Soil Erosion and Sediment Control Plan

For:

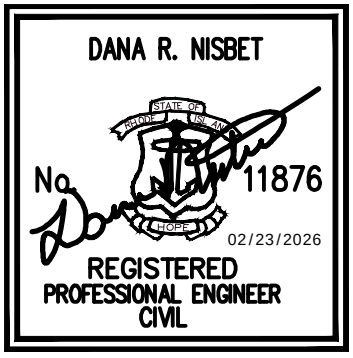
Dunkin' Development

Plainfield Pike

Cranston, RI, 02921

AP 36-2 Lots 99 & 169

Owner:	Mineral Enterprises, Inc. David Petrosinelli 383 Smithfield Avenue Pawtucket, RI 02860 dpetro20@gmail.com
Operator: *TO BE DETERMINED UPON CONTRACT AWARD*	Company Name Name Address City, State, Zip Code Telephone Number Email Address
Estimated Project Dates:	Start Date: Summer 2026 Completion Date: TBD
SESC Plan Prepared By:	DiPrete Engineering Dana Nisbet, PE 2 Stafford Court Cranston, Rhode Island 02920 (401) 943-1000 dnisbet@diprete-eng.com Professional Engineer RI PE 11876
SESC Plan Preparation Date:	02/23/2026
SESC Plan Revision Date:	



OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I am aware that it is the responsibility of the site owner and operator to implement and amend the Soil Erosion and Sediment Control Plan as appropriate in accordance with the requirements of the RIPDES Construction General Permit.

_____

Owner Signature: Date

Owner Name: Name

Owner Title: Title

Company Name: Company Name (if applicable)

Address: Mailing Address

Phone Number: Phone Number

Email Address: Email

OPERATOR CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

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_____

Operator Signature: Date

Contractor Representative:

Contractor Title:

Contractor Company Name:

Address:

Phone Number:

Email Address:

Contractor must fill out this section and sign after the contract is awarded and before any construction begins.

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INTRODUCTION

This Construction Site Soil Erosion and Sediment Control Plan (SESC Plan) has been prepared for Mineral Enterprises, Inc. for the Dunkin' Development in Cranston, RI. In accordance with the RIDEM Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge Associated with Construction Activity (RIPDES Construction General Permit ("CGP")), projects that disturb one (1) or more acres require the preparation of a SESC Plan. This SESC Plan provides guidance for complying with the terms and conditions of the RIPDES Construction General Permit and Minimum Standard 10 of the RI Stormwater Design and Installation Standards Manual. In addition, this SESC Plan is also consistent with Part D of the *RI SESC Handbook* entitled "Soil Erosion and Sediment Control Plans". This document does not negate or eliminate the need to understand and adhere to all applicable RIPDES regulations.

The purpose of erosion, runoff, and sedimentation control measures is to prevent pollutants from leaving the construction site and entering waterways or environmentally sensitive areas during and after construction. This SESC Plan has been prepared prior to the initiation of construction activities to address anticipated worksite conditions. The control measures depicted on the site plan and described in this narrative should be considered the minimum measures required to control erosion, sedimentation, and stormwater runoff at the site. Since construction is a dynamic process with changing site conditions, it is the operator's responsibility to manage the site during each construction phase so as to prevent pollutants from leaving the site. This may require the operator to revise and amend the SESC Plan during construction to address varying site and/or weather conditions, such as by adding or realigning erosion or sediment controls to ensure the SESC Plan remains compliant with the RIPDES Construction General Permit. Records of these changes must be added to the amendment log attached to the SESC Plan, and to the site plans as "red-lined" drawings. Please Note: **Even if practices are correctly installed on a site according to the approved plan, the site is only in compliance when erosion, runoff, and sedimentation are effectively controlled throughout the entire site.**

It is the responsibility of the site owner and the site operator to maintain the SESC Plan at the site, including all attachments, amendments and inspection records, and to make all records available for inspection by RIDEM during and after construction. (RIPDES CGP - Part III.G)

The site owner, the site operator, and the designated site inspector are required to review the SESC Plan and sign the Party Certification pages (Section 8). The primary contractor (if different) and all subcontractors (if applicable) involved in earthwork or exterior construction activities are also required to review the SESC Plan and sign the certification pages before construction begins.

Any questions regarding the SESC Plan, control measures, inspection requirements, or any other facet of this document may be addressed to the RIDEM Office of Water Resources, at 401-222-4700 or via email: water@dem.ri.gov.

ADDITIONAL RESOURCES

Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908-5767
phone: 401-222-4700
email: water@dem.ri.gov

RIDEM *RI Stormwater Design and Installation Standards Manual* (RISDISM) (as amended)
https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/regs/regs/water/swmanual15.pdf

RI Soil Erosion and Sediment Control Handbook
https://dem.ri.gov/sites/g/files/xkgbur861/files/programs/bnatres/water/pdf/riesc-handbook16.pdf

RIDEM 2020 RIPDES Construction General Permit
https://dem.ri.gov/sites/g/files/xkgbur861/files/programs/benviron/water/permits/ripdes/pdfs/cgp092620.pdf

Rhode Island Department of Transportation *Standard Specifications for Road and Bridge Design and Other Specifications* and *Standard Details*
http://www.dot.ri.gov/business/bluebook.php

RIDEM RIPDES & Office of Water Resources website
https://dem.ri.gov/environmental-protection-bureau/water-resources/permitting/stormwater-permitting/construction

RIDEM Water Quality website (for 303(d) and TMDL listings)
https://dem.ri.gov/programs/water/publications/303d.php

RIDEM Rhode Island Natural Heritage Program
http://www.dem.ri.gov/programs/bpoladm/plandev/heritage/index.htm

RIDEM Geographic Data Viewer – Environmental Resource Map
http://www.dem.ri.gov/maps/index.php

Natural Resources Conservation Service - Rhode Island Soil Survey Program
http://www.ri.nrcs.usda.gov/technical/soils.html

EPA NPDES – Stormwater Discharges from Construction Activities webpage:
http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Discharges-From-Construction-Activities.cfm

EPA Construction Site Stormwater Runoff Control BMP Menu
http://water.epa.gov/polwaste/npdes/swbmp/Construction-Site-Stormwater-Run-Off-Control.cfm

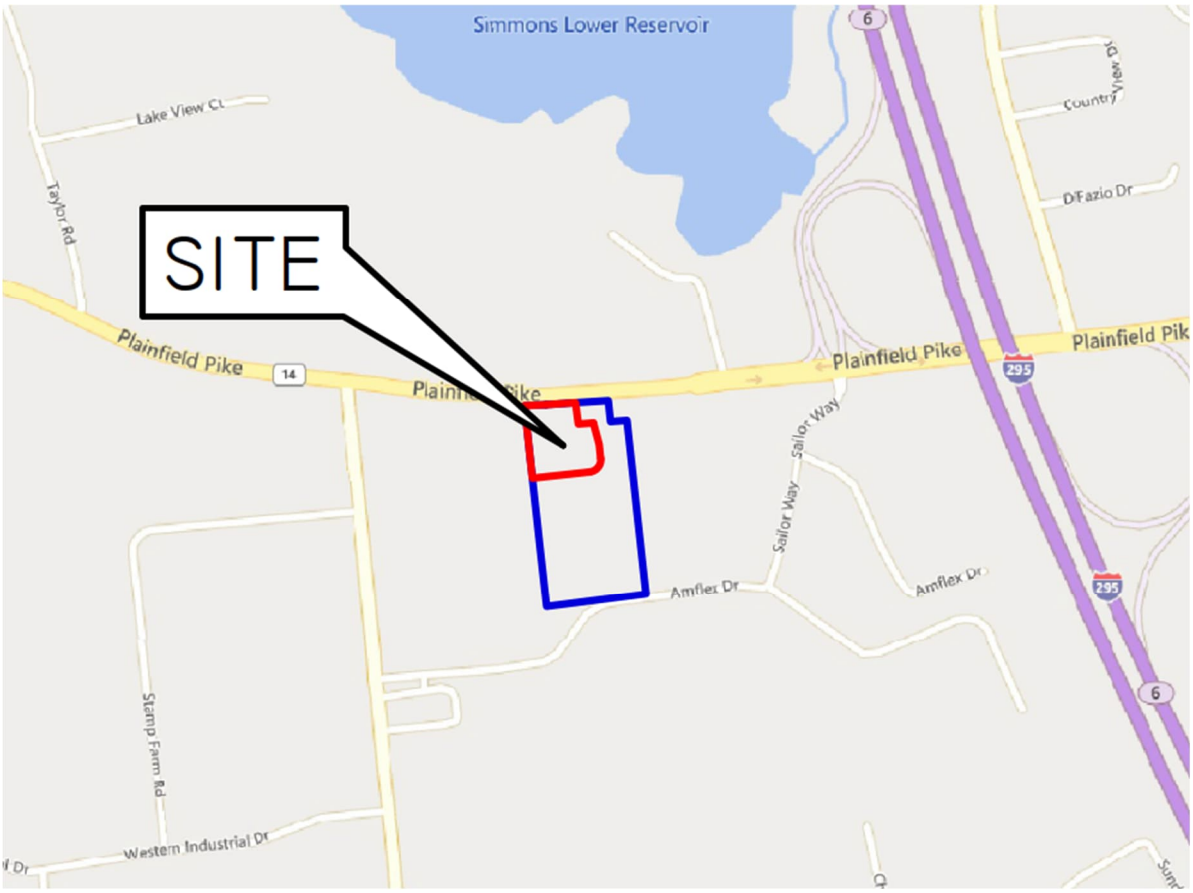
SECTION 1: SITE DESCRIPTION

1.1 Project/Site Information

Dunkin' Development:

- Located on Plainfield Pike in the City of Cranston
- Total Area of the site is 1.91±
- The proposed development includes construction of a new commercial building with multiple units for restaurants and retail use, utilities and associated parking.

Location Map:



The following are estimates of the construction site area:

- Total Project Area 1.98± acres
- Total Project Area to be Disturbed 1.98± acres

1.2 Receiving Waters

RIPDES CGP - Parts IV.A.7 & IV.A.8

List/describe of separate storm sewer systems or drainage systems that may be impacted during construction:

- Plainfield Pike, RIDOT Drainage Network

List/description of receiving waters that may be impacted during construction:

- Simmons Reservoir (Waterbody ID: RI0006018L-03)

Are any of the receiving waters in the vicinity of the proposed construction project listed as being impaired or subject to a TMDL?

☒ Yes ☐ No

If yes, List/provide description of 303(d)/TMDL waters and applicable TMDL requirements that must be addressed during construction:

- *Simmons Reservoir (Phosphorus, Turbidity, Total). No TMDLs.*

1.3 Natural Heritage Area Information

RIPDES CGP - Part III.H

Are there any Natural Heritage Areas being disturbed by the construction activity or will discharges be directed to the Natural Heritage Area as a result of the construction activity?

☐ Yes ☒ No

If yes, describe or refer to documentation which determines the likelihood of an impact on this area and the steps that will be taken to address any impacts.

- N/A

1.4 Historic Preservation/Cultural Resources

Are there any historic properties, historic cemeteries or cultural resources on or near the construction site?

☐ Yes ☒ No

Describe how this determination was made and summarize state or tribal review comments:

- City of Cranston GIS map

If yes, describe or refer to documentation which determines the likelihood of an impact on this historic property, historic cemetery or cultural resource and the steps taken to address that impact including any conditions or mitigation measures that were approved by other parties.

- N/A

1.5 Site Features and Constraints

List All Site Constraints and Sensitive Areas that require avoidance and protection through the implementation of control measures:

- High groundwater table is various places.
- No sensitive areas have been encountered on site.
- See Erosion Control Plan in the latest plan set prepared by DiPrete Engineering

SECTION 2: EROSION, RUNOFF, AND SEDIMENT CONTROL

RIPDES Construction General Permit – Part III.J.1

The purpose of erosion controls is to prevent sediment from being detached and moved by wind or the action of raindrop, sheet, rill, gully, and channel erosion. Properly installed and maintained erosion controls are the primary defense against sediment pollution.

Runoff controls are used to slow the velocity of concentrated water flows. By intercepting and diverting stormwater runoff to a stabilized outlet or treatment practice or by converting concentrated flows to sheet flow erosion and sedimentation are reduced.

Sediment controls are the last line of defense against moving sediment. The purpose is to prevent sediment from leaving the construction site and entering environmentally sensitive areas.

This section describes the set of control measures that will be installed before and during the construction project to avoid, mitigate, and reduce impacts associated with construction activity. Specific control measures and their applicability are contained in Section Four: Erosion Control Measures, Section Five: Runoff Control Measures, and Section Six: Sediment Control Measures of the *RI SESC Handbook*. The *RI SESC Handbook* can be found at the following address:

http://www.dem.ri.gov/soilerosion2014final.pdf.

