0 | -46 | 0.16 |
| -35 | 0 | -35 | 0.18 |
| -26.7 | 0 | -27 | 0.19 |
| -20.2 | 0 | -20 | 0.2 |
| -14.9 | 0 | -15 | 0.2 |
| -10.4 | 0 | -10 | 0.2 |
| -6.5 | 0 | -6 | 0.2 |
| -3.9 | 0 | -4 | 0.2 |
| -2.1 | 0 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 2.1 | 0 | 2 | 0.2 |
| 3.9 | 0 | 4 | 0.2 |
| 6.5 | 0 | 6 | 0.2 |
| 10.4 | 0 | 10 | 0.2 |
| 14.9 | 0 | 15 | 0.2 |
| 20.2 | 0 | 20 | 0.2 |
| 26.7 | 0 | 27 | 0.19 |
| 35 | 0 | 35 | 0.18 |
| 45.7 | 0 | 46 | 0.16 |
| 56.3 | 0 | 56 | 0.14 |
| 67 | 0 | 67 | 0.13 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 13

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 62 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / 1 / 298 SF / 1 DAY**

= **0.18** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U13

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:50:49 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -62 | 0 | -62 | 0.14 |
| -52.1 | 0 | -52 | 0.15 |
| -42.3 | 0 | -42 | 0.16 |
| -32.4 | 0 | -32 | 0.18 |
| -24.7 | 0 | -25 | 0.19 |
| -18.7 | 0 | -19 | 0.2 |
| -13.8 | 0 | -14 | 0.2 |
| -9.6 | 0 | -10 | 0.2 |
| -6 | 0 | -6 | 0.2 |
| -3.6 | 0 | -4 | 0.2 |
| -2 | 0 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 2 | 0 | 2 | 0.2 |
| 3.6 | 0 | 4 | 0.2 |
| 6 | 0 | 6 | 0.2 |
| 9.6 | 0 | 10 | 0.2 |
| 13.8 | 0 | 14 | 0.2 |
| 18.7 | 0 | 19 | 0.2 |
| 24.7 | 0 | 25 | 0.19 |
| 32.4 | 0 | 32 | 0.18 |
| 42.3 | 0 | 42 | 0.16 |
| 52.1 | 0 | 52 | 0.15 |
| 62 | 0 | 62 | 0.14 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 14

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 62 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{}$ DAY**

= **0.18** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U14

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 4:57:22 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -62 | 0 | -62 | 0.11 |
| -52.1 | 0 | -52 | 0.12 |
| -42.3 | 0 | -42 | 0.13 |
| -32.4 | 0 | -32 | 0.14 |
| -24.7 | 0 | -25 | 0.15 |
| -18.7 | 0 | -19 | 0.15 |
| -13.8 | 0 | -14 | 0.16 |
| -9.6 | 0 | -10 | 0.16 |
| -6 | 0 | -6 | 0.16 |
| -3.6 | 0 | -4 | 0.16 |
| -2 | 0 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2 | 0 | 2 | 0.16 |
| 3.6 | 0 | 4 | 0.16 |
| 6 | 0 | 6 | 0.16 |
| 9.6 | 0 | 10 | 0.16 |
| 13.8 | 0 | 14 | 0.16 |
| 18.7 | 0 | 19 | 0.15 |
| 24.7 | 0 | 25 | 0.15 |
| 32.4 | 0 | 32 | 0.14 |
| 42.3 | 0 | 42 | 0.13 |
| 52.1 | 0 | 52 | 0.12 |
| 62 | 0 | 62 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 15

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 68 | Ft | |
| PLOTTING AXIS= | 80 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\phantom{1}}$ DAY**

= **0.18** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U15

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:00:56 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 80 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 6.3 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -67 | -11.8 | -68 | 0.13 |
| -56.3 | -9.9 | -57 | 0.14 |
| -45.7 | -8.1 | -46 | 0.16 |
| -35 | -6.2 | -36 | 0.18 |
| -26.6 | -4.7 | -27 | 0.19 |
| -20.2 | -3.6 | -20 | 0.2 |
| -14.9 | -2.6 | -15 | 0.2 |
| -10.4 | -1.8 | -11 | 0.2 |
| -6.5 | -1.1 | -7 | 0.2 |
| -3.9 | -0.7 | -4 | 0.2 |
| -2.1 | -0.4 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 2.1 | 0.4 | 2 | 0.2 |
| 3.9 | 0.7 | 4 | 0.2 |
| 6.5 | 1.1 | 7 | 0.2 |
| 10.4 | 1.8 | 11 | 0.2 |
| 14.9 | 2.6 | 15 | 0.2 |
| 20.2 | 3.6 | 20 | 0.2 |
| 26.6 | 4.7 | 27 | 0.19 |
| 35 | 6.2 | 36 | 0.18 |
| 45.7 | 8.1 | 46 | 0.16 |
| 56.3 | 9.9 | 57 | 0.14 |
| 67 | 11.8 | 68 | 0.13 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M, | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 16

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 83 | Ft | |
| PLOTTING AXIS= | 80 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\ }$ DAY**

= **0.18** CF/DAY/SF

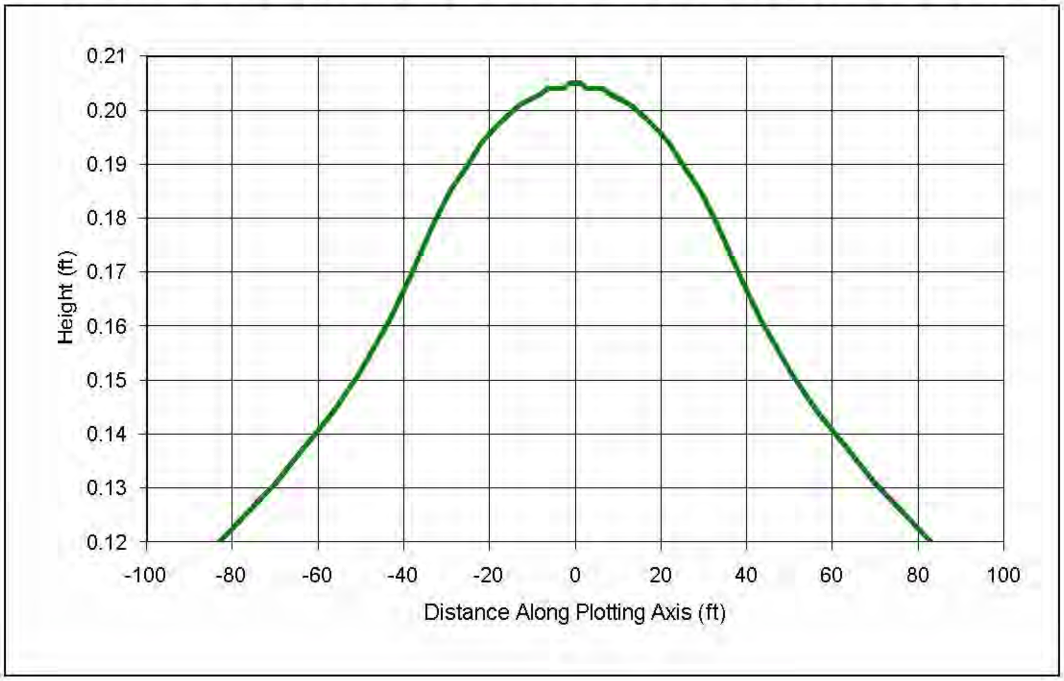
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U16

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:05:51 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 80 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 6.3 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -81.7 | -14.4 | -83 | 0.12 |
| -68.7 | -12.1 | -70 | 0.13 |
| -55.7 | -9.8 | -57 | 0.14 |
| -42.7 | -7.5 | -43 | 0.16 |
| -32.5 | -5.7 | -33 | 0.18 |
| -24.6 | -4.3 | -25 | 0.19 |
| -18.1 | -3.2 | -18 | 0.2 |
| -12.7 | -2.2 | -13 | 0.2 |
| -7.9 | -1.4 | -8 | 0.2 |
| -4.7 | -0.8 | -5 | 0.2 |
| -2.6 | -0.5 | -3 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 2.6 | 0.5 | 3 | 0.2 |
| 4.7 | 0.8 | 5 | 0.2 |
| 7.9 | 1.4 | 8 | 0.2 |
| 12.7 | 2.2 | 13 | 0.2 |
| 18.1 | 3.2 | 18 | 0.2 |
| 24.6 | 4.3 | 25 | 0.19 |
| 32.5 | 5.7 | 33 | 0.18 |
| 42.7 | 7.5 | 43 | 0.16 |
| 55.7 | 9.8 | 57 | 0.14 |
| 68.7 | 12.1 | 70 | 0.13 |
| 81.7 | 14.4 | 83 | 0.12 |

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**KINGSTON, MA**

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 17

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 134 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\phantom{1}}$ DAY**

= **0.18** CF/DAY/SF

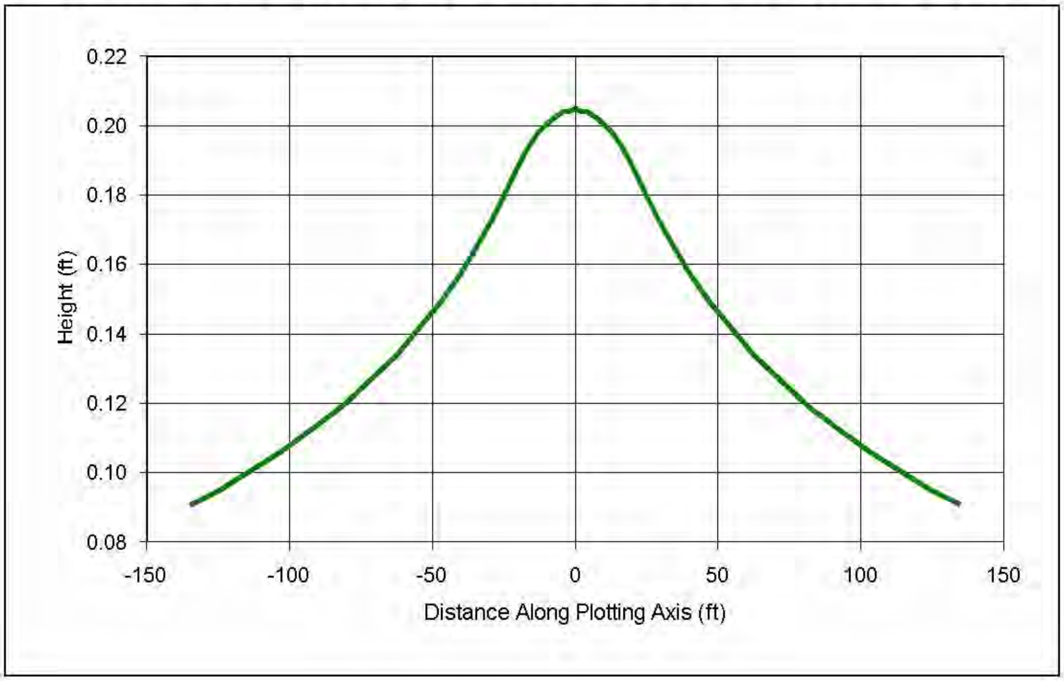
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U17

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:07:55 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -11.7 | -133.5 | -134 | 0.09 |
| -9.8 | -112.3 | -113 | 0.1 |
| -8 | -91 | -91 | 0.11 |
| -6.1 | -69.8 | -70 | 0.13 |
| -4.6 | -53.1 | -53 | 0.14 |
| -3.5 | -40.2 | -40 | 0.16 |
| -2.6 | -29.6 | -30 | 0.17 |
| -1.8 | -20.7 | -21 | 0.19 |
| -1.1 | -12.9 | -13 | 0.2 |
| -0.7 | -7.7 | -8 | 0.2 |
| -0.4 | -4.2 | -4 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 0.4 | 4.2 | 4 | 0.2 |
| 0.7 | 7.7 | 8 | 0.2 |
| 1.1 | 12.9 | 13 | 0.2 |
| 1.8 | 20.7 | 21 | 0.19 |
| 2.6 | 29.6 | 30 | 0.17 |
| 3.5 | 40.2 | 40 | 0.16 |
| 4.6 | 53.1 | 53 | 0.14 |
| 6.1 | 69.8 | 70 | 0.13 |
| 8 | 91 | 91 | 0.11 |
| 9.8 | 112.3 | 113 | 0.1 |
| 11.7 | 133.5 | 134 | 0.09 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD

UNIT 18

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.17 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 22.50 | Ft | |
| WIDTH OF APPLICATION= | 14.2 | Ft | |
| CONSTANT HEAD BOUNDARY= | 97 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / 1/320 SF / 1 DAY**

= **0.17** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U18

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:13:18 PM

INPUT PARAMETERS

Application rate: 0.17 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 22.5 ft
Width of application area: 14.2 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 7.1 ft
positive Y: 0 ft
Total volume applied: 1303.56 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -97 | 0 | -97 | 0.01 |
| -81.6 | 0 | -82 | 0.01 |
| -66.1 | 0 | -66 | 0.01 |
| -50.7 | 0 | -51 | 0.02 |
| -38.6 | 0 | -39 | 0.02 |
| -29.2 | 0 | -29 | 0.02 |
| -21.5 | 0 | -22 | 0.02 |
| -15 | 0 | -15 | 0.02 |
| -9.4 | 0 | -9 | 0.02 |
| -5.6 | 0 | -6 | 0.03 |
| -3.1 | 0 | -3 | 0.03 |
| 0 | 0 | 0 | 0.03 |
| 3.1 | 0 | 3 | 0.03 |
| 5.6 | 0 | 6 | 0.03 |
| 9.4 | 0 | 9 | 0.02 |
| 15 | 0 | 15 | 0.02 |
| 21.5 | 0 | 22 | 0.02 |
| 29.2 | 0 | 29 | 0.02 |
| 38.6 | 0 | 39 | 0.02 |
| 50.7 | 0 | 51 | 0.02 |
| 66.1 | 0 | 66 | 0.01 |
| 81.6 | 0 | 82 | 0.01 |
| 97 | 0 | 97 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 19

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 73 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / (1 / 298 SF) / (1 DAY)**

= **0.18** CF/DAY/SF

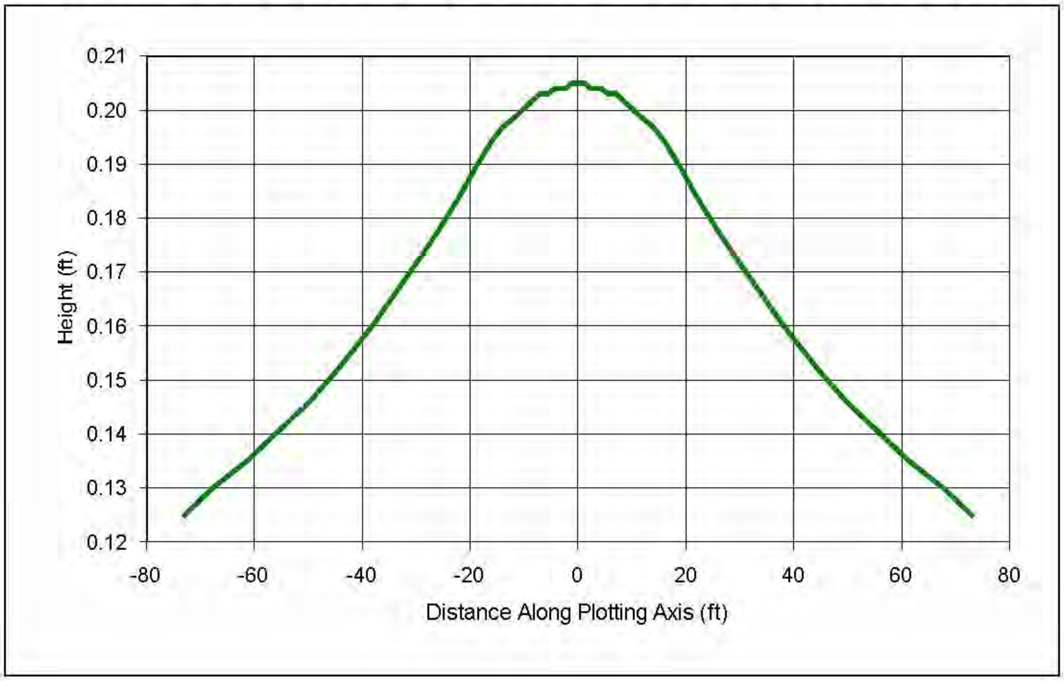
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U19

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:16:25 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -6.4 | -72.7 | -73 | 0.12 |
| -5.4 | -61.2 | -61 | 0.14 |
| -4.3 | -49.6 | -50 | 0.15 |
| -3.3 | -38 | -38 | 0.16 |
| -2.5 | -28.9 | -29 | 0.17 |
| -1.9 | -21.9 | -22 | 0.18 |
| -1.4 | -16.1 | -16 | 0.19 |
| -1 | -11.3 | -11 | 0.2 |
| -0.6 | -7 | -7 | 0.2 |
| -0.4 | -4.2 | -4 | 0.2 |
| -0.2 | -2.3 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 0.2 | 2.3 | 2 | 0.2 |
| 0.4 | 4.2 | 4 | 0.2 |
| 0.6 | 7 | 7 | 0.2 |
| 1 | 11.3 | 11 | 0.2 |
| 1.4 | 16.1 | 16 | 0.19 |
| 1.9 | 21.9 | 22 | 0.18 |
| 2.5 | 28.9 | 29 | 0.17 |
| 3.3 | 38 | 38 | 0.16 |
| 4.3 | 49.6 | 50 | 0.15 |
| 5.4 | 61.2 | 61 | 0.14 |
| 6.4 | 72.7 | 73 | 0.12 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 20

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 66 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

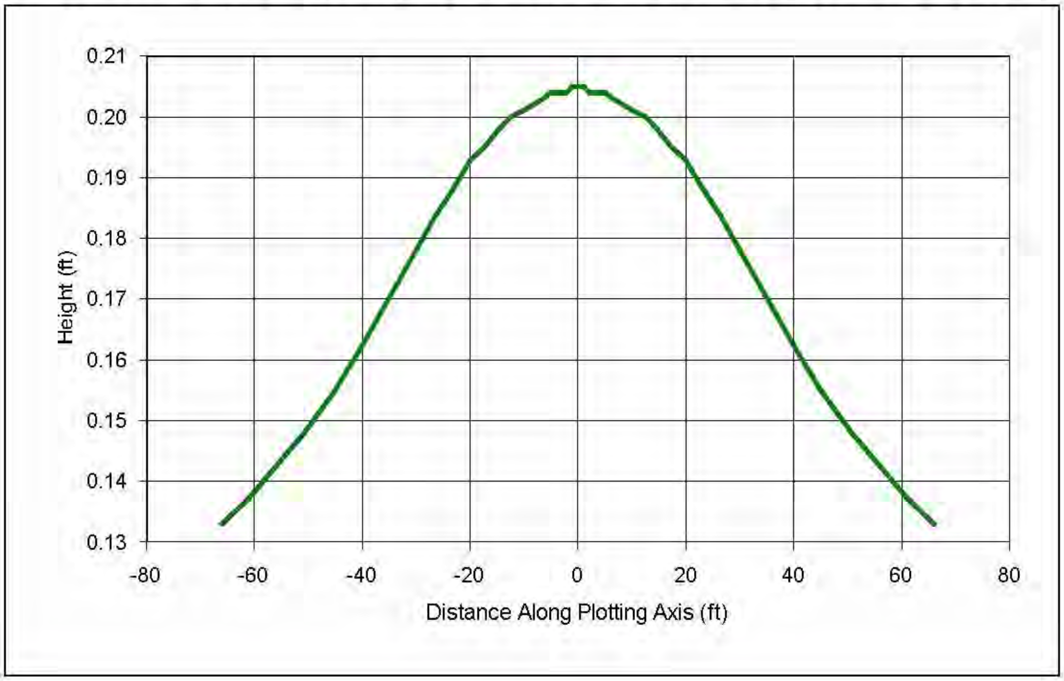
APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{}$ DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U20

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:19:51 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -46.7 | -46.7 | -66 | 0.13 |
| -39.2 | -39.2 | -56 | 0.14 |
| -31.8 | -31.8 | -45 | 0.16 |
| -24.4 | -24.4 | -35 | 0.17 |
| -18.6 | -18.6 | -26 | 0.18 |
| -14 | -14 | -20 | 0.19 |
| -10.4 | -10.4 | -15 | 0.2 |
| -7.2 | -7.2 | -10 | 0.2 |
| -4.5 | -4.5 | -6 | 0.2 |
| -2.7 | -2.7 | -4 | 0.2 |
| -1.5 | -1.5 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 1.5 | 1.5 | 2 | 0.2 |
| 2.7 | 2.7 | 4 | 0.2 |
| 4.5 | 4.5 | 6 | 0.2 |
| 7.2 | 7.2 | 10 | 0.2 |
| 10.4 | 10.4 | 15 | 0.2 |
| 14 | 14 | 20 | 0.19 |
| 18.6 | 18.6 | 26 | 0.18 |
| 24.4 | 24.4 | 35 | 0.17 |
| 31.8 | 31.8 | 45 | 0.16 |
| 39.2 | 39.2 | 56 | 0.14 |
| 46.7 | 46.7 | 66 | 0.13 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 21

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 77 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**55 CF DESIGN FLOW / $\frac{1}{298}$ SF / $\frac{1}{\ }$ DAY**

= **0.18** CF/DAY/SF

| | | |
|---|---|---|
| HYDRAULIC CONDUCTIVITY= | **30** | **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"** |
| ELEVATION OF BEDROCK= | **50** | **FROM "MASSGIS"** |
| DEPTH OF WATER= | **2** | **max. on-site** |
| SATURATED THICKNESS= | **48** | |

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U21

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:23:00 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 12882.24 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -6.7 | -76.7 | -77 | 0.12 |
| -5.6 | -64.5 | -65 | 0.13 |
| -4.6 | -52.3 | -53 | 0.14 |
| -3.5 | -40.1 | -40 | 0.16 |
| -2.7 | -30.5 | -31 | 0.17 |
| -2 | -23.1 | -23 | 0.18 |
| -1.5 | -17 | -17 | 0.19 |
| -1 | -11.9 | -12 | 0.2 |
| -0.7 | -7.4 | -7 | 0.2 |
| -0.4 | -4.4 | -4 | 0.2 |
| -0.2 | -2.4 | -2 | 0.2 |
| 0 | 0 | 0 | 0.2 |
| 0.2 | 2.4 | 2 | 0.2 |
| 0.4 | 4.4 | 4 | 0.2 |
| 0.7 | 7.4 | 7 | 0.2 |
| 1 | 11.9 | 12 | 0.2 |
| 1.5 | 17 | 17 | 0.19 |
| 2 | 23.1 | 23 | 0.18 |
| 2.7 | 30.5 | 31 | 0.17 |
| 3.5 | 40.1 | 40 | 0.16 |
| 4.6 | 52.3 | 53 | 0.14 |
| 5.6 | 64.5 | 65 | 0.13 |
| 6.7 | 76.7 | 77 | 0.12 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 02/11/2023 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M. | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 22 and 23

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.18 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 14.2 | Ft | |
| CONSTANT HEAD BOUNDARY= | 60 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**110 CF DESIGN FLOW / $\frac{1}{596}$ SF / $\frac{1}{\phantom{1}}$ DAY**

= **0.18** CF/DAY/SF

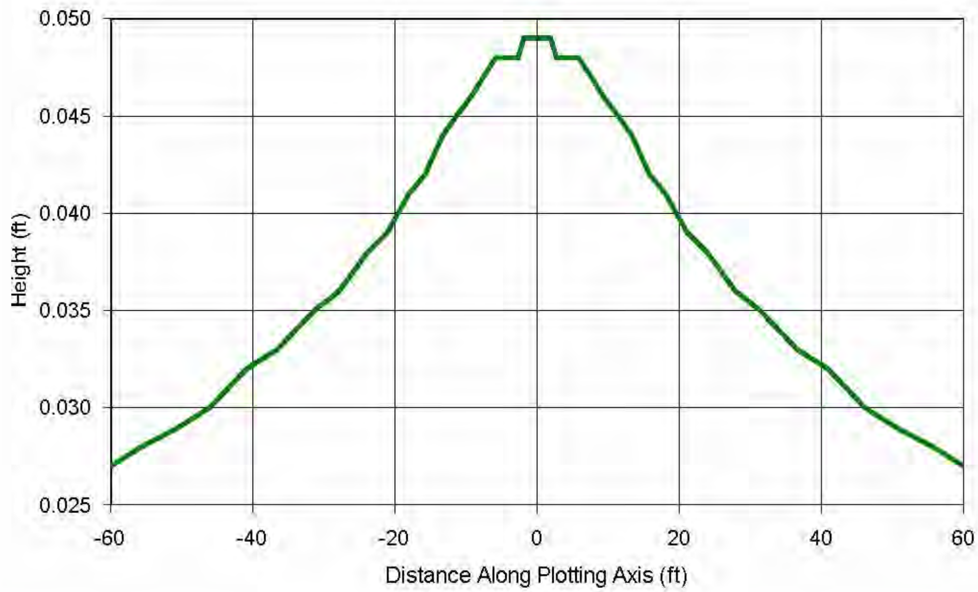
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U22and23

ANALYST: ANTHONY ESPOSITO

DATE: 2/11/2023 TIME: 5:26:06 PM

INPUT PARAMETERS

Application rate: 0.18 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 14.2 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 7.1 ft
positive Y: 7.1 ft
Total volume applied: 2576.448 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -42.4 | -42.4 | -60 | 0.03 |
| -35.7 | -35.7 | -50 | 0.03 |
| -28.9 | -28.9 | -41 | 0.03 |
| -22.2 | -22.2 | -31 | 0.04 |
| -16.9 | -16.9 | -24 | 0.04 |
| -12.8 | -12.8 | -18 | 0.04 |
| -9.4 | -9.4 | -13 | 0.04 |
| -6.6 | -6.6 | -9 | 0.05 |
| -4.1 | -4.1 | -6 | 0.05 |
| -2.5 | -2.5 | -3 | 0.05 |
| -1.3 | -1.3 | -2 | 0.05 |
| 0 | 0 | 0 | 0.05 |
| 1.3 | 1.3 | 2 | 0.05 |
| 2.5 | 2.5 | 3 | 0.05 |
| 4.1 | 4.1 | 6 | 0.05 |
| 6.6 | 6.6 | 9 | 0.05 |
| 9.4 | 9.4 | 13 | 0.04 |
| 12.8 | 12.8 | 18 | 0.04 |
| 16.9 | 16.9 | 24 | 0.04 |
| 22.2 | 22.2 | 31 | 0.04 |
| 28.9 | 28.9 | 41 | 0.03 |
| 35.7 | 35.7 | 50 | 0.03 |
| 42.4 | 42.4 | 60 | 0.03 |

SOUTH SHORE SURVEY CONSULTANTS INC.
167R SUMMER ST.
KINGSTON, MA 02304

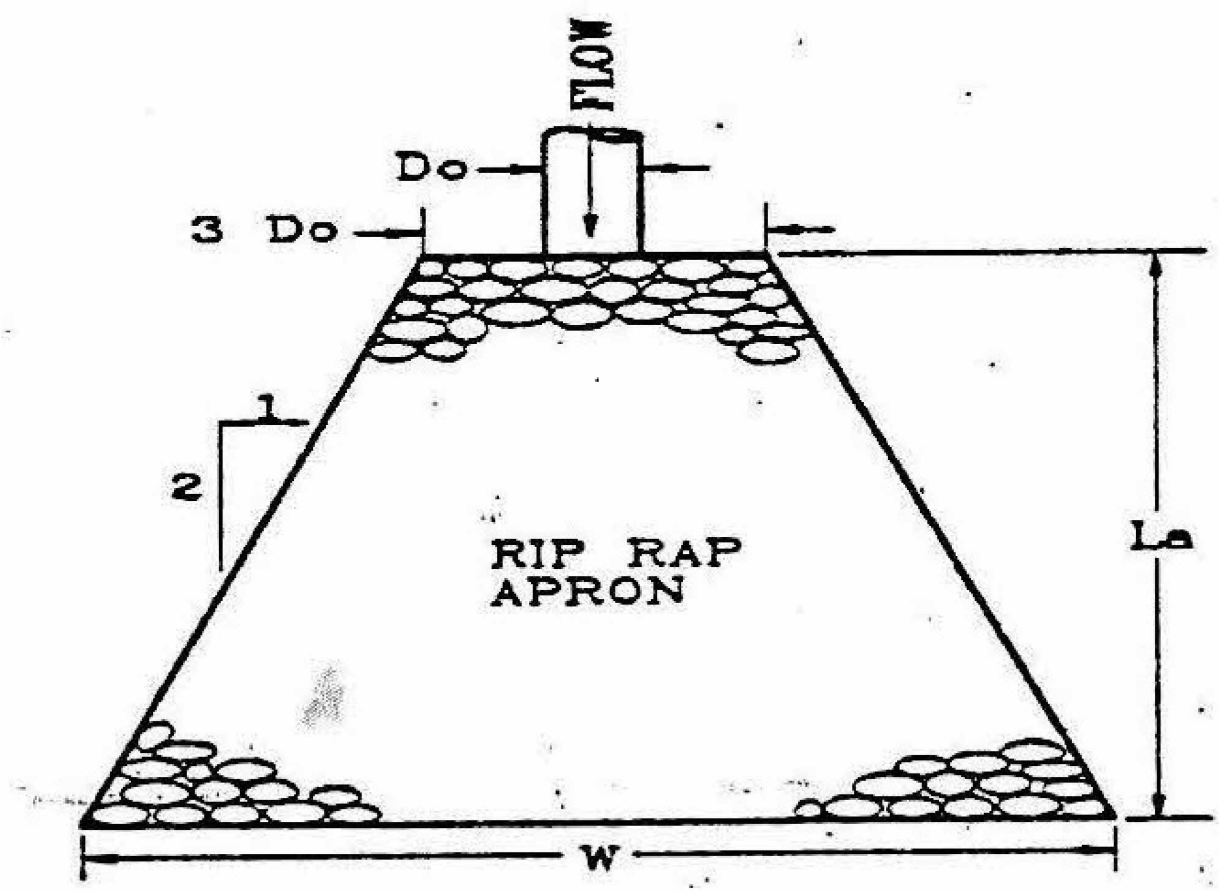
| | |
|---|---|
| Location: | CHAMBER AREA 3 |
| Development: | THE COTTAGES AT OLD OAKEN BUCKET |
| Project No.: | 1908 |

## RIPRAP OUTLET DESIGN

**FROM CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL**

| | | | |
|---|---|---|---|
| Do | 0.67 | **FT** | DIA OF OUTLET |
| Q | 1.70 | **CFS** | 100 YR FLOW |
| Tw | 0.33 | **FT** | 0.49XDo |

| | | | | | |
|---|---|---|---|---|---|
| **FIND** | La = | 10.63 | LENGTH OF RIP RAP PAD | FT | |
| | W= | 12.64 | WIDTH OF RIP RAP PAD | FT | |
| | d50= | 0.21 | AVERAGE ROCK DIAMETER | IN | |
| | d100= | 0.32 | LARGEST ROCK DIAMETER | IN | |
| | T= | 0.47 | THICKNESS OF RIP RAP PAD | IN | 12" MIN. |



SOUTH SHORE SURVEY CONSULTANTS INC.
167R SUMMER ST.
KINGSTON, MA  02304

| | |
|---|---|
| Location: | CHAMBER AREA 4 |
| Development: | THE COTTAGES AT OLD OAKEN BUCKET |
| Project No.: | 1908 |

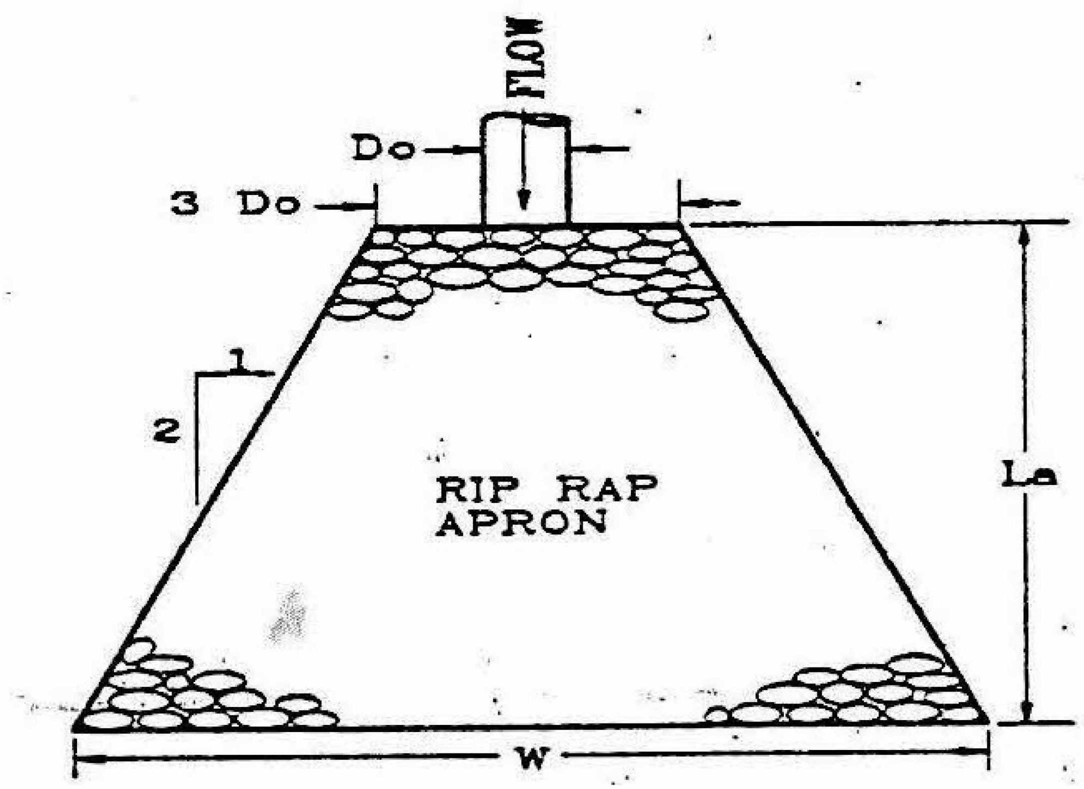
## RIPRAP OUTLET DESIGN

**FROM CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL**

| | | | |
|---|---|---|---|
| Do | 1.75 | **FT** | DIA OF OUTLET |
| Q | 11.91 | **CFS** | 100 YR FLOW |
| Tw | 0.86 | **FT** | 0.49XDo |

| | | | | | |
|---|---|---|---|---|---|
| **FIND** | La = | 22.75 | LENGTH OF RIP RAP PAD | FT | |
| | W= | 28.00 | WIDTH OF RIP RAP PAD | FT | |
| | d50= | 0.30 | AVERAGE ROCK DIAMETER | IN | |
| | d100= | 0.45 | LARGEST ROCK DIAMETER | IN | |
| | T= | 0.68 | THICKNESS OF RIP RAP PAD | IN | 12" MIN. |

La = (1.7*Q)/(Do^3/2)+(8*Do)



# Groundwater Recharge and Water Quality Calculations

The Cottages at Old Oaken Bucket
Scituate, Massachusetts

**Groundwater Recharge**
*Stormwater Management Standard #3*

The prescribed stormwater runoff volume to be recharged to groundwater has been determined using the existing site ( pre-development ) soil conditions from the U.S. Natural Resources Conservation Service NRCS, ( formerly SCS ) County Web Soils Survey.

Soil Hydrologic group, “B”
Required Infiltration Capacity = 0.35”
Watershed Area= 9.54 Acres total for the watershed analyzed
Existing Impervious Area = 0.39 Acres
Proposed impervious area = 3.10 Acres
Net impervious area = 2.71

Required Infiltration Volume= (0.35”/12”/ft) x (2.71 Acres)
= 0.08 acf required
24 x 0.019 acf =0.456 acf provided in all chambers for the roofs of units

Chambers Unit 1=0.072 acf
Chambers Unit 2=0.145 acf
Chambers Unit 3=0.183 acf x 0.58=0.106 acf
Chambers Unit 4=0.167 acf x 0.50=0.0835 acf

Total provided=0.8625 acf without and below outlets

Drawdown calculations

chambers for roofs of units= 0.031 acf x 43560 sf=1,350.36 cf

Drawdown = 1,350.36 cf / (1.02 in/hr x 298.2 sf x 1/12) = 53.3 hr per unit for the 100 yr storm

To chamber unit 3= (0.35”/12”/ft) x (0.44 ac) x 43,560 sf/ac=559.1 cf

Drawdown = 559.1 cf /(1.02 in/hr x 2,463.9 sf x 1/12) = 2,7 hr

To chamber unit 4= (0.35”/12”/ft) x (1.33 acs) x 43,560 sf/ac=1,689.8 cf

Drawdown = 1,689.8 cf /(1.02 in/hr x 1,849.8 sf x 1/12) = 10.8 hr

To chamber unit 1= 0.073 acf x 43,560sf/ac=3,179.9 cf

Drawdown = 3,179.9 cf /(1.02 in/hr x 1,009.8 sf x 1/12) = 37.1 hr for the 100 yr storm

To chamber unit 2= 0.186 x 43,560 sf/ac)=8,102.2 cf

Drawdown = 8,102.2 cf /(1.02in/hr x 1,991.9 sf x 1/12) = 47.9 hr for the 100 yr storm

**Water Quality**
*Stormwater Management Standard - General*

"Containment and treatment of the first inch (first flush) of runoff during a rainfall event is a reasonably effective practice for controlling contaminants in stormwater."