2.1 Avoid and Protect Sensitive Areas and Natural Features

Per RI Stormwater Design and Installation Standards Manual 3.3.7.1:

Areas of existing and remaining vegetation and areas that are to be protected as identified in Section 1.5 of the SESC Plan must be clearly identified on the SESC Site Plans for each Phase of Construction. Prior to any land disturbance activities commencing on the site, the Contractor shall physically mark limits of disturbance (LOD) on the site and any areas to be protected within the site, so that workers can clearly identify the areas to be protected.

Feature Requiring Protection	Construction Phase #	Method of Protection	Sheet #
Infiltration BMPs	All Phases	Silt Fence	See SESC Plan
Down gradient undisturbed Areas	All Phases	Straw Wattle	See SESC Plan
Upgradient Undisturbed Areas	All Phases	Construction Fence	See SESC Plan
Catch Basins	All Phases	Silt Sack	See SESC Plan

2.2 Minimize Area of Disturbance

Per RI Stormwater Design and Installation Standards Manual 3.3.7.2:

Will >5 acres be disturbed in order to complete this project?

☐ Yes ☒ No

Will <5 acres be disturbed or will disturbance activities be completed within a six (6) month window?

☒ Yes ☐ No

Based on the answers to the above questions will phasing be required for this project?

☐ Yes ☒ No

Based on the information above, phasing is not required for this project. The development is proposed to be constructed in one phase.

Below is a description of the Construction Sequencing for the full project:

1. Contractor is responsible for Soil Erosion and Sediment Control (SESC) on site. Sequence of construction provided may be modified as field conditions warrant with prior approval from the Owner or their representative.

2. Construction to begin in the Summer 2026 or upon receipt of all necessary approvals.

3. Survey and stake limit of sedimentation barriers/limit of disturbance.

4. Place perimeter erosion control barriers as shown on the plans along Limit of disturbance. In no case is the limit of disturbance to extend beyond the sedimentation barriers.

5. Topsoil is to be stripped and stockpiled in approved locations. Stockpiles are to be protected by a row of silt fence and covered or temporarily seeded.

6. Install temporary drainage swales and temporary sedimentation ponds per site plans. All temporary control devices shall be installed per the Rhode Island Soil Erosion and Sedimentation Control Handbook. Erosion control blankets shall be used as necessary to stabilize the swales in steep slope areas. Check Dams installed as necessary to detain stormwater and prevent erosion.

7. Survey and stake drain lines, water lines, sewer lines and roadway centerline. Survey drainage BMPs and protect infiltration practices from runoff and construction vehicle traffic. Protect infiltration BMPs by installing erosion control devices around BMPs if possibility of runoff exists. If no stormwater can flow to BMP install construction fencing to prevent compaction of BMP area by construction traffic.

8. Rough grade the lot. Once rough grade on the lot has been established, disturbed areas shall be stabilized with hydroseeding or approved equal. Erosion control blankets shall be installed as necessary to stabilize soil and promote vegetation.

9. Install drain piping, drainage manholes and catch basins beginning at the lowest point and working up gradient. Install inlet protection on catch basins. Protect discharge outlets with rip-rap aprons. Place erosion controls at the discharge points. Install water, sewer, electric, telephone, cable, and gas in accordance with the approved final construction plans.

10. Place compacted gravel foundation and rough grade the pavement areas in accordance with the site plans and in accordance with the geotechnical requirements.

11. Place bituminous asphalt binder per site plans and in accordance with the geotechnical requirements.

12. Stabilize areas outside of pavement areas.

13. Sweep/vacuum the pavement areas to remove all sediments. Flush drainage structures and pipes.

14. Install the underground detention system, sediment forebays and infiltration pond.

15. Remove sediments from sedimentation ponds, excavate and construct ponds per design plans.

16. Finish permanent stabilization of grass areas. Sediments shall be removed from site and disposed of properly.

17. The drainage system may be brought online once all tributary area has been stabilized.

18. Begin construction of the building foundation and structure. Contractor shall limit disturbed areas to the maximum extent practicable during building construction.

19. Finalize permanent stabilization around building.

20. Remove excess sediments from within pavement areas.

21. Repair drainage outlets and BMPs as required. Tree limbs, leaves, cobbles, boulders, etc. shall be removed from the bottom of the BMPs before the application of topsoil. Install plantings per the Landscape Plans.

22. Remove all temporary soil erosion and sedimentation control measures following final vegetative establishment of all disturbed areas.

23. Prior to activation of all utilities (water, sewer, and storm), the design engineer and the appropriate utility company shall be notified at least 48 hours in advance to schedule final inspection.

2.3 Minimize the Disturbance of Steep Slopes

Per RI Stormwater Design and Installation Standards Manual 3.3.7.3:

Are steep slopes (>15%) present within the proposed project area?

☒ Yes ☐ No

Steep slopes are shown and hatched on the grading drawings. Steeps slopes shall be stabilized with erosion control blankets rip rap or approved equal. Alternatively, boulder retaining walls are used as necessary to eliminate/reduce steep slopes.

2.4 Preserve Topsoil

Per RI Stormwater Design and Installation Standards Manual 3.3.7.4:

Site owners and operators must preserve existing topsoil on the construction site to the maximum extent feasible and as necessary to support healthy vegetation, promote soil stabilization, and increase stormwater infiltration rates in the post-construction phase of the project.

Will existing topsoil be preserved at the site?

☒ Yes ☐ No

The site operator shall strip topsoil in proposed project limit of disturbance areas. Topsoil shall be stockpiled in the location specified on the SESC plan. Stockpile areas shall be surrounded by silt fence or approved erosion control measures to prevent migration of soils during rain events. Upon project completion, the site operation shall redistribute topsoil over disturbed areas ensuring at minimum a 4" layer is provided over all disturbed areas. Additional material shall be brought on site should the need arise. Final topsoil areas have been shown on the site plans as landscape areas. Topsoil should be screened and free of weeds, sticks, and stones over ¾" in size and otherwise complying with section M.18.01 of the RIDOT Standard Specifications for Road and Bridge Construction. Contractor shall follow recommendations provided by the landscape plans and the Landscape Architect.

Soil compaction must be minimized by maintaining limits of disturbance throughout construction. In instances where site soils are compacted the site owner and operator must restore infiltration capacity of the compacted soils by tilling or scarifying compacted soils and amending soils as necessary to ensure a minimum depth of topsoil is available in these areas. In areas where infiltrating stormwater treatment practices are located compacted soils must be amended such that they will comply with the design infiltration rates established in the *RI Stormwater Design and Installation Standards Manual*.

In areas of where over compaction has been compromised the natural infiltration rate of onsite soils, the contractor shall scarify or till these areas to restore them to their natural state. Areas prone to over compaction are paths proposed to be used by construction equipment and construction equipment storage areas. Construction equipment storage areas are shown on the SESC Plan.

2.5 Stabilize Soils

Per RI Stormwater Design and Installation Standards Manual 3.3.7.5:

Upon completion and acceptance of site preparation and initial installation of erosion, runoff, and sediment controls and temporary pollution prevention measures, the operator shall initiate appropriate temporary or permanent stabilization practices during all phases of construction on all disturbed areas as soon as possible, but not more than fourteen (14) days after the construction activity in that area has temporarily or permanently ceased.

Any disturbed areas that will not have active construction activity occurring within 14 days must be stabilized using the control measures depicted in the SESC Site Plans, in accordance with the *RI SESC Handbook*, and per manufacturer product specifications.

Only areas that can be reasonably expected to have active construction work being performed within 14 days of disturbance will be cleared/grubbed at any one time. It is NOT acceptable to clear and grub the entire construction site if portions will not be active within the 14-day time frame. Proper phasing of clearing and grubbing activities shall include temporary stabilization techniques for areas cleared and grubbed that will not be active within the 14-day time frame.

All disturbed soils exposed prior to October 15 of any calendar year shall be seeded by that date if vegetative measures are the intended soil stabilization method. Any such areas that do not have adequate vegetative stabilization, as determined by the site operator or designated inspector, by November 15, must be stabilized through the use of non-vegetative erosion control measures. If work continues within any of these areas during the period from October 15 through April 15, care must be taken to ensure that only the area required for that day's work is exposed, and all erodible soil must be restabilized within 5 working days. In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed (i.e. construction of a motocross track).

- When construction activities have temporarily or permanently ceased, stabilization controls shall consist of one or more of the following:
    - Seeding with native vegetation
    - Straw or straw application, in the amount of 2 tons/acre (temporary only)
    - Fiber mulch or covering consisting of mat/fiber lining (temporary only)
- Dust control generation shall be controlled by one or more of the following:
    - Vegetative cover (see stabilization controls above)
    - Sprinkle site with water until surface is wet. Take care to not create runoff from excessive use of water. The general contractor shall have an on-site water vehicle for dust control.
    - Stone to stabilize construction roads
    - Calcium chloride (only with approval of the Design Engineer)

Temporary Vegetative Control Measures

- When construction activities have temporarily ceased, stabilization controls shall consist of one or more of the following:

    1. Hydro seeding
    2. Seeding with native vegetation

Temporary Non-Vegetative Control Measures

- When construction activities have temporarily ceased, stabilization controls shall consist of one or more of the following:

    1. Mulching
    2. Rolled Erosion control mats – Steep Slopes >15%
    3. Rolled Erosion control netting

Permanent Vegetative Control Measures

- When construction activities have permanently ceased, stabilization controls shall consist of one or more of the following:

    1. Hydro seeding
    2. Seeding with native vegetation
    3. Sodding

2.6 Protect Storm Drain Outlets

Per RI Stormwater Design and Installation Standards Manual 3.3.7.7:

Temporary or permanent outlet protection must be used to prevent scouring and erosion at discharge points through the protection of the soil surface, reduction in discharge velocities, and through the promotion of infiltration. Outlets often have high velocity, high volume flows, and require strong materials that will withstand the forces of stormwater. Storm drain outlet control measures also offer a last line of protection against sediment entering environmentally sensitive areas.

All stormwater outlets that may discharge sediment-laden stormwater flow from the construction site must be protected using the control practices depicted on the approved plan set and in accordance with the *RI SESC Handbook*.

Temporary control measures have been designed in accordance with the RI SESC Handbook. Following development completion/implementation of the permanent stormwater control measures, all stormwater will either be directed to the man-made ponds through the proposed storm drains that eventually drain into the wetland located on site or into the existing Drainage Network.

Will temporary or permanent point source discharges be generated at the site as the result of construction of sediment traps or basins, diversions, and conveyance channels?

☒ Yes ☐ No

Sediment traps will use point source discharges. Rip rap aprons have been provided where there is a chance of erosive velocities. Outfalls that do not require rip rap should be stabilized with vegetation. Temporary erosion control blankets may be used to promote vegetation and eliminate erosion during stabilization, if needed. During construction, drainage outfalls should include strawbales, silt fence, and or

straw wattle to reduce the chance of sediments entering the wetlands during construction. Once all tributary areas have been stabilized these measures can be removed.

2.7 Establish Temporary Controls for the Protection of Post-Construction Stormwater Treatment Practices

Per RI Stormwater Design and Installation Standards Manual 3.3.7.8:

Temporary measures shall be installed to protect permanent or long-term stormwater control and treatment measures as they are installed and throughout the construction phase of the project so that they will function properly when they are brought online.

- Storm drain outlets shall be protected during the entire duration of the project using ALL of the following:
    1. Staked strawbales or silt fence (RI Standards 9.1.0, 9.2.0 & 9.3.0) or straw wattles
    2. Flared end. See detail on SESC Site Plans.
    3. Rip rap apron. See detail on SESC Site Plans.

- Storm drain outlets shall be protected by using one or more of the following:
    1. Catch basin inserts such as silt sacks. Install according to manufacturer specifications.
    2. Sandbags
    3. Staked strawbales or silt fence (for unpaved areas ONLY – RI Standards 9.1.0, 9.2.0 & 9.3.0)
    4. Staked filter socks (for unpaved areas ONLY). Install according to manufacturer specifications.

Will long-term stormwater treatment practices be installed at the site?

☒ Yes ☐ No

Long term stormwater treatment practices, that will use infiltration, will be staked off throughout the construction phases. No construction vehicles shall enter these staked areas to avoid sedimentation and compaction. See the Erosion Control Plan prepared by DiPrete Engineering for locations of these areas.

2.8 Divert or Manage Run-on from Up-gradient Areas

Per RI Stormwater Design and Installation Standards Manual 3.3.7.10:

Is stormwater from off-site areas anticipated to flow onto the project area or onto areas where soils will be disturbed?

☒ Yes ☐ No

If Yes: Stormwater from off-site undisturbed areas will be swaled/diverted around the site construction**.** See the Erosion Control Plan prepared by DiPrete Engineering for locations of these diversions.

Structural control measures will be used to limit stormwater flow from coming onto the project area, and to divert and slow on-site stormwater flow that is expected to impact exposed soils for the purpose of minimizing erosion, runoff, and the discharge of pollutants from the site.