**See Calculations from storm treatment unit provider**

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

2/15/2023

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A ($miles^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 1** | **0.053** | 0.000083 | **6.3** | 0.105 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 1** | **0.105** | **773** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area ($mi^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A ($miles^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 1** | 773 | 0.000083 | 1 | **0.06** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

2/15/2023

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 2** | **0.388** | 0.000606 | **13.3** | 0.222 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 2** | **0.222** | **650** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| **Structure Name** | **$q_u$ (csm/in)** | **A (miles$^2$)** | **Q (in)** | **WQF (cfs)** | **Peak Flow (cfs)** | **Proposed Device[1]** |
|---|---|---|---|---|---|---|
| **HYDRO 2** | 650 | 0.000606 | 1 | **0.39** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

2/15/2023

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 3** | **1.11** | 0.001734 | **31.8** | 0.530 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 3** | **0.530** | **487** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 3** | 487 | 0.001734 | 1 | **0.84** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

2/15/2023

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A ($miles^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 4** | **0.165** | 0.000258 | **6.0** | 0.100 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 4** | **0.100** | **774** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) From Table 2 above
A = drainage area ($mi^2$)
Q = runoff depth (watershed inches) Based on Area Type, from above

**Table 3.**

| **Structure Name** | **$q_u$ (csm/in)** | **A ($miles^2$)** | **Q (in)** | **WQF (cfs)** | **Peak Flow (cfs)** | **Proposed Device[1]** |
|---|---|---|---|---|---|---|
| **HYDRO 4** | 774 | 0.000258 | 1 | **0.20** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

2/15/2023

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 5** | **0.215** | 0.000336 | **6.0** | 0.100 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 5** | **0.100** | **774** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| **Structure Name** | **$q_u$ (csm/in)** | **A (miles$^2$)** | **Q (in)** | **WQF (cfs)** | **Peak Flow (cfs)** | **Proposed Device[1]** |
|---|---|---|---|---|---|---|
| **HYDRO 5** | 774 | 0.000336 | 1 | **0.26** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

**TSS Removal Calculation Worksheet**

Location: CHAMBER 1

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| FIRST DEFENCE | 0.50 | 0.75 | 0.38 | 0.37 |
| INFIL. SYSTEM | 0.80 | 0.37 | 0.30 | 0.07 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

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

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 2/6/2023

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

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: CHAMBER 2

**TSS Removal Calculation Worksheet**

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| FIRST DEFENCE | 0.50 | 0.75 | 0.38 | 0.37 |
| INFIL. SYSTEM | 0.80 | 0.37 | 0.30 | 0.07 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

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

Project: THE COTTAGES

Prepared By: ESPOSITO

Date: 2/6/2023

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

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

*1. From MassDEP Stormwater Handbook Vol. 1*

*Mass. Dept. of Environmental Protection*

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

**TSS Removal Calculation Worksheet**

Location: CHAMBER 3

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| FIRST DEFENCE | 0.50 | 0.75 | 0.38 | 0.37 |
| INFIL. SYSTEM | 0.80 | 0.37 | 0.30 | 0.07 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

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

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 2/6/2023

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

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

**TSS Removal Calculation Worksheet**

Location: CHAMBER 4

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS. | 0.25 | 1.00 | 0.25 | 0.75 |
| FIRST DEFENCE | 0.50 | 0.75 | 0.38 | 0.37 |
| INFIL. SYSTEM | 0.80 | 0.37 | 0.30 | 0.07 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

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

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 2/6/2023

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

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

# *Construction Phase Pollution Prevention and Erosion and Sedimentation Plan*

For:

***The Cottages at***
***Old Oaken Bucket***

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

***Town of Scituate***
***Zoning Board of Appeals***

Dated: February 13, 2023


Prepared By
Anthony Esposito, P.E.
South Shore Survey Consultants, Inc.
167R Summer Street
Kingston, MA 02364

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# Construction Phase Pollution Prevention & Erosion and Sedimentation Control Plan

Erosion and Sedimentation will be controlled at the site by utilizing Structural Practices, Stabilization Practices, and Dust Control. These practices correspond with the approved plans entitled "The Cottages at Old Oaken Bucket, A Comprehensive Permit Plan of Land in Scituate MA", prepared by South Shore Survey Consultants, Inc., hereinafter referred to as the Site Plan.

Responsible Party/Property Owner/Developer contact information:

Lovendale, LLC
s/o Salt Meadow Development
107 East St.
Duxbury, MA 02332
(781) 727-2195

Town of Scituate Contact Information:

Department of Public Works
Kevin Cafferty, Director of Public Works
Scituate Town Hall
600 Chief Justice Cushing Way
Scituate, MA 02066
Phone: (781) 545-8732

## Narrative:

### Project Description:

The applicant, Lovendale , LLC, proposes to build 24 units for residential dwellings.

### Site Description:

The subject property is located 279-281 Old Oaken Bucket Rd. in Scituate, MA. The site contains three abandoned dwellings.

### Soils:

Soils information was obtained from the USDA Natural Resources Conservation Service's (NRCS) Web Soil Survey mapping Site soils are classified as SCS Hydrologic Soil Groups: Canton fine sandy loam, 0 to 8 percent slopes, very stony, (421B- SCS Hydrologic Soil Group B) and Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony, (427B - SCS Hydrologic Soil Group B) . Refer to the Soil Survey Map for a delineation of the boundaries of the soils with respect to the study area.

## Erosion and Sedimentation Control Practices:

## Structural Practices:

1) **Filtermitt Barrier Controls** – Filtermitt barriers must be used in lieu of haybales and strawwattle controls and placed along downward slopes at the limit of work locations. This control will be installed prior to major soil disturbance on the site. The selected barrier control shall be installed as shown on the approved subdivision plans and the manufacturers recommendations.

   Filtermitt Design/Installation Requirements *
   * (included on Inspection/Evaluation Checklist)

   a) Filtermitt should be placed lengthwise on the contour, with the ends of adjacent sock tightly abutting one another and overlapping on the ground surface (not one over another) per manufacturer instructions.

   b) The barrier should be placed on natural ground and staked on either side or through the barrier per manufacturer requirements.

   c) Filtermitt should be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

   Filtermitt Inspection/Maintenance *

   a) Filtermitt barriers should be inspected immediately after each runoff-producing rainfall and at least daily during prolonged rainfall.

   b) Close attention should be paid to the repair of damaged barriers, undercutting beneath the barrier, and flow around the ends of the barrier.

   c) Necessary repairs to barriers or replacement of bales should be completed promptly.

   d) Sediment deposits should be checked after each runoff-producing rainfall. They must be removed when the level of deposition reaches approximately one-half the height of the barrier.

   e) Any sediment deposits remaining in place after the barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

   f) Any spills occurring in the construction area including tainted or silty water shall immediately be surrounded by filtermitt and in regards to oils, fuels and paints be cleaned and removed immediately in accordance with all applicable guidance and regulations.

2) **Inlet Protection** – Inlet Protection will be utilized around the catch basin grates. The inlet protection will allow the storm drain inlets to be used before final stabilization. This structural practice will allow early use of the drainage system if the detention basin is already stabilized. Siltsack or equivalent will be utilized for the inlet protection. Siltsack is manufactured by ACF Environmental. Regular flow siltsack will be utilized, and if it does not allow enough storm water flow, hi-flow siltsack will be utilized.

Silt Sack (or equivalent) Inlet Protection Inspection/Maintenance Requirements *

a) All trapping devices and the structures they protect should be inspected after every rain storm and repairs made as necessary.

b) Sediment should be removed from the trapping devices after the sediment has reached a maximum depth of one-half the depth of the trap.

c) Oil build-up should be removed by using a small portable pump and disposed of in accordance with all applicable local, state, and federal regulations.

d) Sediment should be disposed of in a suitable area and protected from erosion by either structural or vegetative means. Sediment removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

e) The silt sack must be replaced if it is ripped or torn in any way.

f) Temporary traps should be removed and the area repaired as soon as the contributing drainage area to the inlet has been completely stabilized.

3) **Construction Entrance**

The entire length of the entrance should be sprayed weekly to remove silt and Old Oaken Bucket Rd. shall be checked and swept to remove construction debris along the entire frontage. Any stones out of alignment with the entrance pad shall be immediately corrected.

4) **Sedimentation basins and diversion swales**

The contractor shall place sedimentation basins and diversion swales as noted on the plans and at any location where his work may cause unstabilized washout or runoff that may impact the wetlands. The sedimentation basins and diversion swales shall be checked weekly for breaches and long term standing water. The temporary outlet piping shall be checked for blockage and structural intergrity weekly.

## Stabilization Practices:

Stabilization measures shall be implemented as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, with the following exceptions.

- Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

- Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

- Temporary sedimentation basins and Diversion berms shall be provided prior to the road drainage system being installed to protect the wetlands.

1) **Temporary Seeding** – Temporary seeding will allow a short-term vegetative cover on disturbed site areas that may be in danger of erosion. Temporary seeding will be done at stock piles and disturbed portions of the site where construction activity will temporarily cease for at least 21 days. The temporary seedings will stabilize cleared and unvegetated areas that will not be brought into final grade for several weeks or months.

   Temporary Seeding Planting Procedures *

   a) Planting should preferably be done between April 1st and June 30th, and September 1st through September 31st. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1st and March 31st, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.

   b) Before seeding, install structural practice controls. Utilize Amoco supergro or equivalent.

   c) The seedbed should be firm with a fairly fine surface. Perform all cultural operations across or at right angles to the slope. A minimum of 2 to 4-inches of tilled topsoil is required. The topsoil must have a sandy loam to silt loam texture with 15% to 20% organic content.

   d) Apply uniformly 2 tons of ground limestone per acre (100 lbs. Per 1,000 sq.ft.) or according to soil test. Apply uniformly organic or non-nitrogen fertilizers at the rate of 400 lbs. per acre (14 lbs. per 1,000 sq.ft.) or as indicated by soil test. Forty percent of the nitrogen should be in organic form. Work in lime and fertilizer to a depth of 4-inches using any suitable equipment.

e) Select the appropriate seed species for temporary cover from the following table.

| Species | Seeding Rate (lbs/1,000 sq.ft.) | Seeding Rate (lbs/acre) | Recommended Seeding Dates | Seed Cover required |
|---|---|---|---|---|
| Annual Ryegrass | 1 | 40 | April 1st to June 1st<br>August 15th to Sept. 15th | ¼ inch |
| Foxtail Millet | 0.7 | 30 | May 1st to June 30th | ½ to ¾ inch |
| Oats | 2 | 80 | April 1st to July 1st<br>August 15th to Sept. 15th | 1 to 1-½ inch |
| Winter Rye | 3 | 120 | August 15th to Oct. 15th | 1 to 1-½ inch |

Apply the seed uniformly by hydroseeding, broadcasting, or by hand.

f) Use an effective mulch, such as clean grain straw; tacked and/or tied with netting to protect seedbed and encourage plant growth.

<u>Temporary Seeding Inspection/Maintenance *</u>

a) Inspect within 6 weeks of planting to see if stands are adequate. Check for damage within 24 hours of the end to a heavy rainfall, defined as a 2-year storm event (i.e., 3.2 inches of rainfall within a twenty-four hour period). Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.

b) Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather. Water application rates should be controlled to prevent runoff.

2) **<u>Geotextiles</u>** - Geotextiles such as jute netting will be used in combination with other practices such as mulching to stabilize slopes. The following geotextile materials or equivalent are to be utilized for structural and nonstructural controls as shown in the following table.

| Practice | Manufacturer | Product | Remarks |
|---|---|---|---|
| Construction Entrance | Amoco | Woven polypropylene 2002 or equivalent | 0.300 mm opening |
| Outlet Protection | Amoco | Nonwoven polypropylene 4551 or equivalent | 0.150 mm opening |
| Erosion Control (slope stability) | Amoco | Supergro or equivalent | Erosion control revegetation mix, open polypropylene fiber on degradable polypropylene net scrim |

Amoco may be reached at (800) 445-7732

Geotextile Installation

a) Netting and matting require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Geotextile Inspection/Maintenance *

a) In the field, regular inspections should be made to check for cracks, tears, or breaches in the fabric. The appropriate repairs should be made.

3) **Mulching and Netting** – Mulching will provide immediate protection to exposed soils during the period of short construction delays, or over winter months through the application of plant residues, or other suitable materials, to exposed soil areas. In areas, which have been seeded either for temporary or permanent cover, mulching should immediately follow seeding. On steep slopes, mulch must be supplemented with netting. The preferred mulching material is straw.

Mulch (Hay or Straw) Materials and Installation

a) Straw has been found to be one of the most effective organic mulch materials. The specifications for straw are described below, but other material may be appropriate. The straw should be air-dried; free of undesirable seeds & coarse materials. The application rate per 1,000 sq.ft. is 90-100 lbs. (2-3 bales) and the application rate per acre is 2 tons (100-120 bales). The application should cover about 90% of the surface. The use of straw mulch is appropriate where mulch is maintained for more than three months. Straw mulch is subject to wind blowing unless anchored, is the most commonly used mulching material, and has the best microenvironment for germinating seeds.

Mulch Maintenance *

a) Inspect after rainstorms to check for movement of mulch or erosion. If washout, breakage, or erosion occurs, repair surface, reseed, remulch, and install new netting.

b) Straw or grass mulches that blow or wash away should be repaired promptly.

c) If plastic netting is used to anchor mulch, care should be taken during initial mowings to keep the mower height high. Otherwise, the netting can wrap up on the mower blade shafts. After a period of time, the netting degrades and becomes less of a problem.

d) Continue inspections until vegetation is well established.

4) **Land Grading** – Grading on fill slopes, cut slopes, and stockpile areas will be done with full siltation controls in place.

Land Grading Design/Installation Requirements

a) Areas to be graded should be cleared and grubbed of all timber, logs, brush, rubbish, and vegetated matter that will interfere with the grading operation. Topsoil should be stripped and stockpiled for use on critical disturbed areas for establishment of vegetation. Cut slopes to be topsoiled should be thoroughly scarified to a minimum depth of 3-inches prior to placement of topsoil.

b) Fill materials should be generally free of brush, rubbish, rocks, and stumps. Frozen materials or soft and easily compressible materials should not be used in fills intended to support buildings, driveways, roads, conduits, or other structures.

c) Earth fill intended to support structural measures should be compacted to a minimum of 90 percent of Standard Proctor Test density with proper moisture control, or as otherwise specified by the engineer responsible for the design. Compaction of other fills should be to the density required to control sloughing, erosion or excessive moisture content. Maximum thickness of fill layers prior to compaction should not exceed 9 inches.

d) The uppermost one foot of fill slopes should be compacted to at least 85 percent of the maximum unit weight (based on the modified AASHTO compaction test). This is usually accomplished by running heavy equipment over the fill.

e) Fill should consist of material from borrow areas and excess cut will be stockpiled in areas shown on the Site Plans. All disturbed areas should be free draining, left with a neat and finished appearance, and should be protected from erosion.

Land Grading Stabilization Inspection/Maintenance *

a) All slopes should be checked periodically to see that vegetation is in good condition. Any rills or damage from erosion and animal burrowing should be repaired immediately to avoid further damage.

b) If seeps develop on the slopes, the area should be evaluated to determine if the seep will cause an unstable condition. Subsurface drains or a gravel mulch may be required to solve seep problems. However, no seeps are anticipated.

c) Areas requiring revegetation should be repaired immediately. Slopes should be limed and fertilized as necessary to keep vegetation healthy. Control undesirable vegetation such as weeds and woody growth to avoid bank stability problems in the future.

5) **Topsoiling *** – Topsoiling will help establish vegetation on all disturbed areas throughout the site during the seeding process. The soil texture of the topsoil to be used will be a sandy loam to a silt loam texture with 15% to 20% organic content.

Topsoiling Placement

a) Topsoil should not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or when conditions exist that may otherwise be detrimental to proper grading or proposed seeding.

b) Do not place topsoil on slopes steeper than 2:1, as it will tend to erode. Any proposed grass slope steeper than 2.5:1 shall be provided with erosion control blankets.

c) If topsoil and subsoil are not properly bonded, water will not infiltrate the soil profile evenly and it will be difficult to establish vegetation. The best method is to actually work the topsoil into the layer below for a depth of at least 6 inches.

6) **Preserving Natural Vegetation** – The trees to be saved will be clearly flagged or marked with a bright colored ribbon. Snow fencing will be set at the drip/spread line of the trees and shrubs to be protected. Machinery will be kept away from tree roots.

7) **Permanent Seeding** – Permanent Seeding should be done immediately after the final design grades are achieved. Native species of plants should be used to establish perennial vegetative cover on disturbed areas. The revegetation should be done early enough in the fall so that a good cover is established before cold weather comes and growth stops until the spring. A good cover is defined as vegetation covering 75 percent or more of the ground surface.

Permanent Seeding Seedbed Preparation

a) In fertile or coarse-textured subsoil, it is best to stockpile topsoil and respread it over the finished slope at a minimum 2 to 6-inch depth and roll it to provide a firm seedbed. The topsoil must have a sandy loam to silt loam texture with 15% to 20% organic content. If construction fill operations have left soil exposed with a loose, rough, or irregular surface, smooth with blade and roll.

b) Loosen the soil to a depth of 3-5 inches with suitable agricultural or construction equipment.

c) Areas not to receive topsoil shall be treated to firm the seedbed after incorporation of the lime and fertilizer so that it is depressed no more than ½ - 1 inch when stepped on with a shoe. Areas to receive topsoil shall not be firmed until after topsoiling and lime and fertilizer is applied and incorporated, at which time it shall be treated to firm the seedbed as described above.

Permanent Seeding Grass Selection/Application

a) Select an appropriate cool or warm season grass based on site conditions and seeding date. Apply the seed uniformly by hydroseeding, broadcasting, or by hand. Uniform seed distribution is essential. On steep slopes, hydroseeding may be the most effective seeding method. Surface roughening is particularly important when preparing slopes for hydroseeding.

b) Lime and fertilize. Organic fertilizer shall be utilized in areas within the 100 foot buffer zone to a wetland resource area.

c) Mulch the seedings with straw applied at the rate of ½ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas. Amoco supergro or equivalent should be utilized.

Permanent Seeding Inspection/Maintenance *

a) Frequently inspect seeded areas for failure and make necessary repairs and reseed immediately. Conduct or follow-up survey after one year and replace failed plants where necessary.

b) If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results.

c) If a stand has less than 40% cover, reevaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand following seedbed preparation and seeding recommendations, omitting lime and fertilizer in the absence of soil test results. If the season prevents resowing, mulch or jute netting is an effective temporary cover.

d) Seeded areas should be fertilized during the second growing season. Lime and fertilize thereafter at periodic intervals, as needed. Organic fertilizer shall be utilized in areas within the 100 foot buffer zone to a wetland resource area.

## Dust Control *:

Dust control will be utilized throughout the entire construction process of the site. For example, keeping disturbed surfaces moist during windy periods will be an effective control measure, especially for construction haul roads. The use of dust control will prevent the movement of soil to offsite areas. However, care must be taken to not create runoff from excessive use of water to control dust. The following are methods of Dust Control that may be used on-site:

- Vegetative Cover – The most practical method for disturbed areas not subject to traffic.
- Calcium Chloride – Calcium chloride may be applied by mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage.
- Sprinkling – The site may be sprinkled until the surface is wet. Sprinkling will be effective for dust control on haul roads and other traffic routes.
- Stone – Stone will be used to stabilize construction roads; will also be effective for dust control.

## Non-Stormwater Discharges:

During construction activities at the site, some water from the site will be suitable for discharge to the drainage system or temporary sediment basin areas.

The construction de-watering and all non-stormwater discharges will be directed into a sediment dirt bag (or equivalent inlet protection) or a sediment basin. Sediment material removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

The developer and site general contractor will comply with the E.P.A.'s Final General Permit for Construction De-watering Discharges, (N.P.D.E.S., Section 402 and 40 C.F.R. 122.26(b)(14)(x).

## Soil Stockpiling *:

Topsoil and subsoil from the roadway grading will be stockpiled in locations temporarily in the island.

Stockpile Material Construction Procedure

1) Topsoil and subsoil that are stripped will be stockpiled for later distribution on disturbed areas.

2) The stockpiles shall be located beyond 100 lf of the wetlands.
3) Seed the stockpiles with a temporary erosion control mix if the stockpile is to remain undisturbed for more than 30 days. The stockpiles must be stable and the side slopes should not exceed 2:1.

4) Filtermitt or equal erosion control measures should be placed surrounding each stockpile.

5) As needed, the stockpiled topsoil and subsoil are redistributed throughout the site.

## Anticipated Construction Schedule:

To prevent excessive erosion and silting, the following construction sequence coupled with other widely accepted principals for reducing erosion and sedimentation shall be implemented in the development of the site.

1. Obtain all plan approvals and other applicable permits.
2. Flag the work limits and mark trees and buffer areas for protection.
3. Install straw wattle barriers at locations indicated on the construction drawings and construct stabilized construction entrance.
4. Clear and grub all areas associated with the construction area.
5. Commense initial grading of the roads.

6. Construct the roadway stormwater system as soon as practicable after the proposed locations have been cleared.
7. Direct runoff to temporary sediment settling areas. No stormwater shall be allowed to discharge to the subsurface infiltration system until all tributary areas are fully stabilized.
8. Rough grade the building areas. Excavate crushed stone and subsoil from cut and fill areas and stockpile. Consideration should be given to locating stockpiles on the uphill side of disturbed areas, where possible, to act as temporary diversions.
9. After the site is stabilized, remove all temporary measures and install permanent vegetation on disturbed areas. Adequate growth for stabilization is defined as vegetation covering 75% or more of the ground surface.
10. Estimated time before final stabilization is 4 years of completed construction.