Control measures shall be installed as depicted on the approved plan set and in accordance with the *RI SESC Handbook* or the *RI Department of Transportation Standard Specifications for Road and Bridge Construction*.

Run-on and Run-off Management				
Construction Phase #	On-site or Off-site Run-on?	Control measure	Identified on Sheet #	Detail(s) is/are on Sheet #
1	Off - Site	Diversion Berm	SESC Plan	N/A

2.9 Retain Sediment Onsite through Structural and Non-Structural Practices

Per RI Stormwater Design and Installation Standards Manual 3.3.7.12:

Once the erosion control measures and the run-on diversions are identified and located on the plans, the next step to site planning is sediment control and sediment management. Sediment barriers, inlet protection, construction entrances, stockpile containment, temporary sediment traps must be integrated into the SESC Plan if applicable. Refer to the RI SESC Handbook Section Six: Sediment Control Measures for additional guidance.

Per RI Stormwater Design and Installation Standards Manual 3.3.7.9:

SEDIMENT BARRIERS must be installed along the perimeter areas of the site that will receive stormwater from disturbed areas. This also may include the use of sediment barriers along the contour of disturbed slopes to maintain sheet flow and minimize rill and gully erosion during construction. Installation and maintenance of sediment barriers must be completed in accordance with the maintenance requirements specified by the product manufacturer or the *RI SESC Handbook*.

Will sediment barriers be utilized at the toe of slopes and other downgradient areas subject to stormwater impacts and erosion during construction?

☒ Yes ☐ No

Sediment barriers will be used to protect stormwater from discharging onto adjacent properties, sensitive areas and proposed BMPs.

Will sediment barriers be utilized along the contour of slopes to maintain sheet flow and minimize rill and gully erosion during construction?

☒ Yes ☐ No

SEDIMENT BARRIERS			
Construction Phase #	Sediment Barrier Type	Sediment Barrier is Labeled on Sheet #	Detail is on Sheet #
All Phases	Filtrexx Sediment Control	SESC Plan	11 of 12

Per RI Stormwater Design and Installation Standards Manual 3.3.7.6:

INLET PROTECTION will be utilized to prevent soil and debris from entering storm drain inlets. These measures are usually temporary and are implemented before a site is disturbed. ALL stormwater inlets &/or catch basins that are operational during construction and have the potential to receive sediment-laden stormwater flow from the construction site must be protected using control measures outlined in the *RI SESC Handbook*.

For more information on inlet protection refer to the *RI SESC Handbook*, Inlet Protection control measure.

Maintenance

The operator must clean or remove and replace the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or as performance is compromised. Accumulated sediment adjacent to the inlet protection measures should be removed by the end of the same workday in which it is found or by the end of the following workday if removal by the same workday is not feasible.

Do inlets exist adjacent to or within the project area that require temporary protection?

☒ Yes ☐ No

Existing on-site and off-site drainage inlets must be protected during construction. Proposed drainage inlets shall be protected once installed to ensure sediments kept out of the drainage network. All inlet protections shall be maintained per the RI SESC handbook and manufacturers' recommendations.

The following lists the proposed storm drain inlet types selected from Section Six of the *RI SESC Handbook*. Each row is unique for each phase and inlet protection type.

INLET PROTECTION			
Construction Phase #	Inlet Protection Type	Inlet Protection is labeled on Sheet #	Detail(s) is/are on Sheet #
All Phases	Silt Sack	SESC Plan	11 of 12

CONSTRUCTION ENTRANCES will be used in conjunction with the stabilization of construction roads to reduce the amount of sediment tracking off the project. This project has avoided placing construction entrances on poorly drained soils where possible. Where poorly drained soils could not be eliminated, the detail includes subsurface drainage.

Any construction site access point must employ the control measures on the approved SESC site plans and in accordance with the *RI SESC Handbook*. Construction entrances shall be used in conjunction with the stabilization of construction roads to reduce the amount of mud picked up by construction vehicles. All construction access roads shall be constructed prior to any roadway accepting construction traffic.

The site owner and operator must:

1. Restrict vehicle use to properly designated exit points.

2. Use properly designed and constructed construction entrances at all points that exit onto paved roads so that sediment removal occurs prior to vehicle exit.

3. When and where necessary, use additional controls to remove sediment from vehicle tires prior to exit (i.e. wheel washing racks, rumble strips, and rattle plates).

4. Where sediment has been tracked out from the construction site onto the surface of off-site streets, other paved areas, and sidewalks, the deposited sediment must be removed by the end of the same workday in which the track out occurs. Track-out must be removed by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal.

Will construction entrances be utilized at the proposed construction site?

☒ Yes ☐ No

Construction entrances have been shown on the Erosion Control Plan prepared by DiPrete Engineering. Construction entrance shall be installed per RIDOT Standard 9.9.0 and maintained in accordance with the RI SESC handbook and RIDOT Standards.

STOCKPILE CONTAINMENT will be used onsite to minimize or eliminate the discharge of soil, topsoil, base material or rubble, from entering drainage systems or surface waters. All stockpiles must be located within the limit of disturbance, protected from run-on with the use of temporary sediment barriers and provided with cover or stabilization to avoid contact with precipitation and wind where and when practical.

Stockpile management consists of procedures and practices designed to minimize or eliminate the discharge of stockpiled material (soil, topsoil, base material, rubble) from entering drainage systems or surface waters.

For any stockpiles or land clearing debris composed, in whole or in part, of sediment or soil, you must comply with the following requirements:

1. Locate piles within the designated limits of disturbance.

2. Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier.

3. Where practicable, provide cover or appropriate temporary vegetative or structural stabilization to avoid direct contact with precipitation or to minimize sediment discharge.

4. NEVER hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or surface water.

5. To the maximum extent practicable, contain and securely protect from wind.

STOCKPILE CONTAINMENT				
Construction Phase #	Run-on measures necessary? (yes/no)	Stabilization or Cover Type	Stockpile Containment Measure	Sheet #
All Phases	No	Top and Sub-Soil piles should be covered or vegetated	Silt Fence	SESC Plan

CONSTRUCTED SEDIMENT STRUCTURES

TEMPORARY SEDIMENT TRAPS will be utilized onsite. There will be no disturbed drainage areas greater than one acre that will be exposed for longer than six months. Design and sizing calculations in accordance with the *RI SESC Handbook*, Section Six are found in Appendix H of this SESC Plan. A summary of the calculations is provided below:

Are temporary sediment traps required at the site?

☒ Yes ☐ No

The trap will be functional and installed prior to disturbance in the contributing drainage area. Access for sediment removal is provided on the plans with cleanout depth requirements. The removed sediment will be utilized onsite or disposed of properly off-site. See Appendix H for sediment trap design calculations.

Are temporary sediment basins required at the site?

☐ Yes ☒ No

Tributary area is less than 5 acres.

2.10 Properly Design Constructed Stormwater Conveyance Channels

Are temporary stormwater conveyance practices required in order to properly manage runoff within the proposed construction project?

☒ Yes ☐ No

Temporary swales have been shown on the Erosion Control Plan prepared by DiPrete Engineering. Swales have been designed to handle the 10-year storm and be non-erosive. Flows within the swales do not exceed 1.5 ft/s and will be grassed

The conveyance will be maintained as depicted on SESC Site Plans and in accordance with the *RI SESC Handbook* and if applicable.

2.11 Erosion, Runoff, and Sediment Control Measure List

It is expected that this table and corresponding Inspection Reports will be amended as needed throughout the construction project as control measures are added or modified.

Phase No. #		
Location/Station	**Control Measure Description/Reference**	**Maintenance Requirement**
Down gradient Limit of disturbance Silt Fence	Straw Wattle/Straw Bales and/or Silt Fence Section Six: Sediment Control Measures – RI SESC Handbook.	Inspection should be made after each storm event and repair, or replacement should be made promptly as needed. Cleanout of accumulated sediment behind the bales is necessary if ½ of the original height of the bales becomes filled in with sediment.
Construction Entrances	Stone Stabilized Pad. Section Six: Sediment Control Measures – Construction Entrances – RI SESC Handbook. Constriction pad per RIDOT Standard 9.9.0	The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto pave surfaces. Provide periodic top dressing with additional stone or additional length as conditions demand. Roads adjacent to entrance shall be clean at the end of each day. If maintenance alone is not enough to prevent excessive track out, increase length of entrance, modify construction access road surface, or install wash rack or mud rack.
Silt Sacks	Inlet Protection, Section Six: Sediment Control Measures – Inlet Protection –RI SESC Handbook.	Install & maintain per manufacture specifications Inspect after each rain event Lift filters carefully from the drainage structure. Remove any accumulated sediment and reinsert device into drain opening. Remove all accumulated sediment and dispose of properly
Water or Calcium Chloride application for Dust Control	Dust Control, Section Three: Pollution Prevention and Good House Keeping –RI SESC Handbook.	When temporary measures are used, repetitive treatments should be applied as needed to control dust.
Temporary Sediment Trap	Temporary Sediment Traps, Section Six: Sediment Control Measures – RI SES Handbook	Inspect trap a minimum once per week or within 24 hours after a rainfall event greater than ¼". Remove sediments when half of the minimum required volume of the wet storage is exceeded.

SECTION 3: CONSTRUCTION ACTIVITY POLLUTION PREVENTION

Per RI Stormwater Design and Installation Standards Manual 3.3.7.14:

The purpose of construction activity pollution prevention is to prevent day to day construction activities from causing pollution.

This section describes the key pollution prevention measures that must be implemented to avoid and reduce the discharge of pollutants in stormwater. Example control measures include the proper management of waste, material handling and storage, and equipment/vehicle fueling/washing/maintenance operations.

Where applicable, include *RI SESC Handbook* or the *RI Department of Transportation Standard Specifications for Road and Bridge Construction* (as amended) specifications.

3.1 Existing Data of Known Discharges from Site

Per RIPDES Construction General Permit – Part III.I:

Are there known discharges from the project area?

☐ Yes ☒ No

Describe how this determination was made:

- Existing Conditions Survey by Others, Online GIS information, RIDOT Plans

If yes, list discharges and locations:

- N/A

Is there existing data on the quality of the known discharges?

☐ Yes ☒ No

If yes, provide data:

- N/A

3.2 Prohibited Discharges

Per RI SESC Handbook – Part D

The following discharges are prohibited at the construction site:

- Contaminated groundwater, unless specifically authorized by the DEM. These types of discharges may only be authorized under a separate DEM RIPDES permit.
- Wastewater from washout of concrete, unless the discharge is contained and managed by appropriate control measures.
- Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance. Proper storage and spill prevention practices must be utilized at all construction sites.
- Soaps or solvents used in vehicle and equipment washing.
- Toxic or hazardous substances from a spill or other release.

All types of waste generated at the site shall be disposed of in a manner consistent with State Law and/or regulations.

Will any of the above listed prohibited discharges be generated at the site?

☐ Yes ☒ No

3.3 Proper Waste Disposal

Per RI SESC Handbook – Part D

Building materials and other construction site wastes must be properly managed and disposed of in a manner consistent with State Law and/or regulations.

- A waste collection area shall be designated on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody or storm drain.
- All waste containers shall be covered to avoid contact with wind and precipitation.
- Waste collection shall be scheduled frequently enough to prevent containers from overfilling.
- All construction site wastes shall be collected, removed, and disposed of in accordance with applicable regulatory requirements and only at authorized disposal sites.
- Equipment and containers shall be checked for leaks, corrosion, support or foundation failure, or other signs of deterioration. Those that are found to be defective shall be immediately repaired or replaced.

Is waste disposal a significant element of the proposed project?

☒ Yes ☐ No

Building construction and general construction waste is anticipated. Before construction begins, an area within the project limits will be designated as a waste collection area. A waste collection time will be arranged so that the containers do not overflow. In the event that a container does spill, cleanup will be provided immediately. The construction waste will be collected, removed, and disposed of only at authorized disposal areas. All waste shall be disposed of in a manner consistent with federal, state and local regulations. Construction debris shall be disposed of daily to avoid exposure to precipitation.

3.4 Spill Prevention and Control

Per RI SESC Handbook – Part D

All chemicals and/or hazardous waste material must be stored properly and legally in covered areas, with containment systems constructed in or around the storage areas. Areas must be designated for materials delivery and storage. All areas where potential spills can occur and their accompanying drainage points must be described. The owner and operator must establish spill prevention and control measures to reduce the chance of spills, stop the source of spills, contain and clean-up spills, and dispose of materials contaminated by spills. The operator must establish and make highly visible location(s) for the storage of spill prevention and control equipment and provide training for personnel responsible for spill prevention and control on the construction site.

Are spill prevention and control measures required for this particular project?

☒ Yes ☐ No

- The construction site supervisor will create and adopt a spill control plan that includes measures to stop the source of the spill, contain the spill, clean up the spill, dispose of materials contaminated by the spill, and identify and train personnel responsible for spill prevention and control. The following measures will be appropriate for a spill prevention and response plan.

- Store and handle materials to prevent spills
    - Tightly seal containers.
    - Make sure all containers are clearly labeled
    - Stack containers neatly and securely
- Reduce storm water contact if there is a spill
    - Have cleanup procedures clearly posted
    - Have cleanup materials readily available
    - Contain any liquid
    - Stop the source of the spill
    - Cover spill with absorbent materials such as sawdust.
- At no time shall spills be cleaned and/or flushed down storm drains or to any environmentally sensitive area (stream, pond, wetland etc.)
- Dispose of contaminated materials according to manufacturer's instructions or according to state or local requirements.
- Equipment/vehicle fueling and repair/maintenance operations or hazardous material storage shall not take place within regulated wetlands or buffer zone area. Designated areas shall be approved by site owner and project engineer.
- Identify personnel responsible for responding to spill of toxic or hazardous materials.
    - Provide personnel spill response training
    - Post names of spill response personnel
    - Keep the spill area well ventilated
    - If necessary, use a private firm that specializes in spill cleanup
- Spills that exceed Reportable Quantity (RQ) levels or reportable materials must be reported and documented.
    - Notify the Rhode Island Department of Environmental Management (401) 222-3961, (401) 222-6519 or (401) 222-2284 at night as soon as there is knowledge of a spill.
    - Notify the permitting authority in writing within 5 days.
    - The SESC must be modified within 14-days to provide a description of the release, the circumstances leading to the release and the date of the release.
- Stone Stabilization Pad (RI Standard 9.9.0)
    - Located at construction site entrance/exit as shown on the SESC Site Plans.
    - The maintenance shall include top dressing with additional stone or additional length as conditions demand or as directed by the engineer.
    - Sediments spilled, dropped, washed or tracked on the public right of way must be removed immediately by the contractor and disposed of according to all applicable regulations.

3.5 Control of Allowable Non-Stormwater Discharges

Per RIPDES Construction General Permit – Part III.J.2.e:

Are there allowable non-Stormwater discharges present on or near the project area?

☒ Yes ☐ No

List of allowable non-stormwater discharge(s) and the associated control measure(s):

- Water for Dust Control
- Fire Hydrant / Water Main Flushing.
- Stormwater Main Flushing

If any existing or proposed discharges consist of contaminated groundwater, such discharges are not authorized under the RIPDES Construction General Permit. These discharges must be permitted separately by seeking coverage to treat and discharge under a separate RIPDES individual permit or under the RIPDES Remediation General Permit. Contact the RIDEM Office of Water Resources RIPDES Permitting Program at 401-222-4700 for application requirements and additional information.

Are there any known or proposed contaminated discharges, including anticipated contaminated dewatering operations, planned on or near the project area?

☐ Yes ☒ No

If yes, list the discharge types and the RIPDES individual permit number(s) or RIPDES Remediation General Permit Authorization number(s) associated with these discharges.

- N/A

3.6 Control Dewatering Practices

Per RI SESC Handbook – Part D

Site owners and operators are prohibited from discharging groundwater or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, unless such waters are first effectively managed by appropriate control measures.

Examples of appropriate control measures include, but are not limited to, temporary sediment basins or sediment traps, sediment socks, dewatering tanks and bags, or filtration systems (e.g. bag or sand filters) that are designed to remove sediment. Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control.

At a minimum the following discharge requirements must be met for dewatering activities:

1. Do not discharge visible floating solids or foam.
2. To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. In no case will surface waters be considered part of the treatment area.
3. At all points where dewatering water is discharged, utilize velocity dissipation devices.
4. With filter backwash water, either haul it away for disposal or return it to the beginning of the treatment process.
5. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
6. Dewatering practices must involve the implementation of appropriate control measures as applicable (i.e. containment areas for dewatering earth materials, portable sediment tanks and bags, pumping settling basins, and pump intake protection.)

Is it at all likely that the site operator will need to implement construction dewatering in order to complete the proposed project?

☒ Yes ☐ No

Dewatering maybe required during deep utility construction. Any dewatering practices must comply with the RI SESC Handbook. Dewatering basins shall be used on site and comply with RIDOT Standard 9.7.0 or approved equal. Contractor to submit alternatives to project engineer for approval.

3.7 Establish Proper Building Material Staging Areas

Per RI SESC Handbook – Part D

All construction materials that have the potential to contaminate stormwater must be stored properly and legally in covered areas, with containment systems constructed in or around the storage areas. Areas must be designated for materials delivery and storage. Designated areas shall be approved by the site owner/engineer. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in the discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- An inventory will be kept of all reportable materials and all materials with a reportable quantity on site. There will be neat and orderly storage of hazardous materials. Regular garbage, rubbish, construction waste, and sanitary waste disposal will be employed. There will be prompt cleanup of any spills, either liquid or dry materials. The following practices will be used to avoid problems associated with the disposal of hazardous materials.
- Check with local waste management authorities to determine what the requirements are for disposing of hazardous materials.
- Use the entire product before disposing of the container.
- Do not remove the original product label from the container, since it contains important information.
- If surplus products must be disposed, do not mix products together unless specifically recommended by the manufacturer.
- The correct method of disposal of hazardous materials varies with the product use. Follow the manufacturer's recommended method, which is often found on the label.

- Construction materials will consist of any or all of the following:

• Asphalt	• Detergents
• Concrete	• Fertilizers (no Phosphate based fertilizers permitted)
• Loam	• Petroleum Based Products
• Gravel for Roadway	• Cleaning Solvents
• Stone	• Wood
• Sewer Pipe	• Paints (enamel and latex)
• Drainage Pipe	• Roofing Shingles
• Water Pipe	• Masonry Block
• Gas pipe	• Sheet Rock / Gypsum Board
• Manholes	• Electrical Materials/Supplies
• Catch Basins	• Plumbing Materials/Supplies
• Catch Basin / Manhole Frames & Grates	

3.8 Minimize Dust

Per RI SESC Handbook – Part D

Dust control procedures and practices shall be used to suppress dust on a construction site during the construction process, as applicable. Precipitation, temperature, humidity, wind velocity and direction will determine amount and frequency of applications. However, the best method of controlling dust is to prevent dust production. This can best be accomplished by limiting the amount of bare soil exposed at one time.

Dust Control measures outlined in the *RI SESC Handbook* shall be followed. Other dust control methods include watering, chemical application, surface roughening, wind barriers, walls, and covers.

- Dust control will be utilized throughout the entire construction process. 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.
  - 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; it will also be effective for dust control.
  - Calcium Chloride – Calcium Chloride or other additive may be used with approval of Engineer.
  - The general contractor will have an on-site water vehicle to control dust.

3.9 Designate Washout Areas

Per RI SESC Handbook – Part D

At no time shall any material (concrete, paint, chemicals) be washed into storm drains, open ditches, streets, streams, wetlands, or any environmentally sensitive area. The site operator must ensure that construction waste is properly disposed of, to avoid exposure to precipitation, at the end of each working day.

Will washout areas be required for the proposed project?

☒ Yes ☐ No

- The construction site supervisor shall establish a washout area prior to construction as indicated on the Erosion Control Plan prepared by DiPrete Engineering. This area shall not be located in or adjacent to a permanent stormwater BMP.
- Concrete trucks may be allowed to wash out or discharge surplus concrete or drum wash water in the washout area. However, this material must be disposed of in a manner that prevents contact between these materials and stormwater runoff.

3.10 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Per RI SESC Handbook – Part D

Vehicle fueling shall not take place within regulated wetlands or buffer zone areas, or within 50-feet of the storm drain system. Designated areas shall be depicted on the SESC Site Plans or shall be approved by the site owner.

Vehicle maintenance and washing shall occur off-site, or in designated areas depicted on the SESC Site Plans or approved of by the site owner. Maintenance or washing areas shall not be within regulated wetlands or buffer zone areas, or within 50-feet of the storm drain system. Maintenance areas shall be clearly designated, and barriers shall be used around the perimeter of the maintenance area to prevent stormwater contamination.

Construction vehicles shall be inspected frequently for leaks. Repairs shall take place immediately. Disposal of all used oil, antifreeze, solvents and other automotive-related chemicals shall be according to applicable regulations; at no time shall any material be washed down the storm drain or into any environmentally sensitive area.

Vehicle fueling storage and maintenance should only be done in the area as shown on the Erosion Control Plan prepared by DiPrete Engineering. Any spills should be handled per section 3.4.

3.11 Chemical Treatment for Erosion and Sediment Control

Per RI SESC Handbook – Appendix J

Chemical stabilizers, polymers, and flocculants are readily available on the market and can be easily applied to construction sites for the purposes of enhancing the control of erosion, runoff, and sedimentation. The following guidelines should be adhered to for construction sites that plan to use treatment chemicals as part of their overall erosion, runoff, and sedimentation control strategy.

The U.S. Environmental Protection Agency has conducted research into the relative toxicity of chemicals commonly used for the treatment of construction stormwater discharges. The research conducted by the EPA focused on different formulations of chitosan, a cationic compound, and both cationic and anionic polyacrylamide (PAM). In summary, the studies found significant toxicity resulting from the use of chitosan and cationic PAM in laboratory conditions, and significantly less toxicity associated with using anionic PAM. EPA's research has led to the conclusion that the use of treatment chemicals for erosion, runoff, and sedimentation control requires proper operator training and appropriate usage to avoid risk to aquatic species. In the case of cationic treatment chemicals additional safeguards may be necessary.

Application/Installation Minimum Requirements

If a site operator plans to use polymers, flocculants, or other treatment chemicals during construction the SESC plan must address the following:

1. Treatment chemicals shall not be applied directly to or within 100 feet of any surface water body, wetland, or storm drain inlet.

2. Use conventional erosion, runoff, and sedimentation controls prior to and after the application of treatment chemicals. Use conventional erosion, runoff, and sedimentation controls prior to chemical addition to ensure effective treatment. Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g. temporary sediment basin, temporary sediment trap or sediment barrier) prior to discharge.

3. Sites shall be stabilized as soon as possible using conventional measures to minimize the need to use chemical treatment.

4. Select appropriate treatment chemicals. Chemicals must be selected that are appropriately suited to the types of soils likely to be exposed during construction and to the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or treatment area. **Soil testing is essential. Using the wrong form of chemical treatment will result in some form of performance failure and unnecessary environmental risk.**

5. Minimize discharge risk from stored chemicals. Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., spill berms, decks, spill containment pallets), or provide equivalent measures, designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., storing chemicals in covered areas or having a spill kit available on site).

6. Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier. You must also use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the supplier of the applicable chemicals, or document specific departures from these practices or specifications and how they reflect good engineering practice.

Will chemical stabilizers, polymers, flocculants or other treatment chemicals be utilized on the proposed construction project?

☐ Yes ☒ No

3.12 Construction Activity Pollution Prevention Control Measure List

It is expected that this table will be amended as needed throughout the construction project.

Phase No. #		
Location/Station	**Control Measure Description/Reference**	**Maintenance Requirement**
Adjacent Roads	Public roads adjacent to a construction site shall be clean at the end of each day.	Street Sweep if construction site sediment is visible
Site Wide	Pick up of construction trash and debris.	All loose trash and debris must be disposed of properly at the end of each working day.
Construction Entrances	Stone Stabilized Pad. Section Six: Sediment Control Measures – Construction Entrances –RI SESC Handbook. Constriction pad per RIDOT Standard 9.9.0	The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto pave surfaces. Provide periodic top dressing with additional stone or additional length as conditions demand. Roads adjacent to entrance shall be clean at the end of each day. If maintenance alone is not enough to prevent excessive track out, increase length of entrance, modify construction access road surface, or install wash rack or mud rack.
Water or Calcium Chloride application for Dust Control	Dust Control, Section Three: Pollution Prevention and Good House Keeping –RI SESC Handbook.	When temporary measures are used, repetitive treatments should be applied as needed to control dust.

SECTION 4: CONTROL MEASURE INSTALLATION, INSPECTION, and MAINTENANCE

4.1 Installation

Per RI SESC Handbook – Part D:

Complete the installation of temporary erosion, runoff, sediment, and pollution prevention control measures by the time each phase of earth-disturbance has begun. All stormwater control measures must be installed in accordance with good judgment, including applicable design and manufacturer specifications. Installation techniques and maintenance requirements may be found in manufacturer specifications and/or the *RI SESC Handbook*.

Erosion control measures shall be located per the Erosion Control Plan prepared by DiPrete Engineering.

4.2 Monitoring Weather Conditions

Per RI SESC Handbook – Part D:

Anticipating Weather Events - Care will be taken to the best of the operator's ability to avoid disturbing large areas prior to anticipated precipitation events. Weather forecasts must be routinely checked, and in the case of an expected precipitation event of over 0.25-inches over a 24-hour period, it is highly recommended that all control measures should be evaluated and maintained as necessary, prior to the weather event. In the case of an extreme weather forecast (greater than one-inch of rain over a 24-hour period), additional erosion/sediment controls may need to be installed.