## Inspection/Maintenance:

Operator personnel must inspect the construction site at least once every 7 calendar days and within 24 hours of a storm event of 2-inch or greater. The applicant shall be responsible to secure the services of a licensed engineer or similar professional (inspector) on an on-going basis throughout all phases of the project. Refer to the Inspection/Maintenance Requirements presented earlier in the "Structural and Stabilization Practices." The inspector should review the erosion and sediment controls with respect to the following:

- Whether or not the measure was installed/performed correctly.
- Whether or not there has been damage to the measure since it was installed or performed.
- What should be done to correct any problems with the measure.

The inspector should complete the Stormwater Management Construction Phase BMP Inspection Schedule and Evaluation Checklist, as attached, for documenting the findings and should request the required maintenance or repair for the pollution prevention measures when the inspector finds that it is necessary for the measure to be effective. The inspector should notify the appropriate person to make the changes and submit copies of the form to the Brockton Planning Board upon request.

It is essential that the inspector document the inspection of the pollution prevention measures. These records will be used to request maintenance and repair and to prove that the inspection and maintenance were performed. The forms list each of the measures to be inspected on the site, the inspector's name, the date of the inspection, the condition of the measure/area inspected, maintenance or repair performed and any changes which should be made to the Pollution Prevention & Erosion and Sedimentation Control Plan to control or eliminate unforeseen pollution of storm water.

# *Post-Construction Phase Best Management Practices Operation and Maintenance Plan & Long-Term Pollution Prevention Plan*

For:

***The Cottages at***
***Old Oaken Bucket***

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

***Town of Scituate***
***Zoning Board of Appeals***

Dated: January 4, 2022


Prepared By
Anthony Esposito, P.E.
South Shore Survey Consultants, Inc.
167R Summer Street
Kingston, MA 02364

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## Post-Construction Best Management Practices (BMPs) Operation and Maintenance Plan

Responsible Party/Property Owner/Developer contact information:

Lovendale, LLC
s/o Salt Meadow Development
107 East St.
Duxbury, MA 02332
(781) 727-2195

Town of Scituate Contact Information:

Department of Public Works
Kevin Cafferty, Director of Public Works
Scituate Town Hall
600 Chief Justice Cushing Way
Scituate, MA 02066
Phone: (781) 545-8732

Best Management Practices (BMPs) of the Commonwealth of Massachusetts Department of Environmental Protection's (DEP's) Stormwater Management Policy (SMP) have been implemented and utilized for the project. The following information provided is to be used as a guideline for monitoring and maintaining the performance of the drainage facilities and to ensure that the quality of water runoff meets the standards set forth by the SMP. The structural Best Management Practices (BMPs) shall be inspected during rainfall conditions during the first year of operation to verify functionality.

BMPs included in the design consist of the use of:

- Deep Sump Catch Basins
- Proprietary Treatment units
- Infiltration chambers

## Operation:

Once the site has been permanently stabilized and the stormwater facilities are online, the operation of the stormwater management system will function as intended. Stormwater runoff from the paved areas are directed into the infiltration chambers where it will recharge the groundwater table. The beds have been designed to convey peak flows for the 2-year, 10-year and the 100-year storm event.

## Maintenance:

1. **Roadway Maintenance** – Vacuum sweepers shall sweep paved areas periodically during dry weather to remove excess sediments to reduce the amount of sediments that the drainage system shall have to remove from the runoff. The sweeping should be conducted on a semiannual basis before April 30th and after November 15th.

   Salt used for de-icing on the pavement during winter months shall be limited as much as possible as this will reduce the need for removal and treatment. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities. Estimated annual budget $1000.

2. **Catch Basins** - Catch basin grates shall be inspected twice per year, in the spring following snow-melt and in the fall following leaf drop and following heavy rainfalls, defined as a storm event exceeding two inch of rainfall within a twenty-four hour period to verify that the inlet openings are not clogged by debris. Debris shall be removed from the grates and disposed of properly. Deep sump and hooded catch basins shall be inspected quarterly to check oil build-up and outlet obstructions and cleaned of all accumulated sediments as warranted by inspections. Oil build-up shall be removed by using a small portable pump and disposed of properly. Material shall be removed from catch basins and disposed of in accordance with all applicable local, state, and federal regulations. Estimated annual budget $800.

3. **Subsurface Infiltration galleys** – The subsurface infiltration galleys for the subdivision shall be checked for siltation accumulation on a quarterly basis through the lawn grate inspection ports. Additional inspections should be scheduled during the first few months after construction to make sure that no debris or silt has accumulated during construction. Silt, sand and sediment, if significant accumulation occurs, shall be removed by vacuum annually. Material removed from the bed shall be disposed of in accordance with all applicable local, state, and federal regulations.

   Any slope erosion within the facilities shall be stabilized and repaired as soon as practical. The galley bed shall be inspected annually for debris, sediment and structural integrity. The inspections shall be conducted by a licensed engineer or qualified professional (inspector). Estimated annual budget $1000.

4. **Pre-treatment units, (i.e. Hydro International)** - The pre-treatment units shall be checked on a semiannual basis and following heavy rainfalls, defined as a storm event exceeding one inch of rainfall within a twenty-four hour period to verify that the inlet openings are not clogged by debris. Debris shall be removed and disposed of properly. Treatment chambers shall be inspected and cleaned semi-annually of all accumulated sediments. Any oily liquid shall be removed prior to the removal of any sediment removal activities in order to minimize the re-suspension or re-mixing of oil and water. Oil build-up shall be removed by using a small portable pump, absorbent pillows or other measures and disposed of properly. Accumulated sediment 18 inches in depth or greater shall be removed. Sediment shall be removed from the unit using a vacuum truck. Material shall be removed from the pre-

treatment unit and disposed of in accordance with all applicable local, state, and federal regulations. Estimated annual budget $800.

## Maintenance Responsibilities:

All post construction maintenance activities will be documented and kept on file. Annual inspection reports in the form of an Evaluation Checklist and a cover letter **shall be kept on file to be provided to local Town officials when requested**

## Long-Term Pollution Prevention Plan

## Good Housekeeping:

To develop and implement an operation and maintenance program with the goal of preventing or reducing pollutant runoff by keeping potential pollutants from coming into contact with stormwater or being transported off site without treatment, the following efforts will be made:

- Property Management awareness and training on how to incorporate pollution prevention techniques into maintenance operations.
- Follow appropriate best management practices (BMPs) by proper maintenance and inspection procedures.

## Storage and Disposal of Household Waste and Toxics:

This management measure involves educating the general public on the management considerations for hazardous materials. Failure to properly store hazardous materials dramatically increases the probability that they will end up in local waterways. Many people have hazardous chemicals stored throughout their homes, especially in garages and storage sheds. Practices such as covering hazardous materials or even storing them properly, can have dramatic impacts. Property owners are encouraged to contract with a hazardous waste collection company as required for removal of the waste.

MADEP has prepared several materials for property owners on how to properly use and dispose of household hazardous materials:

**http://www.mass.gov/dep/recycle/reduce/househol.htm**

For consumer questions on household hazardous waste call the following number:

**DEP Household Hazardous Waste Hotline 800-343-3420**

The following is a list of management considerations for hazardous materials as outlined by the EPA:

- Ensuring sufficient aisle space to provide access for inspections and to improve the ease of material transport;
- Storing materials well away from high-traffic areas to reduce the likelihood of accidents that might cause spills or damage to drums, bags, or containers.

- Stacking containers in accordance with the manufacturers' directions to avoid damaging the container or the product itself;
- Storing containers on pallets or equivalent structures. This facilitates inspection for leaks and prevents the containers from coming into contact with wet floors, which can cause corrosion. This consideration also reduces the incidence of damage by pests.

The following is a list of commonly used hazardous materials used in the household:

Batteries – automotive and rechargeable
nickel cadmium batteries
(no alkaline batteries)
Gasoline
Oil-based paints
Fluorescent light bulbs and lamps
Pool chemicals
Propane tanks
Lawn chemicals,
fertilizers and weed killers
Turpentine
Bug sprays
Antifreeze
Paint thinners, strippers, varnishes and
stains
Arts and crafts chemicals
Charcoal lighter fluid

Disinfectant
Drain clog dissolvers
Driveway sealer
Flea dips, sprays and collars
Houseplant insecticides
Metal polishes
Mothballs
Motor oil and filters
Muriatic acid (concrete cleaner)
Nail polishes and nail polish
removers
Oven cleaner
Household pest and rat poisons
Rug and upholstery cleaners
Shoe polish
Windshield wiper fluid

## Landscape Maintenance:

This management measure seeks to control the storm water impacts of landscaping and lawn care practices through education and outreach on methods that reduce nutrient loadings and the amount of storm water runoff generated from lawns. Nutrient loads generated by fertilizer use on suburban lawns can be significant, and recent research has shown that lawns produce more surface runoff than previously thought.

Using proper landscaping techniques can effectively increase the value of a property while benefiting the environment. These practices can benefit the environment by reducing water use; decreasing energy use (because less water pumping and treatment is required); minimizing runoff of storm and irrigation water that transports soils, fertilizers, and pesticides; and creating additional habitat for plants and wildlife. The following lawn and landscaping management practices will be encouraged:

- Mow lawns at the highest recommended height.
- Minimize lawn size and maintain existing native vegetation.
- Raise public awareness for promoting the water efficient maintenance practices by informing users of water efficient irrigation techniques and other innovative approaches to water conservation.

- Abide by water restrictions and other conservation measures implemented by the Town of Duxbury.
- Water only when necessary.

## Integrated Pest Management (IPM):

This management measure seeks to limit the adverse impacts of insecticides and herbicides by providing information on alternative pest control techniques other than chemicals or explaining how to determine the correct dosages needed to manage pests.

The presence of pesticides in stormwater runoff has a direct impact on the health of aquatic organisms and can present a threat to humans through contamination of drinking water supplies. The pesticides of greatest concern are insecticides, such as diazinon and chloropyrifos, which even at very low levels can be harmful to aquatic life. The major source of pesticides to urban steams is home application of products designed to kill insects and weeds in the lawn and garden. The following IPM practices will be encouraged:

- Lawn care and landscaping management programs including appropriate pesticide use management as part of program.
- Raise public awareness by referring homeowners to "A Homeowner's Guide to Environmentally Sound Lawncare, Maintaining a Healthy Lawn the IPM Way", Massachusetts Department of Food and Agriculture, Pesticide Bureau or link **http://www.mass.gov/dep/water/resources/nonpoint.htm#megaman**>

## Proper Management of Deicing Chemicals and Snow:

The following deicing chemicals and snow storage practices will be encouraged:

- Select effective snow disposal sites adjacent to or on pervious surfaces in upland areas away from water resources and wells. At these locations, the snow meltwater can filter in to the soil, leaving behind sand and debris, which can be removed in the springtime.
- No roadway deicing materials shall be stockpiled on site unless all storage areas are protected from exposure to rain, snow, snowmelt and runoff.
- Avoid dumping snow into any on-site or off-site waterbody, including wetlands, cranberry bogs, detention/infiltration basins, and grassed swales/channels.
- Avoid disposing of snow on top of storm drain catch basins.

**Property Location: 279-281 Old Oaken Bucket Rd. Scituate, MA** **Date:**

**Stormwater Management – Construction Period and Long Term Pollution Prevention Plan**
**Best Management Practices – Inspection Schedule and Evaluation Checklist**

## Long Term Practices

| Best Management Practice | Inspection Frequency (1) | Date Inspected | Inspector | Minimum Maintenance and Key Items to Check (1) | Cleaning/Repair Needed: ☐yes ☐no (List Items) | Date of Cleaning/ Repair | Performed by |
|---|---|---|---|---|---|---|---|
| Catch Basins | | | | Sediment level, accumulation of oil, accumulation of floating debris. | | | |
| chamber Systems | | | | Carryover of sediment level, oil, or floating debris. | | | |
| First Defense units | | | | Sediment level, accumulation of oil, accumulation of floating debris. | | | |
| | | | | | | | |
| | | | | | | | |

**(1) Refer to the Massachusetts Stormwater Management, Volume Two: MA Stormwater Handbook (Feb. 2008) for recommendations regarding frequency for inspection and maintenance of specific BMP's.**

# CONTACTOR® & RECHARGER®

## STORMWATER MANAGEMENT SOLUTIONS


## OPERATION & MAINTENANCE GUIDELINES

FOR CULTEC STORMWATER MANAGEMENT SYSTEMS

STORMWATER MANAGEMENT SOLUTIONS

CULTEC

**Published by**
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Doc ID: CLT057 01-20
January 2020

*These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.*
*All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.*
*Actual designs may vary.*

*This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.*

## Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

## Operation and Maintenance Requirements

### I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

### II. Inspection and Maintenance Options

**A.** The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pre-treatment device). CCTV inspection of this row can be deployed through this access port to deter mine if any sediment has accumulated in the inlet row.

**B.** If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

**1. Manhole Access**
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. **StormFilter Access**
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

**C.** The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

## III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

**A.** The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

**B.** The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

**C.** Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

**D.** Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

## IV. Suggested Maintenance Schedules

**A. Minor Maintenance**
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

| Frequency | Action |
|---|---|
| Monthly in first year | Check inlets and outlets for clogging and remove any debris, as required. |
| Spring and Fall | Check inlets and outlets for clogging and remove any debris, as required. |
| One year after commissioning and every third year following | Check inlets and outlets for clogging and remove any debris, as required. |

**B. Major Maintenance**
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

| | Frequency | Action |
|---|---|---|
| Inlets and Outlets | Every 3 years | • Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended. |
| | Spring and Fall | • Check inlet and outlets for clogging and remove any debris as required. |
| CULTEC Stormwater Chambers | 2 years after commissioning | • Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique.<br>• Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated. |
| | 9 years after commissioning every 9 years following | • Clean stormwater management chambers and feed connectors of any debris.<br>• Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique.<br>• Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended. |
| | 45 years after commissioning | • Clean stormwater management chambers and feed connectors of any debris.<br>• Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required.<br>• Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique.<br>• Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection.<br>• Attain the appropriate approvals as required.<br>• Establish a new operation and maintenance schedule. |
| Surrounding Site | Monthly in 1st year | • Check for depressions in areas over and surrounding the stormwater management system. |
| | Spring and Fall | • Check for depressions in areas over and surrounding the stormwater management system. |
| | Yearly | • Confirm that no unauthorized modifications have been performed to the site. |

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

# WQMP
# Operation & Maintenance (O&M) Plan

Project Name:______________________________________________

## Prepared for:

Project Name: ______________________________________________

Address:______________________________________________

City, State Zip:______________________________________________

## Prepared on:

Date:______________________________________________

This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

### 8.1.1 Project Information

| | |
|---|---|
| Project name | |
| Address | |
| City, State Zip | |
| Site size | |
| List of structural BMPs, number of each | |
| Other notes | |

### 8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

| | |
|---|---|
| Name of Person or HOA Property Manager | |
| Address | |
| City, State Zip | |
| Phone number | |
| 24-Hour Emergency Contact number | |
| Email | |

### 8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

### 8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

## Appendix ___

## BMP SITE PLAN

Site plan is preferred on minimum 11” by 17” colored sheets, as long as legible.

## BMP OPERATION & MAINTENANCE LOG

Project Name: ________________________________________

Today's Date:________________________________________

Name of Person Performing Activity (Printed):________________________________________

Signature: ________________________________________

| BMP Name (As Shown in O&M Plan) | Brief Description of Implementation, Maintenance, and Inspection Activity Performed |
|---|---|
| | |
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| | |
| | |

## Minor Maintenance

| Frequency | | Action |
|---|---|---|
| **Monthly in first year** | | Check inlets and outlets for clogging and remove any debris, as required. |
| | | Notes |
| □ Month 1 | Date: | |
| □ Month 2 | Date: | |
| □ Month 3 | Date: | |
| □ Month 4 | Date | |
| □ Month 5 | Date: | |
| □ Month 6 | Date: | |
| □ Month 7 | Date: | |
| □ Month 8 | Date: | |
| □ Month 9 | Date: | |
| □ Month 10 | Date: | |
| □ Month 11 | Date: | |
| □ Month 12 | Date: | |
| **Spring and Fall** | | Check inlets and outlets for clogging and remove any debris, as required. |
| | | Notes |
| □ Spring | Date: | |
| □ Fall | Date: | |
| □ Spring | Date: | |
| □ Fall | Date: | |
| □ Spring | Date: | |
| □ Fall | Date: | |
| □ Spring | Date: | |
| □ Fall | Date: | |
| □ Spring | Date: | |
| □ Fall | Date: | |
| □ Spring | Date: | |
| □ Fall | Date: | |
| **One year after commissioning and every third year following** | | Check inlets and outlets for clogging and remove any debris, as required. |
| | | Notes |
| □ Year 1 | Date: | |
| □ Year 4 | Date: | |
| □ Year 7 | Date: | |
| □ Year 10 | Date: | |
| □ Year 13 | Date: | |
| □ Year 16 | Date: | |
| □ Year 19 | Date: | |
| □ Year 22 | Date: | |

## Major Maintenance

| | Frequency | | Action |
|---|---|---|---|
| Inlets and Outlets | **Every 3 years** | | Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended. |
| | | | Notes |
| | □ Year 1 | Date: | |
| | □ Year 4 | Date: | |
| | □ Year 7 | Date: | |
| | □ Year 10 | Date: | |
| | □ Year 13 | Date: | |
| | □ Year 16 | Date: | |
| | □ Year 19 | Date: | |
| | □ Year 22 | Date: | |
| | **Spring and Fall** | | Check inlet and outlets for clogging and remove any debris, as required. |
| | | | Notes |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| | □ Spring | Date: | |
| | □ Fall | Date: | |
| CULTEC Stormwater Chambers | **2 years after commissioning** | | □ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique.<br><br>□ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated. |
| | | | Notes |
| | □ Year 2 | Date: | |

## Major Maintenance

| | Frequency | | Action |
|---|---|---|---|
| CULTEC Stormwater Chambers | **9 years after commissioning every 9 years following** | | □ Clean stormwater management chambers and feed connectors of any debris.<br><br>□ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique.<br><br>□ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended. |
| | | | Notes |
| | □ Year 9 | Date: | |
| | □ Year 18 | Date: | |
| | □ Year 27 | Date: | |
| | □ Year 36 | Date: | |
| | **45 years after commissioning** | | □ Clean stormwater management chambers and feed connectors of any debris.<br><br>□ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required.<br><br>□ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique.<br><br>□ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection.<br><br>□ Attain the appropriate approvals as required.<br><br>□ Establish a new operation and maintenance schedule. |
| | | | Notes |
| | □ Year 45 | Date: | |

## Major Maintenance

| | Frequency | | Action |
|---|---|---|---|
| Surrounding Site | **Monthly in 1st year** | | ◻ Check for depressions in areas over and surrounding the stormwater management system. |
| | | | Notes |
| | ◻ Month 1 | Date: | |
| | ◻ Month 2 | Date: | |
| | ◻ Month 3 | Date: | |
| | ◻ Month 4 | Date: | |
| | ◻ Month 5 | Date: | |
| | ◻ Month 6 | Date: | |
| | ◻ Month 7 | Date: | |
| | ◻ Month 8 | Date: | |
| | ◻ Month 9 | Date: | |
| | ◻ Month 10 | Date: | |
| | ◻ Month 11 | Date: | |
| | ◻ Month 12 | Date: | |
| | **Spring and Fall** | | ◻ Check for depressions in areas over and surrounding the stormwater management system. |
| | | | Notes |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | ◻ Spring | Date: | |
| | ◻ Fall | Date: | |
| | **Yearly** | | ◻ Confirm that no unauthorized modifications have been performed to the site. |
| | | | Notes |
| | ◻ Year 1 | Date: | |
| | ◻ Year 2 | Date: | |
| | ◻ Year 3 | Date: | |
| | ◻ Year 4 | Date: | |
| | ◻ Year 5 | Date: | |
| | ◻ Year 6 | Date: | |
| | ◻ Year 7 | Date: | |

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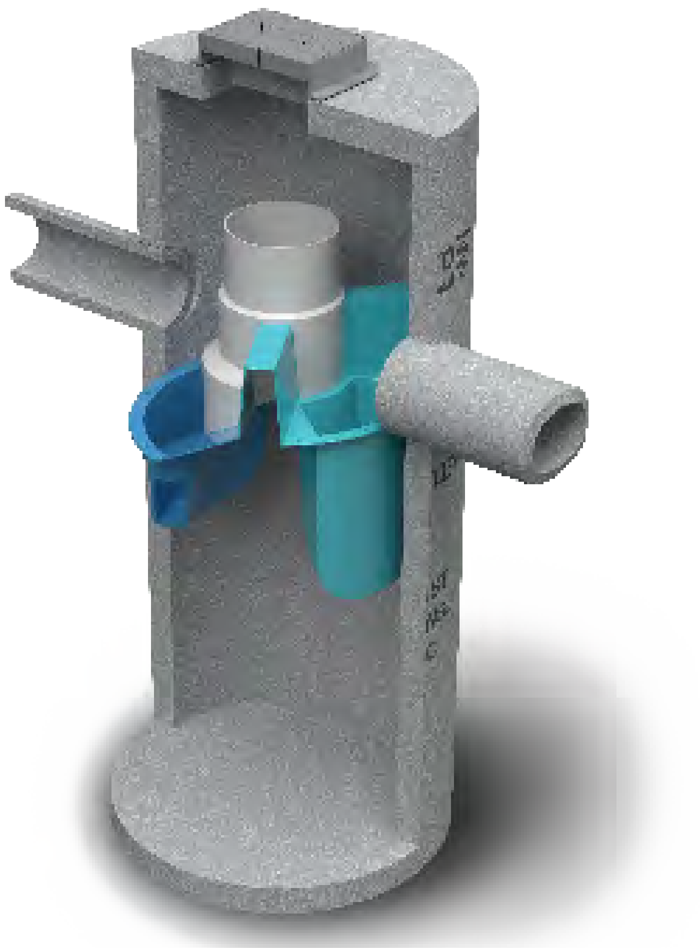

# Operation and Maintenance Manual

## First Defense® High Capacity and First Defense® Optimum

Vortex Separator for Stormwater Treatment

# Table of Contents





**Hydro International** (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

# I. First Defense® by Hydro International

## Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints.

The two product models described in this guide are the First Defense® High Capacity and the First Defense® Optimum; they are inspected and maintained identically.

### Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

### Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

### Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

### Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

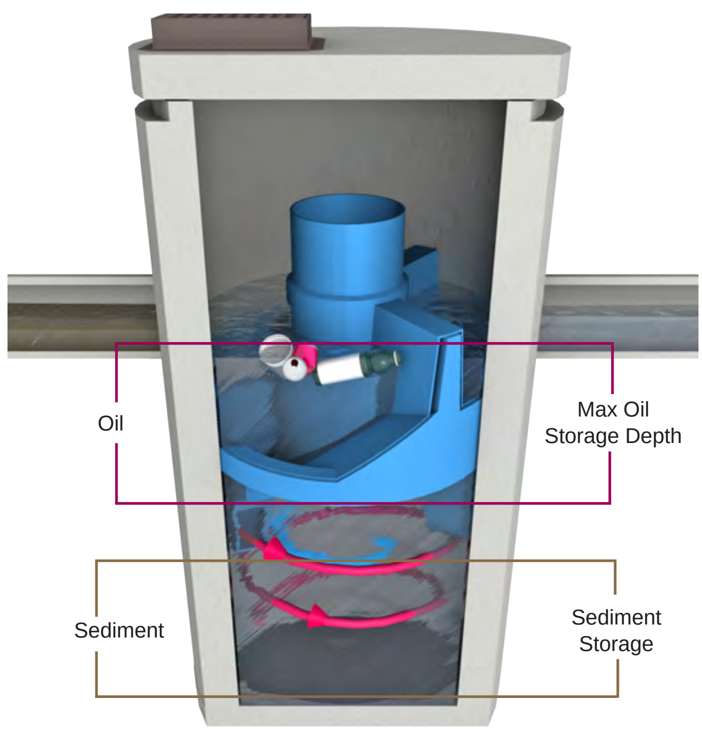


*Fig.1 Pollutant storage volumes in the First Defense®.*

# II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components have modified geometries allowing greater design flexibility to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2). First Defense® model sizes (diameter) are shown in Table 1.

# III. Maintenance

## First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

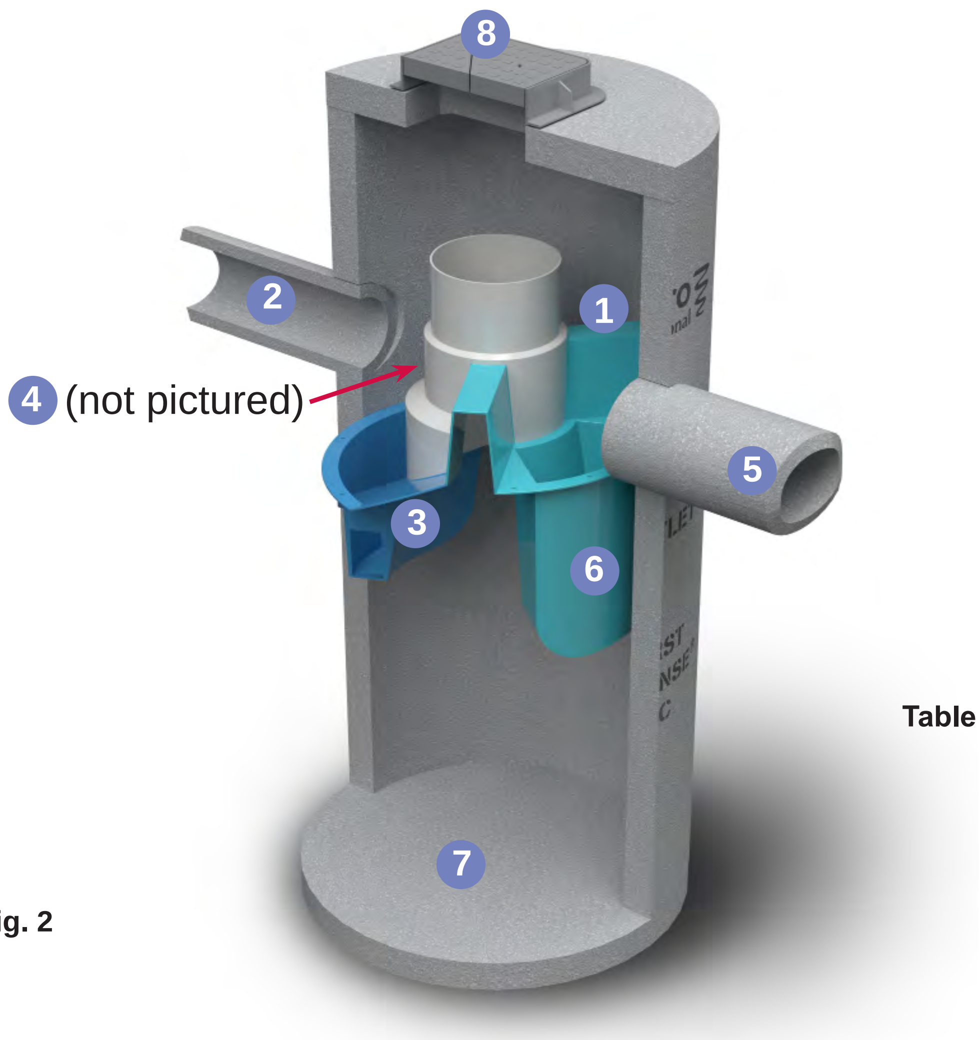


**Fig. 2**

**Table 1**

| First Defense® Model Sizes |
|---|
| (ft / m) diameter |
| 3 / 0.9 |
| 4 / 1.2 |
| 5 / 1.5 |
| 6 / 1.8 |
| 7 / 2.1 |
| 8 / 2.4 |
| 10 / 3.0 |

**Hydro International** (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

## Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

## Maintenance Equipment Considerations

The internal components of the First Defense® have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

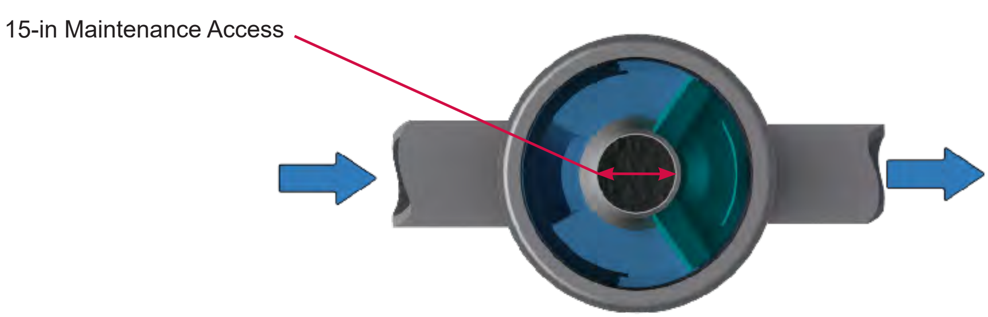


*Fig.3 The central opening to the sump of the First Defense®is 15 inches in diameter.*

## Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

### *Inspection Procedures*

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

*Fig.4 Floatables are removed with a vactor hose*

## Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.4).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose to be lowered to the base of the sump.

### *Scheduling*

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

### *Recommended Equipment*

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

### *Floatables and Sediment Clean Out Procedures*

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose or with the skimmer or net

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

## Maintenance at a Glance

| | |
|---|---|
| Inspection | - Regularly during first year of installation<br>- Every 6 months after the first year of installation |
| Oil and Floatables Removal | - Once per year, with sediment removal<br>- Following a spill in the drainage area |
| Sediment Removal | - Once per year or as needed<br>- Following a spill in the drainage area |

NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.

# First Defense® Installation Log

| HYDRO INTERNATIONAL REFERENCE NUMBER: | |
|---|---|
| SITE NAME: | |
| SITE LOCATION: | |
| OWNER: | CONTRACTOR: |
| CONTACT NAME: | CONTACT NAME: |
| COMPANY NAME: | COMPANY NAME: |
| ADDRESS: | ADDRESS: |
| TELEPHONE: | TELEPHONE: |
| FAX: | FAX: |

**INSTALLATION DATE: / /**

**MODEL SIZE (CIRCLE ONE): [3-FT] [4-FT] [5-FT] [6-FT] [7-FT] [8-FT] [10-FT]**

**INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)**

**Hydro International** (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

# First Defense® Inspection and Maintenance Log

| Date | Initials | Depth of Floatables and Oils | Sediment Depth Measured | Volume of Sediment Removed | Site Activity and Comments |
|---|---|---|---|---|---|
| | | | | | |
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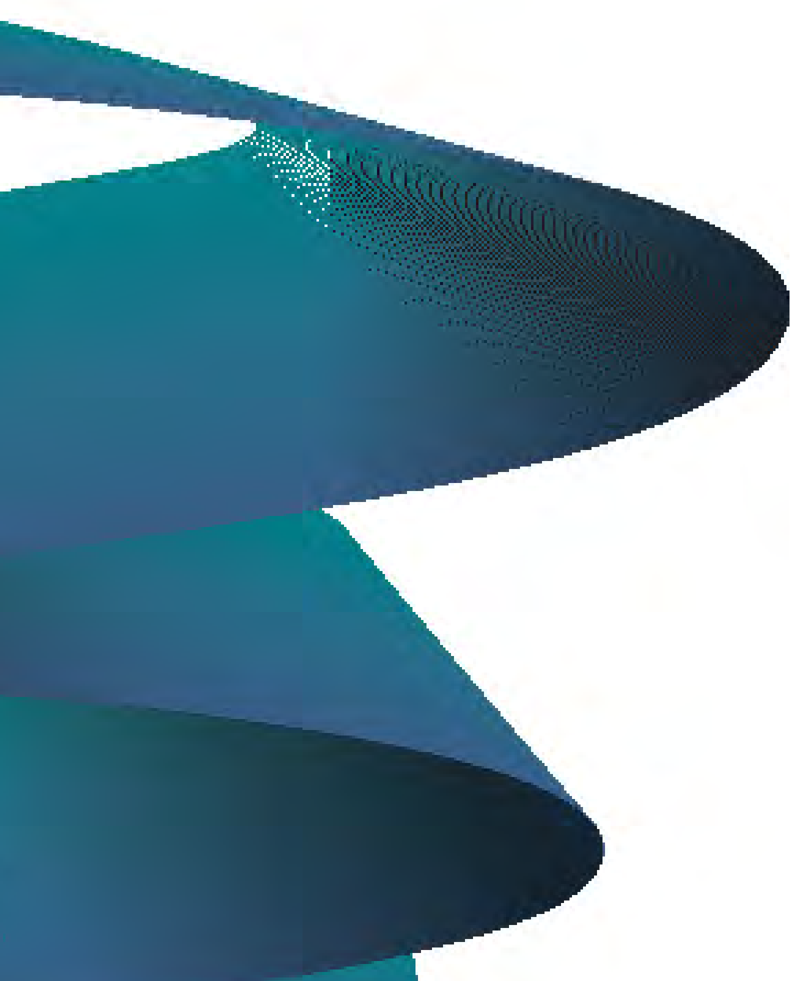
| | | | | | |

**Hydro International** (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International



## Stormwater Solutions


94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com


Turning Water Around...®

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month December 2019

Range: Above Normal ☒ Normal ☐ Below Normal ☐

Other References Reviewed: None

## ***On-Site Review***

Deep Hole Number T.P 1 Date 12-13-2019 Time: 9 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | mottles@ 24” 7.5y6/4 | |
| 45”-96” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >96”

Depth to Groundwater: Standing Water in the Hole: 90” Weeping from Pit Face: 44”

Estimated Seasonal High Ground Water? 24”

# ***On-Site Review***

Deep Hole Number T.P 2 Date 12-13-2019 Time: 9 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-22” | B | LS | 10yr5/6 | | |
| 22”-94” | C | SL | 2.5y5/2 | mottles@ 40” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >94”

Depth to Groundwater: Standing Water in the Hole: 79” Weeping from Pit Face: 49”

Estimated Seasonal High Ground Water? 40”

# *On-Site Review*

Deep Hole Number T.P 3 Date 12-13-2019 Time: 10 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11" | A | SL | 10yr3/3 | - | |
| 11-28" | B | LS | 10yr5/6 | mottles@ 27" 7.5y6/4 | |
| 28"-95" | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >95"

Depth to Groundwater: Standing Water in the Hole: 61" Weeping from Pit Face: 61"

Estimated Seasonal High Ground Water? 27"

# ***On-Site Review***

Deep Hole Number__T.P 4_Date_12-13-2019_______ Time:__10 AM Weather: __sunny 40s_____

Location (identify on site plan)__north of onsite U pole_____________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+____feet

Possible Wet Area _______50+_____feet

Drinking Water Well _____100+____feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other __________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-24” | B | LS | 10yr5/6 | | |
| 24”-85” | C | SL | 2.5y5/2 | mottles@ 30” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>85”

Depth to Groundwater: Standing Water in the Hole:_______82”_____Weeping from Pit Face: 48”______

Estimated Seasonal High Ground Water?____30”_____

# ***On-Site Review***

Deep Hole Number T.P 5 Date 12-13-2019 Time: 11AM Weather: sunny 40s

Location (identify on site plan) west of gravel drive at entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | | |
| 24”-84” | C | SL | 2.5y5/2 | mottles@ 36” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 58” Weeping from Pit Face: 48”

Estimated Seasonal High Ground Water? 36”

## *On-Site Review*

Deep Hole Number T.P 6 Date 12-13-2019 Time: 11 AM Weather: sunny 40s

Location (identify on site plan) east of gravel drive at entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11” | A | SL | 10yr3/3 | - | |
| 11-20” | B | LS | 10yr5/6 | | |
| 20”-77” | C | SL | 2.5y5/2 | mottles@ 33” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >77”

Depth to Groundwater: Standing Water in the Hole: 54” Weeping from Pit Face: 54”

Estimated Seasonal High Ground Water? 33”

## ***On-Site Review***

Deep Hole Number__T.P 10 Date_1-6-2020_ Time:__9 AM Weather: __cloudy 30s_____

Location (identify on site plan)__east of gravel drive at 200 lf from entrance___________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain_________________________________________

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well ____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-16” | A | SL | 10yr3/3 | - | |
| 16-35” | B | LS | 10yr5/6 | | |
| 35”-84” | C | SL | 2.5y5/2 | mottles@ 35” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists____Depth to Bedrock _______>84”

Depth to Groundwater: Standing Water in the Hole:_______70”____Weeping from Pit Face: 39”______

Estimated Seasonal High Ground Water?____35”____

# *On-Site Review*

Deep Hole Number T.P 11 Date 1-6-2020 Time: 9 AM Weather: cloudy 30s

Location (identify on site plan) west of gravel drive at 200 lf from entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7” | A | SL | 10yr3/3 | - | |
| 7-25” | B | LS | 10yr5/6 | | |
| 25”-80” | C | SL | 2.5y5/2 | mottles@ 38” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >80”

Depth to Groundwater: Standing Water in the Hole: 78” Weeping from Pit Face: 38”

Estimated Seasonal High Ground Water? 38”

# *On-Site Review*

Deep Hole Number T.P 13 Date 1-6-2020 Time: 10 AM Weather: cloudy 30s

Location (identify on site plan) east of gravel drive at 200 lf from entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | | |
| 26”-80” | C | SL | 2.5y5/2 | mottles@ 26” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >80”

Depth to Groundwater: Standing Water in the Hole: 70” Weeping from Pit Face: 26”

Estimated Seasonal High Ground Water? 26”

## ***On-Site Review***

Deep Hole Number T.P 20 Date 1-6-2020 Time: 11 AM Weather: cloudy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7” | A | SL | 10yr3/3 | - | |
| 7-22” | B | LS | 10yr5/6 | | |
| 22”-84” | C | SL | 2.5y5/2 | mottles@ 31” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 52” Weeping from Pit Face: 31”

Estimated Seasonal High Ground Water? 31”

# *On-Site Review*

Deep Hole Number T.P 21 Date 1-6-2020 Time: 12 PM Weather: cloudy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-6” | A | SL | 10yr3/3 | - | |
| 6-22” | B | LS | 10yr5/6 | | |
| 22”-84” | C | SL | 2.5y5/2 | mottles@ 33” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 52” Weeping from Pit Face: 41”

Estimated Seasonal High Ground Water? 80”

# ***On-Site Review***

Deep Hole Number__T.P 22_Date_1-8-2020_ Time:__9 AM Weather: __rainy 30s______

Location (identify on site plan)__south of onsite U pole_____________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain__________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr3/3 | - | |
| 9-24” | B | LS | 10yr5/6 | | |
| 24”-72” | C | SL | 2.5y5/2 | mottles@ 26” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>72”

Depth to Groundwater: Standing Water in the Hole:_______60”_____Weeping from Pit Face: 26”______

Estimated Seasonal High Ground Water?____26”____

# *On-Site Review*

Deep Hole Number T.P 24 Date 1-8-2020 Time: 10 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-28” | B | LS | 10yr5/6 | mottles@ 22” 7.5y6/4 | |
| 28”-88” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >88”

Depth to Groundwater: Standing Water in the Hole: 63” Weeping from Pit Face: 22”

Estimated Seasonal High Ground Water? 22”

# ***On-Site Review***

Deep Hole Number T.P 25 Date 1-8-2020 Time: 10:30 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet | Drainage way >25 feet

Possible Wet Area 50+ feet | Property Line >10 feet

Drinking Water Well 100+ feet | Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-25” | B | LS | 10yr5/6 | mottles@ 25” 7.5y6/4 | |
| 25”-98” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >98”