Storm Event Monitoring For Inspections - At a minimum, storm events must be monitored and tracked in order to determine when post-storm event inspections must be conducted. Inspections must be conducted and documented at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event, which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt.

The weather gauge station and website that will be utilized to monitor weather conditions on the construction site are as follows:

CRANSTON STATION

https://www.wunderground.com/weather/us/ri/cranston

4.3 Inspections

Per RI SESC Handbook – Part D:

Minimum Frequency - Each of the following areas must be inspected by or under the supervision of the owner and operator at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event, which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt:

a. All areas that have been cleared, graded, or excavated and where permanent stabilization has not been achieved.

b. All stormwater erosion, runoff, and sediment control measures (including pollution prevention control measures) installed at the site.

c. Construction material, unstabilized soil stockpiles, waste, borrow, or equipment storage, and maintenance areas that are covered by this permit and are exposed to precipitation.

d. All areas where stormwater typically flows within the site, including temporary drainage ways designed to divert, convey, and/or treat stormwater.

e. All points of discharge from the site.

f. All locations where temporary soil stabilization measures have been implemented.

g. All locations where vehicles enter or exit the site.

Reductions in Inspection Frequency - If earth disturbing activities are suspended due to frozen conditions, inspections may be reduced to a frequency of once per month. The owner and operator must document the beginning and ending dates of these periods in an inspection report.

Qualified Personnel – The site owner and operator are responsible for designating personnel to conduct inspections and for ensuring that the personnel who are responsible for conducting the inspections are "qualified" to do so. A "qualified person" is a person knowledgeable in the principles and practices of erosion, runoff, sediment, and pollution prevention controls, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of the permit.

Recordkeeping Requirements - All records of inspections, including records of maintenance and corrective actions, must be maintained with the SESC Plan. Inspection records must include the date and time of the inspection, and the inspector's name, signature, and contact information.

General Notes

- A separate inspection report will be prepared for each inspection.
- The Inspection Reference Number shall be a combination of the RIPDES Construction General Permit No - consecutively numbered inspections. ex/ Inspection reference number for the **4**th inspection of a project would be: RIR10#####-**4**
- Each report will be signed and dated by the Inspector and must be kept onsite.
- Each report will be signed and dated by the Site Operator.
- The corrective action log contained in each inspection report must be completed, signed, and dated by the site operator once all necessary repairs have been completed.
- It is the responsibility of the site operator to maintain a copy of the SESC Plan, copies of all completed inspection reports, and amendments as part of the SESC Plan documentation at the site during construction.

Failure to make and provide documentation of inspections and corrective actions under this part constitutes a violation of your permit and enforcement actions under 46-12 of R.I. General Laws may result.

4.4 Maintenance

Per RI SESC Handbook – Part D:

Maintenance procedures for erosion and sedimentation controls and stormwater management structures/facilities are described on the SESC Site Plans and in the *RI SESC Handbook*.

Site owners and operators must ensure that all erosion, runoff, sediment, and pollution prevention controls remain in effective operating condition and are protected from activities that would reduce their

effectiveness. Erosion, runoff, sedimentation, and pollution prevention control measures must be maintained throughout the course of the project.

Note: It is recommended that the site operator designates a full-time, on-site contact person responsible for working with the site owner to resolve SESC Plan-related issues.

4.5 Corrective Actions

Per RI SESC Handbook – Part D:

If, in the opinion of the designated site inspector, corrective action is required, the inspector shall note it on the inspection report and shall inform the site operator that corrective action is necessary. The site operator must make all necessary repairs whenever maintenance of any of the control measures instituted at the site is required.

In accordance with the *RI SESC Handbook*, the site operator shall initiate work to fix the problem immediately after its discovery, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.

When installation of a new control or a significant repair is needed, site owners and operators must ensure that the new or modified control measure is installed and made operational by no later than seven (7) calendar days from the time of discovery where feasible. If it is infeasible to complete the installation or repair within seven (7) calendar days, the reasons why it is infeasible must be documented in the SESC Plan along with the schedule for installing the control measures and making it operational as soon as practicable after the 7-day timeframe. Such documentation of these maintenance procedures and timeframes should be described in the inspection report in which the issue was first documented. If these actions result in changes to any of the control measures outlined in the SESC Plan, site owners and operators must also modify the SESC Plan accordingly within seven (7) calendar days of completing this work.

SECTION 5: AMENDMENTS

Per RIPDES Construction General Permit – Part III.F:

This SESC Plan is intended to be a working document. It is expected that amendments will be required throughout the active construction phase of the project. **Even if practices are installed on a site according to the approved plan, the site is only in compliance when erosion, runoff, and sedimentation are effectively controlled throughout the entire site for the entire duration of the project.**

The SESC Plan shall be amended within seven (7) days whenever there is a change in design, construction, operation, maintenance or other procedure which has a significant effect on the potential for the discharge of pollutants, or if the SESC Plan proves to be ineffective in achieving its objectives (i.e. the selected control measures are not effective in controlling erosion or sedimentation).

In addition, the SESC Plan shall be amended to identify any new operator that will implement a component of the SESC Plan.

All revisions must be recorded in the Record of Amendments Log Sheet, which is contained in Attachment G of this SESC Plan and dated red-lined drawings and/or a detailed written description must be appended to the SESC Plan. Inspection Forms must be revised to reflect all amendments. Update the Revision Date and the Version # in the footer of the Report to reflect amendments made.

All SESC Plan Amendments, except minor non-technical revisions, must be approved by the site owner and operator. Any amendments to control measures that involve the practice of engineering must be reviewed, signed, and stamped by a Professional Engineer registered in the State of RI.

The amended SESC plan must be kept on file at the site while construction is ongoing and any modifications must be documented.

Attach a copy of the Amendment Log.

SECTION 6: RECORDKEEPING

RIPDES Construction General Permit – Parts III.D, III.G, III.J.3.b.iii, & V.O

It is the site owner and site operator's responsibility to have the following documents available at the construction site and immediately available for RIDEM review upon request:

- A copy of the fully signed and dated SESC Plan, which includes:
    - A copy of the General Location Map
      INCLUDED AS ATTACHMENT A
    - A copy of all SESC Site Plans
      INCLUDED AS ATTACHMENT B
    - A copy of the RIPDES Construction General Permit
      INCLUDED AS ATTACHMENT C
    - A copy of any regulatory permits (RIDEM Freshwater Wetlands Permit, CRMC Assent, RIDEM Water Quality Certification, RIDEM Groundwater Discharge Permit, RIDEM RIPDES Construction General Permit authorization letter, etc.)
      INCLUDED AS ATTACHMENT D
    - The signed and certified NOI form or permit application form
      INCLUDED AS ATTACHMENT E
    - Completed Inspection Reports w/Completed Corrective Action Logs
      INCLUDED AS ATTACHMENT F
    - SESC Plan Amendment Log
      INCLUDED AS ATTACHMENT G
    - Sediment Trap and Swale Calculations
      INCLUDED AS ATTACHMENT H

SECTION 7: PARTY CERTIFICATIONS

RIPDES Construction General Permit – Part V.G

All parties working at the project site are required to comply with the Soil Erosion and Sediment Control Plan (SESC Plan including SESC Site Plans) for any work that is performed on-site. The site owner, site operator, contractors and sub-contractors are encouraged to advise all employees working on this project of the requirements of the SESC Plan. A copy of the SESC Plan is available for your review at the following location: Construction Trailer or may be obtained by contacting the site owner or site operator.

The site owner and site operator and each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement.

I acknowledge that I have read and understand the terms and conditions of the Soil Erosion and Sediment Control (SESC) Plan for the above designated project and agree to follow the control measures described in the SESC Plan and SESC Site Plans.

Site Owner:
Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Site Operator:
Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Designated Site Inspector:
Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Subcontractor SESC Plan Contact:
Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

LIST OF ATTACHMENTS

Attachment A - General Location Map

(See latest plan set prepared by DiPrete Engineering)

Attachment B - SESC Site Plans

(See latest plan set prepared by DiPrete Engineering)

Attachment C - Copy of RIPDES Construction General Permit and Authorization to Discharge

Attachment D - Copy of Other Regulatory Permits

Attachment E - Copy of RIPDES NOI

Attachment F - Inspection Reports w/ Corrective Action Log

SESC Plan
Inspection Report Instructions

For all projects subject to the requirements of the *RI Stormwater Design and Installation Standards Manual* or the *RIPDES Construction General Permit* the site owner and operator are required to develop and comply with a site specific Soil Erosion and Sediment Control Plan (SESC Plan) in order to remain in compliance with applicable regulations.

This inspection report template has been provided by RIDEM for use by the site operator and designated inspector to document the adequacy and condition of erosion, runoff, sediment, and pollution prevention control measures specified for use on the construction site. It should be customized for your specific site conditions and consistent with the SESC Plan developed for your site.

Using the Inspection Report

This inspection report is designed to be customized according to the control measures and conditions at the site. On a copy of the applicable SESC Site Plans, number or label all stormwater control measures and areas of the site that will be inspected. Include all control measures (temporary traps, basins, inlet protection measures, etc.) and areas that will be inspected. Also, identify all point source discharges/outfalls, and the priority natural resource areas (i.e. streams, wetlands, mature trees, etc). List each control measure or area to be inspected separately in the site-specific control measure section of the inspection report.

Complete any items that will remain constant, such as the project information and control measure locations and descriptions. Then, print out multiple copies of this customized inspection report to use during the inspections.

When conducting the inspection, walk the site by following the SESC Site Plans and numbered control measure locations for inspection. Also note whether the overall site issues have been addressed. Customize this list according to the conditions at the site.

Minimum Monitoring and Reporting Requirements

Your site must be inspected by or under the supervision of the owner and operator at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff. Read Section 4.2 of your SESC Plan for more information regarding the importance of monitoring weather conditions.

General Notes

- A separate inspection report will be prepared for each inspection.

Revision Date: May 1, 2015

- The Inspection Reference Number shall be a combination of the RIPDES Permit Authorization Number - consecutively numbered inspections. For example: Inspection reference number for the **4**th inspection of a project would be: RIR101000-**4**

- Each report will be signed and dated by the inspector and forwarded to the site operator within 24 hours of the inspection.

- Each report will be signed and dated by the site operator upon his/her receipt and after completion of all required corrective actions.

- It is the responsibility of the site operator to maintain a copy of the SESC Plan, copies of all completed inspection reports, and amendments as part of the SESC Plan documentation at the site during construction.

Corrective Actions

If the SESC Plan Inspection determines that corrective actions are necessary to install or repair control measures, the resultant actions taken must be documented by the site operator. The actions must be recorded in the Corrective Action Log attached to each SESC Plan inspection form. If the site operator disagrees with the corrective action recommendations, it must be documented, with justifiable reasons, in the Corrective Action Log, as well. **Required timeframes for corrective actions are established by regulation and are discussed in Section 4.5 of your SESC Plan.**

Amendments

All SESC Plan Amendments, except minor non-technical revisions, must be approved by the site owner and site operator. The revision must be recorded in the Record of Amendments Log Sheet within the SESC Plan, and dated red-line drawings and/or a detailed written description of the revision must be appended to the SESC Plan. Inspection forms must be revised to reflect all amendments. Update the *Revision Date* and the *Version* # in the footer of the report to reflect amendments made.

The SESC Plan shall be amended whenever there is a change in design, construction, operation, maintenance or other procedure, which has a significant effect on the potential for the discharge of pollutants, or if the SESC Plan proves to be ineffective in achieving its objectives.

******Remember that the regulations are performance-oriented. Even if all control measures are installed on a site according to the SESC Plan, the site is only in compliance when erosion, runoff, sedimentation, and pollution are effectively controlled. ******

SESC Plan Inspection Report

Project Information			
Name			
Location			
DEM Permit No.			
Site Owner	**Name**	**Phone**	**Email**
Site Operator	**Name**	**Phone**	**Email**

Inspection Information			
Inspector Name	**Name**	**Phone**	**Email**
Inspection Date		**Start/End Time**	

Inspection Type
❑ **Weekly** ❑ **Pre-storm event** ❑ **During storm event** ❑ **Post-storm event** ❑ **Other**

Weather Information
Last Rain Event **Date:** **Duration (hrs):** **Approximate Rainfall (in):**
Rain Gauge Location & Source:
Weather at time of this inspection:

Check statement that applies then sign and date below:

☐ **I, as the designated Inspector, certify that this site has been inspected as required by regulation and I have determined that maintenance and corrective actions are not required at this time.**

☐ **I, as the designated Inspector, certify that this site has been inspected as required by regulation and I have made the determination that the site requires corrective actions. The required corrective actions are noted within this inspection report.**

	Print Name	**Signature**	**Date**
Inspector:			

The Site Operator acknowledges by his/her signature, the receipt of this SESC Plan inspection report and its findings. He/she acknowledges that all recommended corrective actions must be completed and documentation of all such corrective actions must be made in this inspection report per applicable regulations.