Depth to Groundwater: Standing Water in the Hole: 96” Weeping from Pit Face: 32”

Estimated Seasonal High Ground Water? 32”

## *On-Site Review*

Deep Hole Number T.P 26 Date 1-8-2020 Time: 11 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-24” | B | LS | 10yr5/6 | mottles@ 24” 7.5y6/4 | |
| 24”-82” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >82”

Depth to Groundwater: Standing Water in the Hole: 73” Weeping from Pit Face: 24”

Estimated Seasonal High Ground Water? 24”

# ***On-Site Review***

Deep Hole Number__T.P 1DW Date_2-19-2020______ Time:__9 AM Weather: __sunny 30s______

Location (identify on site plan)__120' south of onsite U pole_________

Land Use______vacant__ Slope (%)_____5%_____ Surface Stones__<1%__________________

Vegetation_____oaks and maples________________________________________

Landform______outwash plain___________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body ______200+____feet

Possible Wet Area ______50+_____feet

Drinking Water Well _____100+____feet

Drainage way ___>25____________feet

Property Line ___>10____________feet

Other __________N/A____________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10" | A | SL | 10yr3/3 | - | |
| 10-22" | B | LS | 10yr5/6 | | |
| 22"-120" | C | SL | 2.5y5/2 | mottles@ 25" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>120"

Depth to Groundwater: Standing Water in the Hole:_______none____Weeping from Pit Face: 30"______

Estimated Seasonal High Ground Water?____25"_____

# ***On-Site Review***

Deep Hole Number T.P 2DW Date 2-19-2020 Time: 10 AM Weather: sunny 30s

Location (identify on site plan) 120' south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8" | A | SL | 10yr3/3 | - | |
| 8-19" | B | LS | 10yr5/6 | | |
| 19"-120" | C | SL | 2.5y5/2 | mottles@ 37" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120"

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: 41"

Estimated Seasonal High Ground Water? 37"

# ***On-Site Review***

Deep Hole Number T.P 3NDW Date 2-19-2020 Time: 11 AM Weather: sunny 30s

Location (identify on site plan) 120’ south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11” | A | SL | 10yr3/3 | - | |
| 11-28” | B | LS | 10yr5/6 | | |
| 28”-120” | C | SL | 2.5y5/2 | mottles@ 31” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: 114” Weeping from Pit Face: 60”

Estimated Seasonal High Ground Water? 31”

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)___________inches

☐ Depth observed standing in observation hole________inches

☐ Depth weeping from side of observation hole _____________inches

X Depth to soil mottle see soil logs__________inches

Index Well Number Reading Date_________ Index Well Level
Adjustment Factor______________ Adjusted Groundwater Level ___________

Depth of Naturally Occurring Pervious Material

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____________

If not, what is the depth of naturally occurring pervious material?____________________

Certification

I certify that on __June 1999______ I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature Anthony Esposito________________ Date__2/21/2020

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 12-13-2019 | Time: 9:53 AM, 10:17 AM |

| Observation Hole # | T.P. 2 | T.P. 3 |
|---|---|---|
| Depth of Perc. | 24+18” | 33+18” |
| Start Pre-Soak | 9:53 | 10:17 |
| End Pre-Soak | 10:08 | 10:32 |
| Time at 12” | 10:08 | 10:32 |
| Time at 9” | 10:41 | 10:57 |
| Time at 6” | 11:20 | 11:38 |
| Time (9” - 6”) | 39 | 41 |
| Rate (Minutes/Inch) | 13 min/in | 14 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Form 12 - PERCOLATION TEST pg 2**

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 12-13-2019 | Time: 10:32 AM, 11:47 AM |

| Observation Hole # | T.P. 4 | T.P. 5 |
|---|---|---|
| Depth of Perc. | 30+18" | 24+18" |
| Start Pre-Soak | 10:32 | 11:47 |
| End Pre-Soak | 10:47 | 12:08 |
| Time at 12" | 10:47 | 12:08 |
| Time at 9" | 11:45 | 12:45 |
| Time at 6" | 1:09 | 1:34 |
| Time (9" - 6") | 84 | 49 |
| Rate (Minutes/Inch) | 28 min/in | 17 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 1-6-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 13 | T.P. 20 |
|---|---|---|
| Depth of Perc. | 24+18” | 24+18” |
| Start Pre-Soak | 11:11 | 12:33 |
| End Pre-Soak | 11:26 | 12:48 |
| Time at 12” | 11:26 | 12:48 |
| Time at 9” | 11:32 | 1:56 |
| Time at 6” | 1:01 | 3:45 |
| Time (9” - 6”) | 89 | 109 |
| Rate (Minutes/Inch) | 30 min/in | 37 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| ***Percolation Test** | |
|---|---|
| Date: 2-19-2020 | Time: 10:02 AM, 9:16 AM |

| Observation Hole # | T.P. 1DW | T.P. 2DW |
|---|---|---|
| Depth of Perc. | 26+18” | 36+18” |
| Start Pre-Soak | 10:02 | 9:16 |
| End Pre-Soak | 10:17 | 9:31 |
| Time at 12” | 10:17 | 9:31 |
| Time at 9” | 11:31 | 11:00 |
| Time at 6” | 1:12 | 1:40 |
| Time (9” - 6”) | 101 | 160 |
| Rate (Minutes/Inch) | 34 min/in | 54 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2-19-2020 | Time: 10:02 AM, 9:16 AM |

| Observation Hole # | T.P. 3NDW | |
|---|---|---|
| Depth of Perc. | 25+18” | |
| Start Pre-Soak | 11:12 | |
| End Pre-Soak | 11:27 | |
| Time at 12” | 11:27 | |
| Time at 9” | 12:48 | |
| Time at 6” | 3:48 | |
| Time (9” - 6”) | 120 | |
| Rate (Minutes/Inch) | 60 min/in | |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month August 2020

Range: Above Normal ☐ Normal ☐ Below Normal ☒

Other References Reviewed: None

# ***On-Site Review***

Deep Hole Number__T.P 1-2_Date_8-26-20_ Time:__9 AM Weather: __sunny 80s______

Location (identify on site plan)__rear yard_________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain_________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8" | A | SL | 10yr4/4 | - | |
| 8-27" | B | LS | 10yr5/4 | mottles@ 36" 7.5y6/4 | |
| 27"-120" | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>120"

Depth to Groundwater: Standing Water in the Hole:_______none___Weeping from Pit Face: none_____

Estimated Seasonal High Ground Water?____36"____

## ***On-Site Review***

Deep Hole Number T.P 2-2 Date 8-26-20 Time: 9:20 AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-22” | A | SL | 10yr4/4 | - | |
| 22-41” | B | LS | 10yr5/4 | mottles@ 41” 7.5y6/4 | |
| 27”-142” | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >142”

Depth to Groundwater: Standing Water in the Hole: 131” Weeping from Pit Face: 131”

Estimated Seasonal High Ground Water? 41”

# ***On-Site Review***

Deep Hole Number__T.P 3-2_Date_8-26-20_ Time:__9 :30AM Weather: __sunny 80s___

Location (identify on site plan)__rear yard_________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_____________________________________

Landform______outwash plain_______________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well ____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8” | A | SL | 10yr4/4 | - | |
| 8-23” | B | LS | 10yr5/4 | mottles@ 23” 7.5y6/4 | |
| 23”-122” | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists____Depth to Bedrock _______>122”

Depth to Groundwater: Standing Water in the Hole:______none___Weeping from Pit Face: none_____
Estimated Seasonal High Ground Water?____23”____

## *On-Site Review*

Deep Hole Number T.P 4-2 Date 8-26-20 Time: 9 :40AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8” | A | SL | 10yr4/4 | - | |
| 8-24” | B | LS | 10yr5/4 | | |
| 24”-133” | C | SL | 2.5y6/3 | mottles@ 35” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >133”

Depth to Groundwater: Standing Water in the Hole: 130” Weeping from Pit Face: 130”

Estimated Seasonal High Ground Water? 35”

# ***On-Site Review***

Deep Hole Number__T.P 5-2_Date_8-26-20_ Time:__9 :50AM Weather: __sunny 80s____

Location (identify on site plan)__rear yard__________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+____feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+____feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr4/4 | - | |
| 10-35” | B | LS | 10yr5/4 | | |
| 35”-96” | C | SL | 2.5y6/3 | mottles@ 35” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>96”

Depth to Groundwater: Standing Water in the Hole:_______96”_____Weeping from Pit Face: 96”______

Estimated Seasonal High Ground Water?____35”____

# ***On-Site Review***

Deep Hole Number__T.P 6-2_Date_8-26-20_ Time:__10AM Weather: __sunny 80s______

Location (identify on site plan)__rear yard_________

Land Use_______vacant__ Slope (%)______5%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples______________________________________

Landform______outwash plain______________________________________

Position on Landscape (see septic plan) ____

Distances from:

| | |
|---|---|
| Open Water Body _______200+____feet | Drainage way ___>25___________feet |
| Possible Wet Area _______50+_____feet | Property Line ___>10___________feet |
| Drinking Water Well _____100+____feet | Other _________N/A___________feet |

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr4/4 | - | |
| 10-26” | B | LS | 10yr5/4 | | |
| 26”-160” | C | SL | 2.5y6/3 | mottles@ 44” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>160”

Depth to Groundwater: Standing Water in the Hole:_______152”____Weeping from Pit Face: 151”_____

Estimated Seasonal High Ground Water?____44”____

# *On-Site Review*

Deep Hole Number T.P 7 Date 8-26-20 Time: 10:15AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7" | A | SL | 10yr4/4 | - | |
| 7-23" | B | LS | 10yr5/4 | | |
| 23"-111" | C | SL | 2.5y6/3 | mottles@ 25" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >111"

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: none

Estimated Seasonal High Ground Water? 25"

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)___________inches

☐ Depth observed standing in observation hole________inches

☐ Depth weeping from side of observation hole _____________inches

X Depth to soil mottle see soil logs__________inches

Index Well Number Reading Date_________ Index Well Level
Adjustment Factor______________ Adjusted Groundwater Level ___________

Depth of Naturally Occurring Pervious Material

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____________

If not, what is the depth of naturally occurring pervious material?____________________

Certification

I certify that on __June 1999_______ I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito*________________ Date__8/26/2020

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1 | T.P. 2 |
|---|---|---|
| Depth of Perc. | 42+18” | 41+18” |
| Start Pre-Soak | 9:31 | 10:02 |
| End Pre-Soak | 9:46 | 10:17 |
| Time at 12” | 9:46 | 10:17 |
| Time at 9” | 10:02 | 10:39 |
| Time at 6” | 10:23 | 11:11 |
| Time (9” - 6”) | 21 | 32 |
| Rate (Minutes/Inch) | 7 min/in | 11 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Form 12 - PERCOLATION TEST pg 2**

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3 | T.P. 4 |
|---|---|---|
| Depth of Perc. | 30+18” | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12” | 10:37 | |
| Time at 9” | 10:50 | test |
| Time at 6” | 11:05 | |
| Time (9” - 6”) | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 5 | T.P. 6 |
|---|---|---|
| Depth of Perc. | 39+18" | 22+18" |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12" | 12:01 | 12:31 |
| Time at 9" | 12:36 | 12:43 |
| Time at 6" | 1:03 | 1:03 |
| Time (9" - 6") | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:43 AM |

| | | |
|---|---|---|
| Observation Hole # | T.P. 7 | |
| Depth of Perc. | 23+18” | |
| Start Pre-Soak | 11:43 | |
| End Pre-Soak | 1:58 | |
| Time at 12” | 1:58 | |
| Time at 9” | 2:10 | |
| Time at 6” | 2:23 | |
| Time (9” - 6”) | 13 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month February 2021

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other References Reviewed: None

# *On-Site Review*

Deep Hole Number T.P 1-3 Date 2-1-21 Time: 9 AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet

Possible Wet Area 50+ feet

Drinking Water Well 100+ feet

Drainage way >25 feet

Property Line >10 feet

Other N/A feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/2 | - | |
| 12-36” | B | LS | 10yr5/6 | mottles@ 36” 7.5y6/4 | |
| 36”-120” | C | SL | 2.5y6/3 | | Loose and wet, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: 108” Weeping from Pit Face: 36”

Estimated Seasonal High Ground Water? 36”

## ***On-Site Review***

Deep Hole Number__T.P 2-3_Date_2-1-2021_______ Time:__9:20 AM Weather: __snow 20s____

Location (identify on site plan)__upland island______

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain__________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well ____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/2 | - | |
| 10-26” | B | LS | 10yr5/6 | | |
| 26”-40” | C1 | GS | 2.5y4/3 | mottles@ 36” 7.5y6/4 | firm, 40% stones 50% gravel |
| 40-120” | C2 | SL | 2.5y3/2 | | |

Parent Material (geologic)_____eiolian deposists____Depth to Bedrock _______>120”

Depth to Groundwater: Standing Water in the Hole:_______76”____Weeping from Pit Face: 40”______

Estimated Seasonal High Ground Water?____36”____

# ***On-Site Review***

Deep Hole Number__T.P 3-3_ Date_2-1-2021_______ Time:__9:40 AM Weather: __snow 20s____

Location (identify on site plan)__upland island_____________

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples______________________________________

Landform______outwash plain________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well ____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other __________N/A__________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-15” | A | SL | 10yr3/2 | - | |
| 15-36” | B | LS | 10yr5/6 | | |
| 36”-120” | C1 | LS | 2.5y4/3 | mottles@ 36” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists____Depth to Bedrock _______>120”

Depth to Groundwater: Standing Water in the Hole:______90”____Weeping from Pit Face: 81”______
Estimated Seasonal High Ground Water?____36”____

# ***On-Site Review***

Deep Hole Number__T.P 4-3_Date_2-1-21__ Time:__9 :40AM Weather: __sunny 30s____

Location (identify on site plan)__upland island_____________

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain__________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well ____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-18” | A | SL | 10yr3/2 | - | |
| 18-24” | B | LS | 10yr5/4 | | |
| 24”-108” | C | SL | 2.5y6/3 | mottles@ 22” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>108”

Depth to Groundwater: Standing Water in the Hole:_______94”_____Weeping from Pit Face: 24”______

Estimated Seasonal High Ground Water?____22”_____

# ***On-Site Review***

Deep Hole Number__T.P 5-3 Date_2-1-21___ Time:__9 :40AM Weather: __snow 20s____

Location (identify on site plan)__upland island_____________

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain_______________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+___feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+___feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other _________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/2 | - | |
| 10-24” | B | LS | 10yr5/4 | | |
| 24”-112” | C | SL | 2.5y6/3 | mottles@ 24” 7.5y6/4 | loose 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>108”

Depth to Groundwater: Standing Water in the Hole:_______100”___Weeping from Pit Face: 24”______

Estimated Seasonal High Ground Water?____22”____

# ***On-Site Review***

Deep Hole Number__T.P 6-3_Date_2-1-21__ Time:__10AM Weather: __snow 20s______

Location (identify on site plan)__upland island_____________

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%__________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain_________________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+____feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+____feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other __________N/A___________feet

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr4/4 | - | |
| 9-18” | B | LS | 10yr5/4 | | |
| 18”-110” | C | SL | 2.5y6/3 | mottles@ 18” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>110”

Depth to Groundwater: Standing Water in the Hole:_______70”_____Weeping from Pit Face: 104”_____

Estimated Seasonal High Ground Water?____18”____

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

## ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)___________inches

☐ Depth observed standing in observation hole________inches

☐ Depth weeping from side of observation hole _____________inches

X Depth to soil mottle see soil logs__________inches

Index Well Number Reading Date_________ Index Well Level
Adjustment Factor______________ Adjusted Groundwater Level ___________

Depth of Naturally Occurring Pervious Material

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____________

If not, what is the depth of naturally occurring pervious material?____________________

Certification

I certify that on __June 1999______ I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito*________________ Date__2/1/2021

**Form 12 - PERCOLATION TEST pg 1**

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2/1/2021 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1-3 | T.P. 2-3 |
|---|---|---|
| Depth of Perc. | 24+18" | 36+18" |
| Start Pre-Soak | 10:28 | 10:02 |
| End Pre-Soak | 10:43 | 10:17 |
| Time at 12" | 10:43 | 10:17 |
| Time at 9" | 11:34 | 10:39 |
| Time at 6" | 12:50 | 11:11 |
| Time (9" - 6") | 76 | 32 |
| Rate (Minutes/Inch) | 26 min/in | 11 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts

## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3-3 | T.P. 4-3 |
|---|---|---|
| Depth of Perc. | 30+18” | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12” | 10:37 | |
| Time at 9” | 10:50 | test |
| Time at 6” | 11:05 | |
| Time (9” - 6”) | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 5-3 | T.P. 6-3 |
|---|---|---|
| Depth of Perc. | 39+18" | 22+18" |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12" | 12:01 | 12:31 |
| Time at 9" | 12:36 | 12:43 |
| Time at 6" | 1:03 | 1:03 |
| Time (9" - 6") | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Joshua Green Merrill Associates

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month October 2022

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other References Reviewed: None

## ***On-Site Review***

Deep Hole Number__T.P unit 4_Date_10-6-22______ Time:__9 AM Weather: __sunny 60s______

Location (identify on site plan)__dwelling 4_

Land Use_______vacant__ Slope (%)______3%_____ Surface Stones__<1%_________________

Vegetation______oaks and maples_______________________________________

Landform______outwash plain_______________________________________

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body _______200+____feet

Possible Wet Area _______50+____feet

Drinking Water Well _____100+____feet

Drainage way ___>25___________feet

Property Line ___>10___________feet

Other __________N/A___________feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr3/2 | - | |
| 9-35” | B | SL | 10yr5/6 | | |
| 35”-90” | C | SL | 2.5y6/3 | mottles@ 48” 7.5y5/8 | firm |

Parent Material (geologic)_____eiolian deposists_____Depth to Bedrock _______>90”

Depth to Groundwater: Standing Water in the Hole:_______none___Weeping from Pit Face: none_____

Estimated Seasonal High Ground Water?____48”_____

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

## ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)___________inches

☐ Depth observed standing in observation hole________inches

☐ Depth weeping from side of observation hole ______________inches

X Depth to soil mottle 48___________inches

Index Well Number Reading Date_________ Index Well Level
Adjustment Factor______________ Adjusted Groundwater Level ___________

Depth of Naturally Occurring Pervious Material

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____________

If not, what is the depth of naturally occurring pervious material?____________________

Certification

I certify that on June 1999 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito* Date 10/6/2022

**Form 12 - PERCOLATION TEST pg 1**

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2/1/2021 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1-3 | T.P. 2-3 |
|---|---|---|
| Depth of Perc. | 24+18" | 36+18" |
| Start Pre-Soak | 10:28 | 10:02 |
| End Pre-Soak | 10:43 | 10:17 |
| Time at 12" | 10:43 | 10:17 |
| Time at 9" | 11:34 | 10:39 |
| Time at 6" | 12:50 | 11:11 |
| Time (9" - 6") | 76 | 32 |
| Rate (Minutes/Inch) | 26 min/in | 11 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3-3 | T.P. 4-3 |
|---|---|---|
| Depth of Perc. | 30+18" | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12" | 10:37 | |
| Time at 9" | 10:50 | test |
| Time at 6" | 11:05 | |
| Time (9" - 6") | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 5-3 | T.P. 6-3 |
|---|---|---|
| Depth of Perc. | 39+18" | 22+18" |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12" | 12:01 | 12:31 |
| Time at 9" | 12:36 | 12:43 |
| Time at 6" | 1:03 | 1:03 |
| Time (9" - 6") | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed X Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 421B (Soil Map Unit) Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

   Morraines, hills, ridges (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 1 (Hole #) | 10/07/2022 (Date) | 11:50 (Time) | Sunny, 65F (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Chamber Area 1" at north area of locus, near existing driveway

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist | Till plains (Landform) | Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way n/a feet | Wetlands ~165 feet
Property Line ~20 feet | Drinking Water Well n/a feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Loamy sand | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 12-44 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 44-108 | C | Loamy sand | 2.5Y6/3 | 59 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole #Ch.A. 1 Obs. Hole #_____

☒ Depth to soil redoximorphic features — 59 inches — _____ inches

☐ Depth to observed standing water in observation hole — _____ inches — _____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — _____ inches — _____ inches

Index Well Number ________ Reading Date ________

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 108 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage area "Chamber Area 1"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ____ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 3-1 (Hole #) 10/06/2022 (Date) 10:30 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 115 feet east of BVW, refer to site plan "Chamber Area 3" south end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till   Till plains (Landform)   Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet   Drainage Way ~350 feet   Wetlands ~115 feet
   Property Line ~35 feet   Drinking Water Well n/a feet   Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No   If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No   If yes: 115 inches Depth to Weeping in Hole   ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-28 | B | Sandy loam | 10YR4/4 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 28-132 | C | Sandy loam | 5Y2/2 | 30 | Cnc :2.5YR3/6<br>Dpl: | | | 5-10% | massive | friable | pockets of firm silt loam |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Ch.A. 3-1 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 30 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number   _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 132 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

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

## 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.

| | |
|---|---|
| | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

"Ch. A. 3-1" test hole was performed at proposed location for "Chamber Area 3" as shown on site plan.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 4-1 (Hole #) 10/06/2022 (Date) 12:20 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 110 feet NE of BVW, refer to site plan "Chamber Area 4" north end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till   Till plains (Landform)   Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet   Drainage Way ~220 feet   Wetlands ~110 feet
   Property Line ~140 feet   Drinking Water Well n/a feet   Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No   If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No   If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-14 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 14-30 | B | Sandy loam | 10YR4/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 30-124 | C | Sandy loam | 10YR5/1 | 43 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Ch.A. 4-1 Obs. Hole # _____

☒ Depth to soil redoximorphic features 43 inches _____ inches

☐ Depth to observed standing water in observation hole _____ inches _____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) _____ inches _____ inches

Index Well Number ______ Reading Date ______

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 14 inches Lower boundary: 124 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed "Chamber Area 4"
i.e. "Ch.A.4-1"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey

nesoil.com
Source

427B
Soil Map Unit

Newfields fine sandy loam, 3-8% slopes, stony
Soil Series

Morraines, till plains, hills
Landform

Shallow to restrictive layer, shallow to groundwater
Soil Limitations

Coarse-loamy eolian deposits over sandy and supraglacial meltout till
Soil Parent material

3. Surficial Geological Report

2018 - Stone, Stone, DiGiacomo-Cohen
Year Published/Source

Thin till
Map Unit

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer:

Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 Range: ☐ Above Normal ☒ Normal ☐ Below Normal

Month/Day/ Year

8. Other references reviewed:
(Zone II, IWPA, Zone A, EEA Data Portal, etc.)

USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 4-2 (Hole #) | 10/06/2022 (Date) | 12:35 (Time) | Sunny, 65F (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 80 feet NE of BVW, refer to site plan "Chamber Area 4" south end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~240 feet | Wetlands ~80 feet
   Property Line ~110 feet | Drinking Water Well n/a feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-6 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 6-36 | B | Sandy loam | 10YR4/3 | 32 | Cnc :2.5YR3/6<br>Dpl: | | | | massive | friable | |
| 36-126 | C | Sandy loam | 10YR5/1 | | Cnc :<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Ch.A. 4-2  Obs. Hole # _____

☒ Depth to soil redoximorphic features — 32 inches — _____ inches

☐ Depth to observed standing water in observation hole — _____ inches — _____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — _____ inches — _____ inches

_____________ Index Well Number   _____________ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 6 inches Lower boundary: 126 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed location of "Chamber Area 4"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

Coarse-loamy eolian deposits over sandy and supraglacial meltout till
Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
(Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Septic 3 (Hole #) 10/06/2022 (Date) 11:15 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Overgrown driveway (e.g., woodland, agricultural field, vacant lot, etc.) tall grass, low-lying brush (Vegetation) None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Area near NW corner of existing 2-story home #279, refer to site plan

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till; Till plains (Landform); Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way ~235 feet; Wetlands ~130 feet; Property Line ~150 feet; Drinking Water Well n/a feet; Other ____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 66 inches Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-18 | FILL | N/A | N/A | | Cnc :<br>Dpl: | | | | N/A | N/A | |
| 18-22 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 22-40 | B | Sandy loam | 10YR4/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 40-130 | C | Sandy loam | 10YR5/1 | 43 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Septic 3 Obs. Hole # _____

| | Obs. Hole # Septic 3 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 43 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 22 inches Lower boundary: 130 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan. "Septic 3" test hole performed at NW corner area of existing 2-story home at #279 Old Oaken Bucket Road.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road — Street Address
41-1-2-D — Map/Lot #

Scituate — City
MA — State
02066 — Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey: nesoil.com (Source); 421B (Soil Map Unit); Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

   Morraines, hills, ridges (Landform); Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist
   Soil Parent material

3. Surficial Geological Report: 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source); Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #1 (Hole #) 10/07/2022 (Date) 12:30 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: lawn (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 1" at north area of locus, west side yard of existing dwelling

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist Till plains (Landform) Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet Drainage Way n/a feet Wetlands ~75 feet
Property Line ~50 feet Drinking Water Well n/a feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 96 inches Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-19 | B | Sandy loam | 10YR5/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 19-110 | C | Sandy loam | 10YR6/2 | 32 | Cnc :2.5YR3/6<br>Dpl: | | 5% | 5% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #1 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 32 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 110 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of Scituate

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

## 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.

| | |
|---|---|
| | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #1

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #10 (Hole #) | 10/06/2022 (Date) | 10:50 (Time) | Sunny, 65F (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 180 feet east of BVW, refer to site plan "Unit 10"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~260 feet | Wetlands ~180 feet
Property Line ~75 feet | Drinking Water Well n/a feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Sandy loam | 10YR3/2 | | Cnc : Dpl: | | | | granular | very friable | |
| 12-32 | B | Sandy loam | 10YR5/3 | | Cnc : Dpl: | | | | massive | friable | |
| 32-120 | C | Sandy loam | 10YR5/2 | 35 | Cnc :2.5YR3/6 Dpl: | | | 10-15% | massive | friable | stratified deposits of silt loam |
| | | | | | Cnc : Dpl: | | | | | | |
| | | | | | Cnc : Dpl: | | | | | | |
| | | | | | Cnc : Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Unit #10 Obs. Hole # ____

☒ Depth to soil redoximorphic features — 35 inches — ____ inches

☐ Depth to observed standing water in observation hole — ____ inches — ____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — ____ inches — ____ inches

Index Well Number ____ Reading Date ____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   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

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 120 inches

   c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan. Test hole for "Unit #10" performed at proposed drainage location as shown on site plan - For unit #10.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts (Description of Geologic Map Unit)

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #16 (Hole #) 10/07/2022 (Date) 10:00 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: SE corner of locus, refer to site plan "Unit 16"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till; Till plains (Landform); Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way ~90 feet; Wetlands ~200 feet; Property Line ~20 feet; Drinking Water Well n/a feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-9 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 9-35 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 35-90 | C | Sandy loam | 2.5Y6/3 | 36 | Cnc :2.5YR3/6<br>Dpl: | | | 20-30% | massive | friable | very bouldery |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #16 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 36 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number   _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   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

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 9 inches Lower boundary: 90 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #16

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #17 (Hole #) 10/07/2022 (Date) 10:30 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: SE corner of locus, refer to site plan "Unit 17"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till; Till plains (Landform); Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way ~110 feet; Wetlands ~140 feet; Property Line ~30 feet; Drinking Water Well n/a feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 98 inches Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-7 | A | Sandy loam | 10YR3/2 | | Cnc : <br> Dpl: | | | | granular | very friable | |
| 7-36 | B | Sandy loam | 10YR5/6 | | Cnc : <br> Dpl: | | | | massive | friable | |
| 36-108 | C | Loamy sand | 2.5Y6/3 | 38 | Cnc :2.5YR3/6 <br> Dpl: | | | 20-30% | massive | very friable | bouldery |
| | | | | | Cnc : <br> Dpl: | | | | | | |
| | | | | | Cnc : <br> Dpl: | | | | | | |
| | | | | | Cnc : <br> Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #17 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 38 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____________________ Index Well Number     _____________________ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____   $S_c$ _____   $S_r$ _____   $OW_c$ _____   $OW_{max}$ _____   $OW_r$ _____   $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)?   Upper boundary: 7 inches   Lower boundary: 108 inches

c. If no, at what depth was impervious material observed?   Upper boundary: _____ inches   Lower boundary: _____ inches

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for ~~test~~ hole location at proposed drainage for unit #17

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #19 (Hole #) 10/06/2022 (Date) 13:00 (Time) Sunny, 65F (Weather) ______ (Latitude) ______ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Trees/low-lying brush (Vegetation) None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 80 feet NE of BVW, refer to site plan "Unit 19"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till — Till plains (Landform) — Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way ~240 feet; Wetlands ~80 feet; Property Line ~110 feet; Drinking Water Well n/a feet; Other ______ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ______ Depth to Weeping in Hole ______ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-6 | A | Sandy loam | 10YR2/1 | | Cnc : <br> Dpl: | | | | granular | very friable | |
| 6-32 | B | Sandy loam | 10YR4/3 | 24 | Cnc :2.5YR3/6 <br> Dpl: | | | | massive | friable | |
| 32-120 | C | Sandy loam | 10YR5/1 | | Cnc : <br> Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc : <br> Dpl: | | | | | | |
| | | | | | Cnc : <br> Dpl: | | | | | | |
| | | | | | Cnc : <br> Dpl: | | | | | | |

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Unit #19 Obs. Hole # _____

| | Obs. Hole # Unit #19 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 24 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 6 inches Lower boundary: 120 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed drainage location for unit #19

Commonwealth of Massachusetts
City/Town of Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 421B (Soil Map Unit) Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

   Morraines, hills, ridges (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #2 (Hole #) 10/07/2022 (Date) 12:10 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: lawn (e.g., woodland, agricultural field, vacant lot, etc.) — Trees/low-lying brush (Vegetation) — Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) — 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 2" at north area of locus, front yard of existing dwelling

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist — Till plains (Landform) — Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way n/a feet; Wetlands ~120 feet; Property Line ~35 feet; Drinking Water Well n/a feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features: Depth | Redoximorphic Features: Color | Redoximorphic Features: Percent | Coarse Fragments % by Volume: Gravel | Coarse Fragments % by Volume: Cobbles & Stones | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-13 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 13-27 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 27-103 | C | Loamy sand | 2.5Y6/3 | 49 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #2 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 49 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number    _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 13 inches Lower boundary: 103 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## 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.

| | |
|---|---|
| | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #2

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #20 (Hole #) 10/06/2022 (Date) 11:30 (Time) Sunny, 65F (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) — Trees/low-lying brush (Vegetation) — None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) — 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 60 feet east of BVW, refer to site plan "Unit 20"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till — Till plains (Landform) — Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet; Drainage Way ~320 feet; Wetlands ~60 feet; Property Line ~110 feet; Drinking Water Well n/a feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 45 inches Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 12-22 | B | Sandy loam | 10YR5/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 22-112 | C | Sandy loam | 10YR6/2 | 32 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | Hole caving in at 112" |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #20 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 32 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

Index Well Number ______ Reading Date ______

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 112 inches

c. If no, at what depth was impervious material observed? Upper boundary: ______ inches Lower boundary: ______ inches

Commonwealth of Massachusetts
City/Town of Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

"Unit #20" test hole performed at proposed drainage location for unit 20 as shown on site plan.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

**Commonwealth of Massachusetts**
**City/Town of** Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #8 (Hole #) | 10/07/2022 (Date) | 11:20 (Time) | Sunny, 65F (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 8"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~290 feet | Wetlands ~165 feet
Property Line ~30 feet | Drinking Water Well n/a feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No | If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No | If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-21 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 21-101 | C | Sandy loam | 2.5Y6/3 | 24 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #8 | Obs. Hole # ____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 24 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number ____ Reading Date ____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 101 inches

c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of Scituate

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

## 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] | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #8.

Commonwealth of Massachusetts
City/Town of Scituate

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

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

Morraines, till plains, hills (Landform) Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

Coarse-loamy eolian deposits over sandy and supraglacial meltout till
Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ___ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS 420316070433501 MA-D4W 79R DUXBURY, MA
(Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of Scituate

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #9 (Hole #) | 10/07/2022 (Date) | 11:00 (Time) | Sunny, 65F (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 9"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~250 feet | Wetlands ~150 feet

Property Line ~20 feet | Drinking Water Well n/a feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-8 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 8-36 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 36-86 | C | Sandy loam | 2.5Y6/3 | 30 | Cnc :2.5YR3/6<br>Dpl: | | 10% | 20-30% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

Commonwealth of Massachusetts
City/Town of Scituate

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one): Obs. Hole # Unit #9 Obs. Hole # _____

☒ Depth to soil redoximorphic features — 30 inches — _____ inches

☐ Depth to observed standing water in observation hole — _____ inches — _____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — _____ inches — _____ inches

_____________________ Index Well Number _____________________ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 8 inches Lower boundary: 86 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of Scituate

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

## 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.

| | |
|---|---|
| | 10/12/2022 |
| Signature of Soil Evaluator | Date |
| Christopher McEntee, SE14021 | 06/30/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green, SE14374 | Town of Scituate |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test pit location at proposed drainage for unit #9

Commonwealth of Massachusetts
City/Town of

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

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-D / 41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey: Web Soil Survey (Source); 427B - Newfields FSL (Soil Map Unit); Newfields Fine Sandy Loam (Soil Series)

   Moraines, till plains, Hills (Landform); Shallow to Groundwater, shallow to Restrictive layer (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report: 2018 - Stone, Stone, Diagiacomo (Year Published/Source); Thin till (Map Unit)

   Description of Geologic Map Unit: Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ______ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-D4W 79 R DUXBURY

Commonwealth of Massachusetts
City/Town of

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** SEPTIC-2 (Hole #) 10/6/22 (Date) 10:15AM (Time) Partly Cloudy (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) Shrubs (Vegetation) NONE (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

   Description of Location: Rear of house, Below deck in a heavily vegetated area

2. Soil Parent Material: LOOSE TILL MORAINE (Landform) BackSlope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >50 feet Drainage Way >50 feet Wetlands >50 feet

   Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material 0-12" ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

### Soil Log

| Depth (In) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | FILL | — | — | — | Cnc: — Dpl: — | — | — | — | — | — | — |
| 12-28 | Ab | SL | 10YR 2/1 | — | Cnc: — Dpl: — | — | — | — | GR | Friable | — |
| 28-44 | Bw | SL | 10YR 5/6 | 40 | Cnc: 7.5YR 4/6 Dpl: — | 20% | 5% | 15% | M | Friable | — |
| 44-120 | C1 | LS | 2.5Y 6/3 | — | Cnc: — Dpl: — | — | 10% | 15% | M | Friable | — |
| 120-140 | C2 | SL | 2.5Y 6/3 | — | Cnc: — Dpl: — | — | 10% | 15% | M | Friable | — |
| | | | | | Cnc: Dpl: | | | | | | |

Additional Notes:

PERC @ 55" – PRESOAK 10:21 – START 10:36AM – 9" 12:25AM – 6" 3:20PM

~59 min./inch

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

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # SEPTIC-2 | Obs. Hole # ____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 40 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number ____________ Reading Date ____________

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: >60 inches

c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

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

## 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.

A Wimmer
Signature of Soil Evaluator

10/6/2022
Date

Anna Wimmer - SE14615
Typed or Printed Name of Soil Evaluator / License #

5/1/2025
Expiration Date of License

Joshua Green - SE14374
Name of Approving Authority Witness

Scituate Board of Health
Approving Authority

**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.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

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

## A. Facility Information

Salt Meadow Development/Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-D/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey: Web Soil Survey (Source) — 427B-Newfields FSL (Soil Map Unit) — Newfields Fine Sandy Loam (Soil Series)

Moraines, till plains, Hills (Landform) — Shallow to Groundwater, Shallow to Restrictive layer (Soil Limitations)

Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report: 2018 - Stone, Stone, Diagiacomo (Year Published/Source) — Thin till (Map Unit)

Description of Geologic Map Unit: Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-D4W 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Lt 3-2 (Hole #) 10/6/2022 (Date) 10:45 AM (Time) Partly Cloudy (Weather) ______ (Latitude) ______ (Longitude)

1. Land Use woodland (e.g., woodland, agricultural field, vacant lot, etc.) understory, shrubs (Vegetation) Some cobbles (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 0-3% (Slope (%))

Description of Location: Wooded area about 50' off a dirt road

2. Soil Parent Material: Thin/Loose Till Moraine (Landform) Backslope/Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >50 feet Drainage Way >50 feet Wetlands >50 feet

Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features: Depth | Redoximorphic Features: Color | Redoximorphic Features: Percent | Coarse Fragments % by Volume: Gravel | Coarse Fragments % by Volume: Cobbles & Stones | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-24 | Ap | FS | 10YR3/2 | — | Cnc: —<br>Dpl: — | — | — | — | GR | F | — |
| 24-36 | Bw | SL | 10YR5/4 | — | Cnc: —<br>Dpl: — | — | 5% | — | M | F | — |
| 36-67 | C1 | LS | 2.5Y6/4 | 40 | Cnc: 7.5YR5/4<br>Dpl: 2.5Y7/2 | 30% | — | 10% | M | F | — |
| 67-124 | C2 | SL | 2.5Y5/3 | — | Cnc: —<br>Dpl: — | — | — | 10% | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

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 (Choose one): Obs. Hole # CH3 -2 Obs. Hole # ____

☒ Depth to soil redoximorphic features — 40 inches — ____ inches

☐ Depth to observed standing water in observation hole — ____ inches — ____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — ____ inches — ____ inches

____ Index Well Number ____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occuring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

c. If no, at what depth was impervious material observed? Upper boundary: ____ Inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

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

## 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.

| | |
|---|---|
| A. Wimmer | 10/6/2022 |
| Signature of Soil Evaluator | Date |
| Anna Wimmer - SE14615 | 5/1/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green - SE14374 | Scituate Board of Health |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

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

## A. Facility Information

Salt Meadow Development / Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-D / 41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey

Web Soil Survey
Source

427B - Newfields FSL
Soil Map Unit

Newfields Fine Sandy Loam
Soil Series

Moraines, till plains, Hills
Landform

Shallow to Groundwater, shallow to Restrictive layer
Soil Limitations

Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout
Soil Parent material

3. Surficial Geological Report

2018 - Stone, Stone, Diagiacomo
Year Published/Source

Thin till
Map Unit

Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ____________
Wetland Type

7. Current Water Resource Conditions (USGS): 10/6/2022 Range: ☐ Above Normal ☒ Normal ☐ Below Normal
Month/Day/ Year

8. Other references reviewed: ~~420130~~ USGS 420316070433501 - MA-D4W 79R DUXBURY
(Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** CH-3 3 (Hole #) 10/6/2022 (Date) 11:00 Am (Time) Partly Cloudy (Weather) ______ (Latitude) ______ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Understory, shrubs (Vegetation) Some cobbles (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 0-3% (Slope (%))

Description of Location: Wooded area about 30' off a dirt road

2. Soil Parent Material: LOOSE TILL MORAINE (Landform) Back slope / Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >50 feet Drainage Way >50 feet Wetlands >50 feet

Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features Depth | Redoximorphic Features Color | Redoximorphic Features Percent | Coarse Fragments % by Volume Gravel | Coarse Fragments % by Volume Cobbles & Stones | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-6 | Ap | SL | 10YR 3/2 | — | Cnc: —<br>Dpl: — | — | 5 | — | GR ~~M~~ | F | — |
| 6-34 | Bw | SL | 10YR 4/4 | 28 | Cnc: 7.5YR 4/6<br>Dpl: 2.5Y 4/4 | 30% | — | — | M | F | — |
| 34-65 | C1 | GSL | 2.5Y 5/4 | — | Cnc: —<br>Dpl: — | — | — | — | M | F | — |
| 65-114 | C2 | LS | 2.5Y 5/4 | — | Cnc: —<br>Dpl: — | — | — | — | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