	Print Name	**Signature**	**Date**
Operator:			

Site-specific Control Measures

Number the structural and non-structural stormwater control measures identified in the SESC Plan and on the SESC Site Plans and list them below (add as necessary). Bring a copy of this inspection form and any applicable SESC Site Plans with you during your inspections. This list will assist you to inspect all control measures at your site.
FILL THIS TABLE USING THE SESC PLAN TABLES 2.11 & 3.12.

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
1	Example 1: Eastern Parcel – Slope No. 4 Adjacent to I-95. Straw Wattles	Straw Wattle. Section Six, Sediment Control Measures, Straw Wattles, Compost Tubes and Fiber Rolls - *RI SESC Handbook*.	❑Yes ❑No		
2	Example 2: Western Parcel – Green Street Construction Entrance	Stone Stabilized Pad. Section Six: Sediment Control Measures – Construction Entrances –*RI SESC Handbook*.	❑Yes ❑No		
3	Example 3: Hospital Main Footings – Excavation Area – SESC Site Plan Sheet No. 3.	Pump Intake Protection Using Stone Filled Sump with Standpipe. Section Six: Sediment Control Measures, Pump Intake Protection, *RI SESC Handbook.*	❑Yes ❑No		
4	Example 4: Bridge Abutment Construction Southbound Bridge Abutment, Bridge No. 244 – SESC Site Plan Sheet No. 18.	Prefabricated Concrete Washout Container with Ramp. Used to contain concrete washout during concrete pouring operations. Section Three: Pollution Prevention and Good Housekeeping, Concrete Washouts, *RI SESC Handbook*.	❑Yes ❑No		
5	INSERT TEXT	INSERT TEXT	❑Yes ❑No		
6	**Attention Operator:**	**You must modify this inspection form as the project progresses, control measure locations change, and amendments to the SESC Plan are instituted in the field.**	❑Yes ❑No		
7			❑Yes ❑No		
8			❑Yes ❑No		

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
9			❑Yes ❑No		
10			❑Yes ❑No		
11			❑Yes ❑No		
12			❑Yes ❑No		
13			❑Yes ❑No		
14			❑Yes ❑No		
15			❑Yes ❑No		
16			❑Yes ❑No		
17			❑Yes ❑No		
18			❑Yes ❑No		
19			❑Yes ❑No		
20			❑Yes ❑No		
21			❑Yes ❑No		
22			❑Yes ❑No		
23			❑Yes ❑No		
24			❑Yes ❑No		

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
25			❑Yes ❑No		
26			❑Yes ❑No		
27			❑Yes ❑No		
28			❑Yes ❑No		
29			❑Yes ❑No		
30			❑Yes ❑No		

(add more as necessary)

General Site Issues

*Below are some general site issues that should be assessed during inspections. Please **customize** this list as needed for conditions at the site.*

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
1	Have all control measures been installed as specified in the RISESC Handbook and prior to any earth disturbing activities?	❑Yes ❑No ❑ N/A		
2	Are appropriate limits of disturbance (LOD) established?	❑Yes ❑No ❑ N/A		
3	Are controls that limit runoff from exposed soils by diverting, retaining, or detaining flows (such as check dams, sediment basins, etc.) in place?	❑Yes ❑No ❑ N/A		
4	Are all temporary conveyance practices installed correctly and functioning as designed?	❑Yes ❑No ❑ N/A		
5	Has maintenance been performed as required to ensure continued proper function of all temporary conveyances practices?	❑Yes ❑No ❑ N/A		
6	Were all exposed soils seeded by October 15th?	❑Yes ❑No ❑ N/A		
7	Have soils been stabilized where earth disturbance activities have permanently or temporarily ceased on any portion of the site and will not resume for more than 14 days?	❑Yes ❑No ❑ N/A		
8	In instances where adequate vegetative stabilization was not established by November 15th, have non-vegetative erosion control measures must be employed?	❑Yes ❑No ❑ N/A		
9	If work is to continue from October 15th through April 15th, are steps taken to ensure that only the day's work area will be exposed and all erodible soil is stabilized within 5 working days?	❑Yes ❑No ❑ N/A		
10	Have inlet protection measures (such as fabric drop inlet protection, curb drop inlet protection, etc.) been properly installed?	❑Yes ❑No ❑ N/A		
11	Has the operator cleaned and maintained inlet protection measures when needed?	❑Yes ❑No ❑ N/A		
12	Has the operator removed accumulated sediment adjacent to inlet protection measures within 24 hours of detection?	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
13	Has the operator properly installed outlet protection (such as riprap, turf mats, etc.) at all temporary and permanent discharge points?	❑Yes ❑No ❑ N/A		
14	Are all outlet protection measures functioning properly in order to reduce discharge velocity, promote infiltration, and eliminate scour?	❑Yes ❑No ❑ N/A		
15	Have all discharge points been inspected to ensure the prevention of scouring and channel erosion?	❑Yes ❑No ❑ N/A		
16	Have sediment controls been installed along perimeter areas that will receive stormwater from earth disturbing activities?	❑Yes ❑No ❑ N/A		
17	Is the operator maintaining sediment controls in accordance with the requirements in the *RI SESC Handbook*?	❑Yes ❑No ❑ N/A		
18	Have temporary sediment barriers been installed around permanent infiltration areas (such as bioretention areas, infiltration basins, etc.)?	❑Yes ❑No ❑ N/A		
19	Have staging areas and equipment routing been implemented to avoid compaction where permanent infiltration areas will be located?	❑Yes ❑No ❑ N/A		
20	Are surface outlet structures (such as skimmers, siphons, etc.) installed for each temporary sediment basin? [Exception: frozen conditions]	❑Yes ❑No ❑ N/A		
21	Have all temporary sediment basins or traps been inspected and maintained as required to ensure proper function?	❑Yes ❑No ❑ N/A		
22	Does the project include the use of polymers, flocculants, or other chemicals to control erosion, sedimentation, or runoff from the site?	❑Yes ❑No ❑ N/A		
23	Are all chemicals being managed in accordance with Appendix J of the *RISESC Handbook* and current best management practices?	❑Yes ❑No ❑ N/A		
24	Has the site operator taken steps to **prohibit** the following pollutant discharges on the site?			
a	Contaminated groundwater.	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
b	Wastewater from washout of concrete; unless properly contained, managed, and disposed of.	❑Yes ❑No ❑ N/A		
c	Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction products.	❑Yes ❑No ❑ N/A		
d	Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.	❑Yes ❑No ❑ N/A		
e	Soaps or solvents used in vehicle and equipment washing.	❑Yes ❑No ❑ N/A		
f	Toxic or hazardous substances from a spill or other release.	❑Yes ❑No ❑ N/A		
25	Is the operator using properly constructed entrances/exits to the site so sediment removal occurs prior to vehicles exiting?	❑Yes ❑No ❑ N/A		
26	If needed, are additional controls (such as rumble strips, rattle plates, etc.) in place to remove sediment from tires prior to exiting?	❑Yes ❑No ❑ N/A		
27	Is sediment track-out being removed by the end of the same workday in which it occurs (via sweeping, shoveling, or vacuuming)?	❑Yes ❑No ❑ N/A		
28	Are all wastes generated at the site being managed and properly disposed of by the end of each workday?	❑Yes ❑No ❑ N/A		
29	Are all chemicals and hazardous waste materials stored properly in covered areas and surrounded by containment control systems?	❑Yes ❑No ❑ N/A		
30	Has the operator established highly visible locations for the storage of spill prevention and control equipment on the construction site?	❑Yes ❑No ❑ N/A		
31	Are allowable non-stormwater discharges being managed properly with adequate controls?	❑Yes ❑No ❑ N/A		
32	Is the site operator properly managing groundwater or stormwater that is removed from excavations, trenches, or similar points of accumulation?	❑Yes ❑No ❑ N/A		
33	Are proper procedures and controls in place for the storage of materials that may discharge pollutants if	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
	exposed to stormwater?			
	Are stockpiles located within the limits of disturbance?	❑Yes ❑No ❑ N/A		
	Are stockpiles being protected from contact with stormwater using a temporary sediment barrier?	❑Yes ❑No ❑ N/A		
	Where needed, has cover or appropriate temporary vegetative or structural stabilization been utilized for stockpiles?	❑Yes ❑No ❑ N/A		
	Is the operator effectively managing the generation of dust through the use of water, chemicals, or minimization of exposed soil?	❑Yes ❑No ❑ N/A		
	Are designated washout areas (such as wheel washing stations, washout for concrete, paint, stucco, etc.) clearly marked on the site?	❑Yes ❑No ❑ N/A		
	Are vehicle fueling and maintenance areas properly located to prevent pollutants from impacting stormwater and sensitive receptors?	❑Yes ❑No ❑ N/A		
	(Other)			

(add more as necessary)

General Field Comments:

Photos:

(Associated photos – each photo should be dated and have a unique identification # and written description indicating where it is located within the project area. If a close up photo is required, it should be preceded with a photo including both the detail area and some type of visible fixed reference point. Photos should be annotated with Station numbers and other identifying information where needed.)

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

(add more as necessary)

Corrective Action Log

TO BE FILLED OUT BY SITE OPERATOR

Describe repair, replacement, and maintenance of control measures, actions taken, date completed, and note the person that completed the work.

	Location/Station	Corrective Action	Date Completed	Person Responsible
Operator Signature:			**Date:**	

Attachment G - SESC Plan Amendment Log

PROJECT:

Amendment Log

TO BE FILLED OUT BY SITE OPERATOR

Describe amendment(s) to be made to the SESC Plan, the date, and the person/title making the amendment. ALL amendments must be approved by the Site Owner.

#	Date	Description of Amendment	Amended by: Person/Title	Site Owner Must Initial
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Add more lines/pages as necessary

Attachment H - Sediment Trap Calculations

DiPrete Engineering
Engineers • Planners • Surveyors

Temporary Sediment Trap Sizing

NOTE: Only for use on contributing drainage areas of 5 acres or less. For areas larger than 5 acres use a **Temporary Sediment Basin**.

RI Soil Erosion Sediment Control Handbook - Section 6: Temporary Sediment Traps - Page 3

Per Section 6 of the RISESCH, Sediment trap storage volume is based on 134 cubic yards per tributary area, 1" over the tributary area or per the sediment volume method, which ever is greater. Based on these methodologies, 1" over the tributary area always generates the greatest sediment load based on soils commonly found in Rhode Island.

Sediment Trap A

Drainage Area (DA) = 1.953 Acres

RISDISM Standard 10 Requires 1" from contributing Area (V)

V = DA x 1"

Sediment Storage Volume Required, V = **7,089** cu.ft.

Wet Storage Volume Calc

Wet Storage Volume(V_w) = $0.85 \times A_w \times D_w$

V_w = 3,705 cu.ft.

Wet Storage Volume Check = $V_w > 0.5\ V$ Ok

Dry Storage Volume Calc

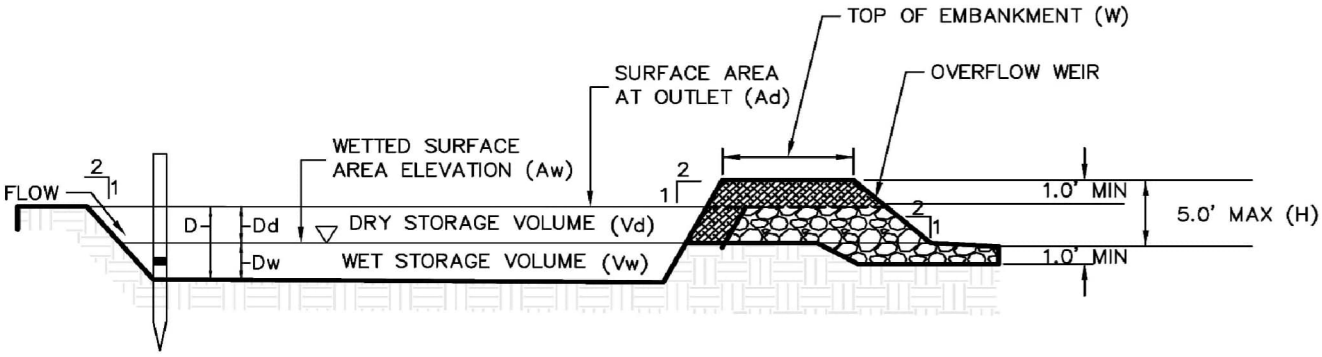
Dry Storage Volume (V_d) = $[(A_w + A_d)/2] * Dd$

V_d = 5,079 cu.ft.

Sediment Storage Volume Provided, V = **8,784** cu.ft.

Sediment Trap Dimensions

Wet Storage Depth (D_w)	1.5	ft
Dry Storage Depth (D_d)	1.5	ft
Total Depth (D)	3.0	ft
Bottom of Trap Area (A_b)	2,004	sq.ft
Wetted Surface Area (A_w)	2,906	sq.ft
Surface Area at Outlet (A_d)	3,865	sq.ft



Temporary Sediment Trap Detail

NOT TO SCALE

DiPrete Engineering

Project # 3562-001

July 21, 2026

Stormwater Management Report

Dunkin' Development

Plainfield Pike, Cranston, RI

Assessors Plat 36-2, Lot 169 & 99

Applicant:

Mineral Enterprises, Inc.
383 Smithfield Ave
Pawtucket, RI 02860

DANA R. NISBET
STATE OF RHODE ISLAND
No. 11876
07/21/2026
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

Table of Contents

Executive Summary

On behalf of the Client, we are submitting drainage calculations for the proposed development at 0 Plainfield Pike in Cranston, RI. The site is located on Assessors' Plat 36-2 Lot 169 and a portion of Lot 99. The site exists today as a large depression and almost entirely grass with some wooded area. The client proposes developing a multi-tenant building including a Dunkin' Restaurant with associated parking and a double drive thru. The proposed building will provide space for another restaurant tenant and retail.

The post development stormwater will be treated for water quality using Best Management Practices (BMPs). The site has been designed to meet the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). Based on the completed soil evaluations, the development site contains good soil textures (mostly sand and loamy sand) with moderate to shallow groundwater depths throughout the site.

To mitigate post development flows on site, a new drainage network is utilized to convey runoff from the new parking areas to sediment forebays for pretreatment and an infiltration basin with underground storage for water quality treatment and infiltration/detention. Sediment forebays are designed to remove 85% or more of TSS (total suspended solids) generated by the proposed driveways and parking area. Roof runoff is directed to the sediment forebays via roof leaders. The infiltration system is designed to hold and infiltrate the 1 through 100 year storm events. The underground detention system utilizes Stormtech 800 Chambers to provide additional storage for the infiltration system, but no additional infiltration has been modeled in this area.

This report details how the site will show negligible increases in stormwater runoff from pre development to post development conditions, and how the proposed BMPs will provide water quality treatment for stormwater runoff.

Pre development Conditions versus Post Development Conditions Flow Rates for each watershed are summarized below:

Subwatershed (design point)	1-yr Peak Flow		10-yr Peak Flow		25-yr Peak Flow		100-yr Peak Flow	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.05	0.10	0.17	0.26	0.25	0.35	0.42	0.54

All flows in cubic feet per second (cfs)

Pre development Conditions versus Post Development Volume Conditions for each watershed are summarized below:

Sub-watershed (design point)	1-yr Volume		10-yr Volume		25-yr Volume		100-yr Volume	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.004	0.006	0.012	0.015	0.017	0.021	0.030	0.033

All volumes are in acre feet (af)

1.0 Project Description

The purpose of this report is to specify a Stormwater Management System to be implemented in the new Dunkin' Development Project on Plainfield Pike in Cranston, RI.

The site totals approximately 1.91 acres located on Assessor's Plat 36-2 Lot 169 and a portion of Lot 99 in Cranston, RI. The site is located near the intersection of Plainfield Pike and Comstock Parkway. There are no wetlands within or abutting the site. The proposed development will include an 11,000± SF multi-tenant building with associated parking. The site is to be serviced by public water and sewer. Water is provided by Providence Water and Sewer is provided by Cranston DPW and Veolia Water.

The stormwater quality will be improved by utilizing Best Management Practices (BMPs) as established by the RISDISM for the treatment of stormwater runoff from the proposed development. BMPs will consist of a new drainage network system for conveyance, sediment forebays, infiltration basin, and Stormtech 800 Chambers for an underground detention system (UDS). The system has been designed to meet the RIDEM Stormwater Design and Installations Standards Manual.

2.0 Site Conditions

2.1 SOILS

There are the following soil types within the analyzed area of the Site as mapped by the NRCS USDA Soil Conservation service:

Soil Symbol	Description	Hydrologic Group
NaB	Narragansett silt loam, 3 to 8 percent slopes	B
StA	Sutton fine sandy loam, 0 to 3 percent slopes	B
WhB	Woodbridge fine sandy loam, 3 to 8 percent slopes	C

Site specific soil evaluations can be found in Appendix A2.1.

2.2 EXISTING SITE CONDITIONS

Currently the site is predominantly grass with some wooded area along the west and southwest edge of the property. The whole site is currently in a large depression that contains almost all stormwater runoff from the site. Some stormwater along the northern edge of the property does discharge directly onto Plainfield Pike where it is collected by the RIDOT MS4 system. The RIDOT MS4 system ultimately discharges to Simmons Reservoir. The design point is the RIDOT MS4 system located in Plainfield Pike.

2.3 POST SITE CONDITIONS

The proposed drainage analysis uses stormwater management systems to control and treat runoff from the proposed development. The following BMPs are used on site and have been designed to include the following elements:

- Sediment Forebays
  - Pretreatment of impervious areas such as driveways, parking areas, and sidewalks
  - 2.0' forebay depth with proposed 2:1 riprap slopes.
  - Equipped with gabion basket weir to infiltration basin
  - Sandy-loam or other slower infiltrating soil to be placed under the sediment forebays to inhibit infiltration within sediment forebay in areas with high insitu infiltration rates.
- Infiltration Basin
- Underground Detention System

The above elements will be used to meet the design standards of the Rhode Island Stormwater Design and Installation Standard.

The primary goal of increasing water quality treatment is accomplished by providing water quality BMPs. Stormwater runoff mitigation is provided by using an infiltration basin, underground storage system, sediment forebays and a new drainage network. Stormwater runoff is captured to the maximum extent practicable and fully infiltrated within the proposed infiltration basin.

3.0 Minimum Standards

The site has been designed to meet the minimum standards as outlined in the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). The following sections outline how the site meets and exceeds the minimum required standards.

3.1 Minimum Standard 1: LID Site Planning and Design Strategies

See "RIDEM (Appendix A) Stormwater Management Plan Checklist and LID Planning Report".

3.2 Minimum Standard 2: Groundwater Recharge

Groundwater is to be recharged per watershed based on impervious area coverage in accordance with section 3.2.2 of the RISDISM.

Groundwater recharge is determined from the following equation:
Re_v=1"*F*I/12

Where:
Re_v=Groundwater Recharge Volume (cf)
F=Recharge Factor based on Hydrologic Soil Groups (HSG) (see table below)
I=Impervious Area (sf)

HSG	Recharge Factor (F)
A	0.60
B	0.35
C	0.25
D	0.10

Recharge volume is provided using the infiltration basin. See Table 2-1 of the "RIDEM (Appendix A) Stormwater Management Plan Checklist and LID Planning Report" checklist for a summary of recharge values.

The required recharge volume is based on all impervious area, not just areas which are captured in the proposed BMPs.

See Appendix A3.2 for the water quality storm HydroCAD analysis. The water quality storm is calculated in HydroCAD using the 'calculate separate Pervious/Impervious runoff' option.

3.3 Minimum Standard 3: Water Quality

All stormwater is treated through an approved BMP before being discharged. This site has been designed to use sediment forebays to treat stormwater before being infiltrated by the infiltration basin. There are no pollutant-specific requirements and/or pollutant removal efficiencies applicable to the site as the result of SAMP, TMDL, or other watershed-specific requirements.

Water Quality Infiltration Basin

The infiltration basin has been sized using HydroCAD and an infiltration rate based on a parent material within the footprint of the BMP. The project site largely consists of sand. An infiltration rate was used from table 5-3 in section 5.3.4 of the RISDISM. See Appendix A3.2 for the HydroCAD analysis for the water quality event. The infiltration pond has been designed to fully retain and infiltrate the water quality event before reaching the underground detention system.

Pretreatment for the infiltration basin has been provided using sediment forebays. The forebays have been sized per section 6.4 of the RISDISM.

Infiltration Basin Parameters:

BMP	Total Watershed Area (acres)	Impervious (acres)	Required Forebay Volume (cf)	Provided Forebay Volume (cf)	Required Surface Area, As (sf)	Provided Surface Area, As (sf)
Forebay - A	0.88	0.68	498	857	33	292
Forebay - B	0.95	0.68	504	744	34	248
Infiltration Basin	1.83	1.36	1,002	1,601	67	540

Underground Detention System

The Underground Detention System has been designed as additional storage for the infiltration basin during the 1 to 100-year storm events. The system has been sized using HydroCAD and will not provide infiltration. The system will be located above the groundwater table and is not proposed to be lined. Natural infiltration is expected but has not been accounted for in this analysis as there will be less than 3 ft of separation.

3.4 Minimum Standard 4: Conveyance and Natural Channel Protection

3.4.1 Drainage Network Design Parameters:

A. PIPES

- All drainage pipes are HDPE or equivalent unless otherwise noted.
- Manning's coefficient = 0.012
- Diameters & lengths as specified
- The 100-year design storm is utilized for the drainage pipe design to ensure that the drainage system contains and channels water to the BMP areas as shown on the plans.
- The rational method has been used for the closed drainage system.

B. STRUCTURES

- Catch basins – Pre-cast concrete with 3' sump unless otherwise noted and inverts as specified
- Manholes – Pre-cast concrete with inverts as specified.

3.4.2 Channel Protection Volume:

The site has been designed to fully infiltrate the channel protection volume. The channel protection required has been met.

See table 4-1 of the "RIDEM (Appendix A) Stormwater Management Plan Checklist and LID Planning Report" for a Summary of Channel Protection Volumes. See Appendix A3.5.4.2 for the 1-year storm event HydroCAD analysis.

3.5 Minimum Standard 5: Overbank Flood Protection & Downstream Analysis

3.5.1 Method of Analysis

USDA Soil Conservation Service Method as defined by Technical Release No. 20 (TR-20) determines Stormwater runoff rate and volume. Type III rainfall distribution is utilized. Time of concentration is determined using Technical Release No 55 (TR-55) methodology, through the computer program *HydroCAD ver. 10.0* by HydroCAD Software Solutions LLC.

Soil evaluations have been performed by DiPrete Engineering. The existing soil has a texture of sand. Based on table 5-3 in section 5.3.4 of the RISDISM the soil has been modeled as having an infiltration rate of 8.27 in/hr.

The drainage system has been designed to mitigate all stormwater flows through the 100 year storm event without any discharges. The system has been designed to hold and infiltrate the 100 year storm event while still providing at least 6" of freeboard.

3.5.2 Design Storm

Analysis of 1-year, 10-year, 25-year, and 100-year frequency storms are included. The following 24-hour rainfall intensities are obtained from the Rhode Island Stormwater Design and Installation Standards Manual, Table 3-1 for Providence County.

1 year =	2.7 inches
10 year =	4.9 inches
25 year =	6.1 inches
100 year=	8.7 inches

3.5.3 Design Point Breakdown

The site is analyzed as one watershed area. In the pre development stage there are two subcatchments. In the post development stage there are five subcatchments. A description of each watershed and associated subcatchments are summarized as follows, for cover types see color watershed maps located in back of this report. Numbers in parentheses ( ) indicate the HydroCAD Node Number.

<u>Design Point 1:Plainfield Pike MS4 System</u>

In pre development conditions there are two sub watersheds to Design Point - 1.

Pre-1 (10) contains most of the site. Stormwater travels via overland flow to an existing depression (12) where stormwater is infiltrated

Pre-2 (11) contains the small area along the northern edge of the site that abuts Plainfield Pike. Stormwater flows to DP-1 (13) via overland flow into the RIDOT MS4 system.

In post development conditions there are five sub watersheds:

Post-1 (100) is the area of the pond complex for the infiltration basin and its sediment forebays (104).

Post-2 (101) contains the western portion of the site. Stormwater flows via overland flow into the proposed drainage network and to the pond complex (104/105). It is then pretreated before infiltrating

Post-3 (102) contains the eastern portion of the site. Stormwater flows via overland flow into the proposed drainage network and to the pond complex (104/105). It is then pretreated before infiltrating

Post-4 (103) is the undetained area along the northern edge of the site that travels via overland flow into the RIDOT MS4 system (DP-1) along Plainfield Pike.

Below is a summary of the hydrologic parameters for the pre and post development sub-areas in Design Point-1.

	Area (acres)	CN	Tc (min)
Pre-1	2.010	62	10.0
Pre-2	0.064	74	6.0
Post-1	0.182	61	6.0
Post-2	0.869	90	6.0
Post-3	0.964	88	6.0
Post-4	0.058	84	6.0

3.5.4 Q_p BMP Calculations

The proposed Qp BMP has been designed to provide stormwater mitigation including the 100-year event. Based on the available storage volume and the documented infiltration capacity of the underlying soils, the system is designed to fully infiltrate the 100-year storm event without the need for a conventional outlet structure. Accordingly, no outlet or emergency overflow structure is proposed.

As a conservative measure, the system has been evaluated under conditions where infiltration is temporarily unavailable. Under these conditions, stormwater will be retained on-site without discharge to the adjacent right-of-way. Runoff will begin to overtop the curb openings and pond in the vicinity of the BMP and along the adjacent curb line. The maximum ponding elevation under these conditions remains below the controlling high points of the driveways, thereby maintaining on-site containment. Ponded stormwater will remain within these areas and will gradually dissipate as infiltration resumes.