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 (Choose one): Obs. Hole # CH-3-3 Obs. Hole # _____

☒ Depth to soil redoximorphic features — 28 inches — _____ inches

☐ Depth to observed standing water in observation hole — _____ inches — _____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) — _____ inches — _____ inches

_____________ Index Well Number _____________ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of

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

## 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.

| | |
|---|---|
| A Wimmer | 10/6/2022 |
| Signature of Soil Evaluator | Date |
| Anna Wimmer - SE14615 | 5/1/2025 |
| Typed or Printed Name of Soil Evaluator / License # | Expiration Date of License |
| Joshua Green - SE14374 | Scituate Board of Health |
| Name of Approving Authority Witness | Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

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

## A. Facility Information

Salt Meadow Development / Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-D / 41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey
   Web Soil Survey — Source
   427B - Newfields FSL — Soil Map Unit
   Newfields Fine Sandy Loam — Soil Series
   Moraines, till plains, Hills — Landform
   Shallow to Groundwater, Shallow to Restrictive layer — Soil Limitations
   Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout — Soil Parent material

3. Surficial Geological Report
   2018 - Stone, Stone, DiGiacomo — Year Published/Source
   Thin till — Map Unit
   Non-sorted, non-stratified matrix of sand, some silt and little clay containing scattered pebble, cobble and boulder deposits — Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ________ Wetland Type

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS ~~420130~~ 420316070433501 - MA-D4W 79 R DUXBURY
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit-22 (Hole #) 10/6/2022 (Date) 11:30Am (Time) Partly Cloudy (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) understory, shrubs, Logs (Vegetation) ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 0-3% (Slope (%))

Description of Location: Approx. 100-150' to the west of the house/100' off Road

2. Soil Parent Material: Loose Till Moraines (Landform) Back slope/Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >150 feet Drainage Way >50 feet Wetlands >50 feet

Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 126 Depth to Weeping in Hole N/A Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | Ap | LS | 10YR2/2 | — | Cnc: —<br>Dpl: — | — | — | — | M | F | — |
| 12-36 | Bw | LS | 10YR5/6 | — | Cnc: —<br>Dpl: — | — | 5 | — | M | F | — |
| 36-70 | C1 | LS | 10YR4/3 | 36 | Cnc: 7.5YR4/4<br>Dpl: 2.5Y7/2 | 30% | 10 | 5 | M | F | — |
| 70-128 | C2 | SL | 10YR4/3 | — | Cnc: —<br>Dpl: — | — | 10 | 5 | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

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 (Choose one): Obs. Hole # Unit ·22 Obs. Hole # ____

☒ Depth to soil redoximorphic features 36 inches ____ inches

☐ Depth to observed standing water in observation hole ____ inches ____ inches

☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) ____ inches ____ inches

________________ Index Well Number ________________ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

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

## 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.

A Wimmer
Signature of Soil Evaluator

10/6/2022
Date

Anna Wimmer - SE14615
Typed or Printed Name of Soil Evaluator / License #

5/1/2025
Expiration Date of License

Joshua Green - SE14374
Name of Approving Authority Witness

Scituate Board of Health
Approving Authority

**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.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

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

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-0/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey
   Web Soil Survey — Source
   427B-Newfields FSL — Soil Map Unit
   Newfields Fine Sandy Loam — Soil Series
   Moraines, till plains, Hills — Landform
   Shallow to Groundwater, Shallow to Restrictive layer — Soil Limitations
   Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout — Soil Parent material

3. Surficial Geological Report
   2018 - Stone, Stone, Diagiacomo — Year Published/Source
   Thin till — Map Unit
   Non-sorted, non-stratified matrix of Sand, some silt and little clay containing scattered pebble, cobble and boulder deposits — Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ______ Wetland Type

7. Current Water Resource Conditions (USGS): 10/6/2022 Month/Day/ Year — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: USGS ~~420130~~ 420316070433501 - MA-D4W 79R DUXBURY
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of

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

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: UNIT-21 (Hole #) 10/6/2022 (Date) 11:50AM (Time) Partly Cloudy (Weather) ______ (Latitude) ______ (Longitude)

1. Land Use Woodland (e.g., woodland, agricultural field, vacant lot, etc.) Understory, Shrubs (Vegetation) Some cobbles (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

Description of Location: Approx 150' West of house, 150' off Road

2. Soil Parent Material: Loose Till Moraines (Landform) Back slope/plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >50 feet Drainage Way >50 feet Wetlands >50 feet

Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 108 Depth to Weeping in Hole 112 Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-16 | Ap | SL | 7.5YR 2.5/3 | — | Cnc: — Dpl: — | — | — | — | M | F | — |
| 16-48 | Bw | LS | 10YR 5/6 | — | Cnc: — Dpl: — | — | 10 | — | M | F | — |
| 48-120 | C | GLS | 2.5Y 6/4 | 48 | Cnc: 7.5YR 4/5 Dpl: 2.5Y 6/2 | 50% | — | 5 | M | F | — |
| | | | | | Cnc: Dpl: | | | | | | |
| | | | | | Cnc: Dpl: | | | | | | |
| | | | | | Cnc: Dpl: | | | | | | |

Additional Notes:

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 (Choose one):

| | Obs. Hole # UNIT-21 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 48 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number    _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

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

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of

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

## 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.

| | |
|---|---|
| A Wimmer<br>Signature of Soil Evaluator | 10/6/2022<br>Date |
| Anna Wimmer - SE14615<br>Typed or Printed Name of Soil Evaluator / License # | 5/1/2025<br>Expiration Date of License |
| Joshua Green - SE14374<br>Name of Approving Authority Witness | Scituate Board of Health<br>Approving Authority |

**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.

**Field Diagrams:** Use this area for field diagrams:

**Form 12 - PERCOLATION TEST**
**Location, Address, or Lot #** 279-281 Old Oaken Bucket Rd. Scituate, MA

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 10-6-2022 | Time: 12:24PM |

| | | |
|---|---|---|
| Observation Hole # | T.P. septic 3 | |
| Depth of Perc. | 60+18” | |
| Start Pre-Soak | 12:24 | |
| End Pre-Soak | 12:39 | |
| Time at 12” | 12:39 | |
| Time at 9” | 1:37 | |
| Time at 6” | 3:25 | |
| Time (9” - 6”) | 108 | |
| Rate (Minutes/Inch) | 36 min/in | |

X Site Passed Site Failed

## Stormwater Management Regulations Standard #10:

## Illicit Discharge Compliance Statement

An illicit discharge is any discharge to a municipal separate storm sewer system (MS4) that is not comprised entirely of stormwater, discharges from fire-fighting activities, and certain non-designated non-stormwater discharges.

To the best of my knowledge, no detectable illicit discharge exists on site. The Comprehensive Permit plans included with this report detail the storm sewers that convey stormwater on the site and demonstrate that these systems do not include the entry on and illicit discharge. An Operations and Maintenance Plan is also included along with the Long Term Pollution Prevention Plan that outlines measures to prevent future illicit discharges. As the Site Owner, I will be responsible for implementing the Long Term Pollution Prevention Plan.

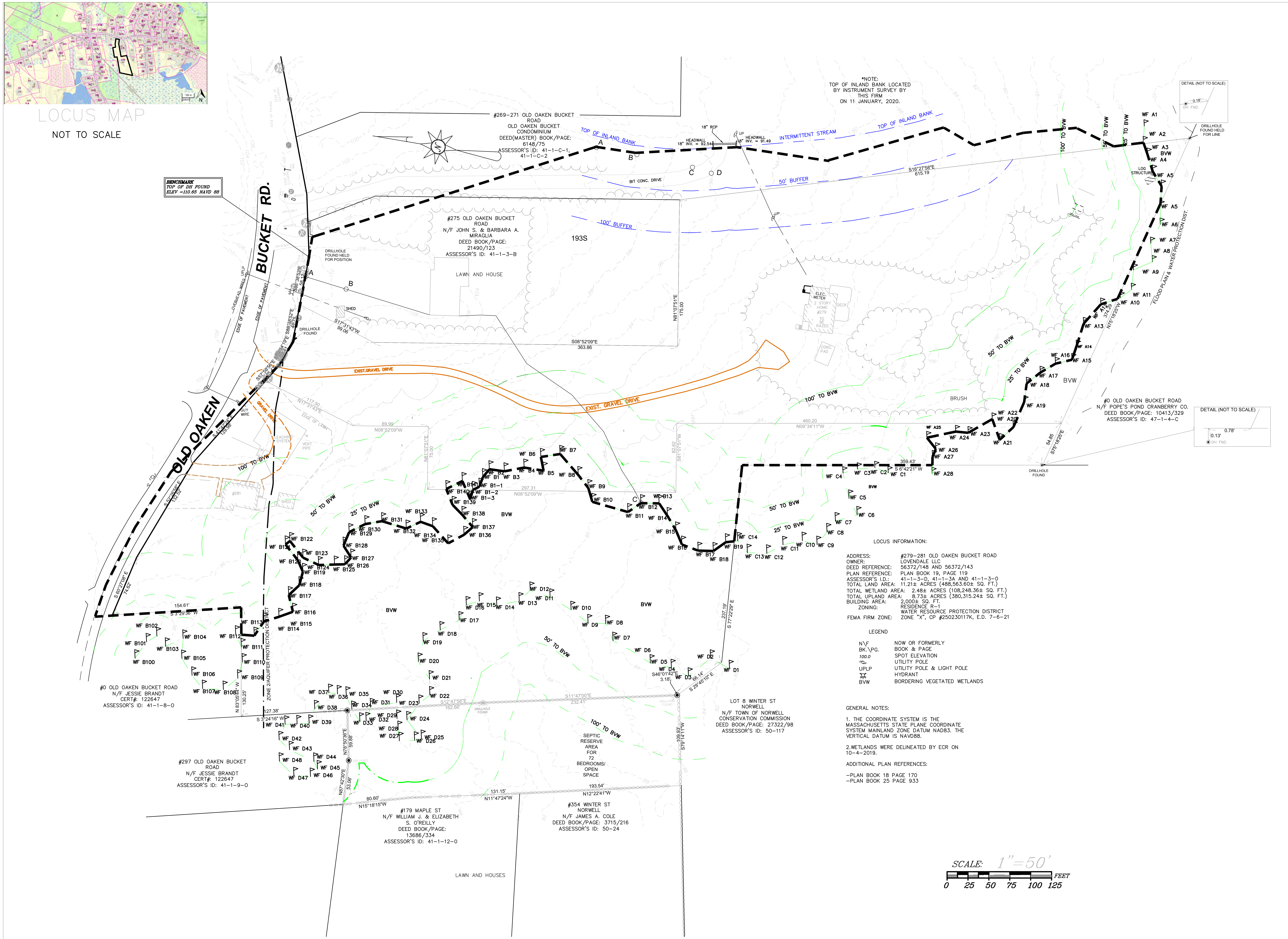
**Name:** ______________________________

**Company:** Lovendale, LLC

**Title:** ______________________________

**Signature:** ______________________________

**Date:** ______________________________




LOCUS INFORMATION:

| | |
|---|---|
| ADDRESS: | #279–281 OLD OAKEN BUCKET ROAD |
| OWNER: | LOVENDALE LLC |
| DEED REFERENCE: | 56372/148 AND 56372/143 |
| PLAN REFERENCE: | PLAN BOOK 19, PAGE 119 |
| ASSESSOR'S I.D.: | 41–1–3–D, 41–1–3A AND 41–1–3–0 |
| TOTAL LAND AREA: | 11.21± ACRES (488,563.60± SQ. FT.) |
| TOTAL WETLAND AREA: | 2.48± ACRES (108,248.36± SQ. FT.) |
| TOTAL UPLAND AREA: | 8.73± ACRES (380,315.24± SQ. FT.) |
| BUILDING AREA: | 2,000± SQ. FT. |
| ZONING: | RESIDENCE R–1<br>WATER RESOURCE PROTECTION DISTRICT |
| FEMA FIRM ZONE: | ZONE "X", CP #250230117K, E.D. 7–6–21 |

LEGEND

| | |
|---|---|
| N\F | NOW OR FORMERLY |
| BK.\PG. | BOOK & PAGE |
| *100.0* | SPOT ELEVATION |
| | UTILITY POLE |
| UPLP | UTILITY POLE & LIGHT POLE |
| | HYDRANT |
| BVW | BORDERING VEGETATED WETLANDS |

GENERAL NOTES:

1. THE COORDINATE SYSTEM IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM MAINLAND ZONE DATUM NAD83. THE VERTICAL DATUM IS NAVD88.

2.WETLANDS WERE DELINEATED BY ECR ON 10–4–2019.

ADDITIONAL PLAN REFERENCES:

–PLAN BOOK 18 PAGE 170
–PLAN BOOK 25 PAGE 933

REVISIONS:

| No. | DESCRIPTION | DATE |
|---|---|---|

PROJECT TITLE:

COMMONWEALTH OF MASSACHUSETTS
ANTHONY A. ESPOSITO
CIVIL
No. 39782
REGISTERED PROFESSIONAL ENGINEER

2/15/2023

**THE COTTAGES AT OLD OAKEN BUCKET AT #279-281 OLD OAKEN BUCKET ROAD SCITUATE, MA**

**PRE-DEVELOPMENT DRAINAGE PLAN**

PARCEL 41–1–3–D
PARCEL 41–1–3–0

PREPARED BY:

South Shore Survey Consultants, Inc.
REGISTERED LAND SURVEYORS & CIVIL ENGINEERS
167 R SUMMER STREET
KINGSTON, MA 02364
781–582–2185
mark@ssscinc.net

PREPARED FOR:

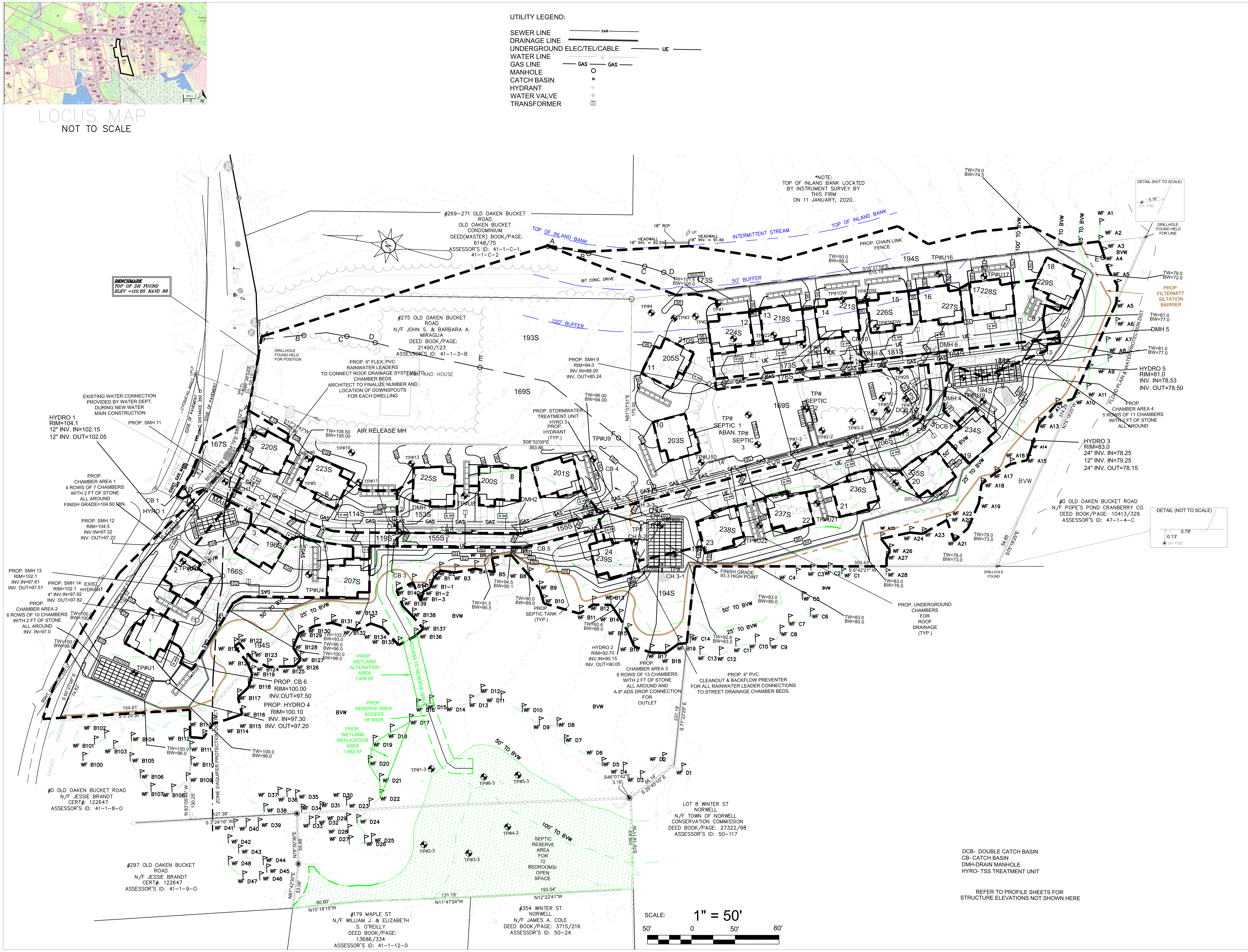
*LOVENDALE, LLC*
*107 EAST. ST.*
*DUXBURY, MA 02332*

SCALE: 1" = 50'
50 0 50 100

DATE: FEBRUARY 16, 2023
COMP./DESIGN: A. ESPOSITO
CHECK: M. D. CASEY
DRAWN: A. ESPOSITO
FIELD: LJL/PS
APPROVED: M. D. CASEY
DWG.No. 1908 PRED
JOB No. 1908
SHEET 1 OF 2

UTILITY LEGEND:

SEWER LINE
DRAINAGE LINE
UNDERGROUND ELEC/TEL/CABLE
WATER LINE
GAS LINE
MANHOLE
CATCH BASIN
HYDRANT
WATER VALVE
TRANSFORMER




DCB- DOUBLE CATCH BASIN
CB- CATCH BASIN
DMH-DRAIN MANHOLE
HYRO- TSS TREATMENT UNIT

REFER TO PROFILE SHEETS FOR STRUCTURE ELEVATIONS NOT SHOWN HERE

SCALE: 1" = 50'
50' 0 50' 80'

| REVISIONS: No. | DESCRIPTION | DATE |
|---|---|---|
| | | |

PROJECT TITLE:

COMMONWEALTH OF MASSACHUSETTS
ANTHONY A. ESPOSITO
CIVIL
No. 39782
REGISTERED PROFESSIONAL ENGINEER

2/15/2023

# THE COTTAGES AT OLD OAKEN BUCKET AT #279-281 OLD OAKEN BUCKET ROAD SCITUATE, MA

## POST-DEVELOPMENT DRAINAGE PLAN

PARCEL 41-1-3-D
PARCEL 41-1-3-0

PREPARED BY:


South Shore Survey Consultants, Inc.
REGISTERED LAND SURVEYORS & CIVIL ENGINEERS
167 R SUMMER STREET
KINGSTON, MA 02364
781-582-2185
mark@ssscinc.net


PREPARED FOR:

*THE LOVENDALE COMPANY, LLC*
*114 ONION HILL ROAD*
*DUXBURY, MA 02332*

SCALE: 1" = 50'
50' 0 50' 80'

DATE: FEBRUARY 16, 2023
COMP./DESIGN: A. ESPOSITO
CHECK: M. D. CASEY
DRAWN: A. ESPOSITO
FIELD: LJL/PS
APPROVED: M. D. CASEY
DWG.No. 1908 POST
JOB No. 1908
SHEET 2 OF 2