This design approach ensures that the BMP provides both effective infiltration under normal operating conditions and safe on-site storage during extreme or non-ideal conditions, without creating off-site impacts.

See attached Emergency HydroCAD in Appendix A.

3.5.5 Downstream Analysis

A downstream analysis is required under the following conditions:

Area of Disturbance (Acres)	Impervious Cover (%)
>5 to 10	>75
>10 to 25	>50
>25 to 50	>25
>50	All Projects

The proposed project disturbs 1.98 acres and is 1.33 acres of impervious. The proposed project disturbs less than 5 acres, thus a downstream analysis is not required.

3.5.6 Overbank Flood Protection Conclusion

The tables below present a summary of the pre development flows and volumes vs. the mitigated post development flows and volumes. The tables show negligible increases in all storm events due to the new driveway entrances to the site. Both entrances have been graded to capture stormwater to the maximum extent practicable before allowing flows off the site.

Pre development Conditions versus Post Development Conditions Flow Rates for each watershed are summarized below:

Subwatershed (design point)	1-yr Peak Flow		10-yr Peak Flow		25-yr Peak Flow		100-yr Peak Flow	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.05	0.10	0.17	0.26	0.25	0.35	0.42	0.54

All flows in cubic feet per second (cfs)

Pre development Conditions versus Post Development Volume Conditions for each watershed are summarized below:

Sub-watershed (design point)	1-yr Volume		10-yr Volume		25-yr Volume		100-yr Volume	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.004	0.006	0.012	0.015	0.017	0.021	0.030	0.033

All volumes are in acre feet (af)

3.6 Minimum Standard 6: Redevelopment and Infill Projects.
The site is not classified as a redevelopment or infill project.

3.7 Minimum Standard 7: Pollution Prevention
A Soil Erosion and Sediment Control Plan (SESC) for this development can be found under a separate document. See the Soil Erosion and Sediment Control Plan for the development prepared by DiPrete Engineering. The SESC contains information for construction pollution prevention. For post construction pollution prevention see the Operations and Maintenance (O&M) document prepared for this development by DiPrete Engineering.

3.8 Minimum Standard 8: Land Uses with High Potential Pollutant Loads (LUHPPLs)
The site is not considered LUHPPL.

3.9 Minimum Standard 9: Illicit Discharges
There are no proposed Illicit Discharges on site. The site will be serviced by public water and public sewer.

3.10 Minimum Standard 10: Construction Activity Soil Erosion, Runoff and Sedimentation and Pollution Prevention Control Measure Requirements
See the SESC for this development prepared by DiPrete Engineering.

3.11 Minimum Standard 11: Stormwater Management System Operation and Maintenance
See the O&M for this development prepared by DiPrete Engineering.

Appendix A

A2.1 Soil Evaluations

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/17/2025
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 50s Shaded: Yes ☐ No ☑ Time: 8:30

TH dth 25-1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-7"	A	S	10YR 5/3	-	-	fsl	1 gr	FR	Fill
^B	7-25"	A	S	10YR 6/6	-	-	gr lfs	0 m	FR	Fill
Gravel	25-44"	A	S	-	-	-	-	-	-	3/4" stone
Ab	44-50"	C	S	10YR 2/2	-	-	fsl	0 m	FR	
Bwb	50-75"	C	S	10YR 4/2	7.5YR 5/6	C F P	gr fsl	1 sbk	FR	
C	75-84	-	-	2.5Y 5/2	7.5YR 5/6	M C P	lfs	0 m	FR	
TH dth 25-2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-4"	C	S	10YR 3/3	-	-	fsl	1 gr	FR	Fill
^B	4-17"	C	S	10YR 3/4	-	-	fsl	0 m	FR	Fill
^A'	17-37"	C	S	10YR 3/3	-	-	fsl	0 m	FR	Fill
C1	37-57"	C	S	2.5Y 6/3	7.5YR 5/8	C M P	gr fsl	0 m	FR	
2C2	57-96"	-	-	10YR 5/4	-	-	cb gr s	0 sgr	LO	

TH dth 25-1 Soil Class _____ Total Depth 84" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 24" SHWT 50" (og)
TH dth 25-2 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 37" (og)

Comments: dth 25-1: apppears to be former drain area with 3/4" crushed stone. Heavy sidewall seepage at 24"

Revised 11/25/18

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/17/2025
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 50s Shaded: Yes ☐ No ☑ Time: 8:30

TH dth 25-3 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-8"	C	S	10YR 5/3	-	-	fsl	1 gr	FR	Fill
^B	8-27"	C	S	10YR 3/4	-	-	ls	0 m	FR	Fill
C1	27-52"	C	S	2.5Y 5/4	-	-	s	0 sgr	LO	
C2	52-96"	-	-	2.5Y 6/3	7.5YR 5/6	C M P	fs	0 m	VFR	

TH dth 25-4 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-4"	C	S	10YR 3/3	-	-	fsl	1 gr	FR	Fill
^B	4-20"	C	S	10YR 4/4	-	-	gr fsl	0 m	FR	Fill
BC	20-36"	C	S	2.5Y 5/6	7.5YR 5/6	C M D	fsl	0 m	FR	
2C1	36-55"	C	S	10YR 5/6	5YR 5/8	F F D	gr cos	0 sgr	LO	
2C2	55-73"	C	S	10YR 5/6	-	-	gr s	0 sgr	LO	
2C3	73-96"	-	-	10YR 5/4	-	-	cos	0 sgr	LO	

TH dth 25-3 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 96" SHWT 68" (og)
TH dth 25-4 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 96" SHWT 55" (og)

Comments: dth 25-4: Redox in BC appears to be hanging water table due to contrasting textures. Some areas sil in texture

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
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Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/17/2025
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 50s Shaded: Yes ☐ No ☑ Time: 8:30

TH dth 25-5 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-25"	C	S	10YR 3/3	-	-	lfs	1 gr	FR	Fill
^B	25-28"	I	B	2.5Y 5/4	-	-	lfs	0 m	FR	Fill
^C	28-44"	C	S	2.5Y 5/2 and 7.5YR 5/8	7.5YR 5/8	C F P	si + vfs	2 pl	FR	Fill
C1	44-48"	C	S	Gley1 5/10Y	7.5YR 5/8	C M P	lvfs	0 m	FR	
C2	48-75"	C	S	5Y 5/1	-	-	gr lfs	0 m	FR	
2C3	75-96"	-	-	10YR 5/4	-	-	lvfs	0 m	FR	
TH dth 25-6 Horizon	**Depth**	**Horizon Boundaries**		**Soil Colors**		**Re-Dox**	**Texture**	**Structure**	**Consistence**	**Soil Category**
		Dist	**Topo**	**Matrix**	**Re-Dox Features**	**Ab. S. Contr.**				
^A	0-6"	C	S	10YR 3/3	7.5YR 3/4	C F D	fsl	1 gr	FR	Fill
^B	6-28"	C	S	10YR 4/4	-	-	lfs	0 m	FR	Fill
^C	28-46"	C	S	2.5Y 4/3	-	-	gr lfs	0 m	FR	Fill
^A'	46-96"	-	-	10YR 2/2	-	-	sl	0 m	FR	Fill

TH dth 25-5 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 42" SHWT 40" (og)
TH dth 25-6 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 15" SHWT 46" (og)

Comments: dth 25-5: C1 firm in place. Sidewall seepage at 42", none below
dth 25-6: A is saturated, evidence of standing water. ^A' contains large boulders, wood.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
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Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/17/2025
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 50s Shaded: Yes ☐ No ☑ Time: 8:30

TH dth 25-7 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-5"	C	S	10YR 3/2	-	-	fsl	1 gr	FR	Fill
^B	5-36"	C	S	10YR 4/4	-	-	sl	0 m	FR	Fill
^Cd	36-47"	C	S	5Y 5/2	7.5YR 5/6	C M P	lvfs	0 m	FR	Fill
C	47-96"	-	-	2.5Y 5/3			cb gr ls	0 m	VFR	

TH dth 25-8 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^A	0-5"	C	S	10YR 3/3	-	-	fsl	1 gr	FR	Fill
^B	5-31"	C	S	10YR 4/3	-	-	fsl	0 m	FR	Fill
Cd	31-59"	C	S	2.5Y 4/2	-	-	fsl	0 m	FR	
C	59-96"	-	-	2.5Y 7/2	-	-	fs	0 m	VFR	

TH dth 25-7 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 30" SHWT 47" (og)
TH dth 25-8 Soil Class _____ Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 23"/96" SHWT 31" (og)

Comments: dth 25-7: Sidewall seepage at 30", no seepage at bottom.
dth 25-8: south side of testhole has C horizon with cb gr lfs instead of fs. Sidewall seepage at 23", bottom seepage at 96".

Revised 11/25/18

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/28/2026
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 60s Shaded: Yes ☐ No ☑ Time: 7:30

TH dth 26-1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C	0-9"	C	S	10YR 3/3	-	-	fsl	1 gr	FR	Fill
Bwb	9-26"	C	W	10YR 5/4	-	-	fsl	0 m	FR	6
2C1	26-44"	C	S	10YR 4/4	-	-	gr cos	0 sgr	LO	1
2C2	44-72"	C	S	2.5Y 6/3	-	-	s	0 sgr	LO	1
2C3	72-96"	-	-	2.5Y 5/3	7.5YR 5/8	F M P	fs	0 sgr	LO	1

TH dth 26-2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C	0-36"	C	S	10YR 3/3	7.5YR 5/8	C F P	fsl	0 m	FR	Fill
C1	36-92"	C	S	2.5Y 5/3	7.5YR 5/8	M M P	sil	0 m	FR	7
2C2	92-108"	-	-	2.5Y 5/3	7.5YR 5/6	C M P	cb gr s	0 sgr	LO	1

TH dth 26-1 Soil Class Fill over ab till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 72" (og)
TH dth 26-2 Soil Class Fill over ab till Total Depth 108" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 108" SHWT 30" (og)

Comments: dth 26-1: very large boulder at 84".
dth 26-2: ^C contains small inclusions of 10YR 5/6 sil. Inclusions contain redox features. C1 is firm in place

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/28/2026
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 60s Shaded: Yes ☐ No ☑ Time: 7:30

TH dth 26-3 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C	0-29"	C	S	10YR 3/2	-	-	fsl	0 m	FR	Fill
C1	29-42"	C	S	2.5Y 5/3	7.5YR 5/8	C M P	sil	0 m	FR	7
2C2	42-68"	C	S	2.5Y 5/3	-	-	s	0 sgr	LO	1
2C3	68-108"	-	-	10YR 5/3	-	-	gr cos	0 sgr	LO	1

TH dth 26-4 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C1	0-27"	C	S	10YR 3/2	-	-	fsl	0 m	FR	Fill
^C2	27-42"	C	S	2.5Y 5/4	7.5YR 5/8	C M P	sl	0 m	FR	Fill
C1	42-63"	C	S	2.5Y 5/3	7.5YR 5/8	C M P	sil	0 m	FR	7
2C2	63-96"	-	-	10YR 5/3	-	-	gr s	0 sgr	LO	1

TH dth 26-3 Soil Class Fill over ab till Total Depth 108" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 32" (og)
TH dth 26-4 Soil Class Fill over ab till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 36" (og)

Comments: dth 26-3: concrete slab at 24" in eastern side of testhole. Saturated at 100"

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: _____
Property Location: 2110 Plainfield Pike, Cranston
Date of Test Hole: 4/28/2026
Soil Evaluator: Tim Twohig License Number: D4073
Weather: Sunny, 60s Shaded: Yes ☐ No ☑ Time: 7:30

TH dth 26-5 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C	0-51"	C	S	10YR 2/2	-	-	sl and ls	0 m	FR	Fill
C1	51-60"	C	S	2.5Y 5/3	7.5YR 5/8	C M P	sil	0 m	FR	7
2C2	60-96"	-	-	2.5Y 5/3	-	-	cb gr s	0 sgr	LO	1

TH dth 26-6 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
^C	0-39"	C	S	10YR 3/3	-	-	fsl	0 m	FR	Fill
C1	39-64"	C	S	2.5Y 5/2	7.5YR 5/8	C M P	fsl	1 pl parting to 0 m	FI	7
2C2	64-84"	-	-	2.5Y 5/3	-	-	cb gr s	0 sgr	LO	1

TH dth 26-5 Soil Class Fill over ab till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 51" (og)
TH dth 26-6 Soil Class Fill over ab till Total Depth 84" Impervious/Limiting Layer Depth - (og) GW Seepage Depth 36" SHWT 36" (og)

Comments: dth 26-6: seepage localized in distinct areas within the profile, but always immediately above 2C2

Revised 11/25/18

A3.2 Water Quality HydroCAD Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: Pre-1 Runoff Area=2.010 ac 0.13% Impervious Runoff Depth=0.00"
Flow Length=365' Tc=10.0 min CN=62/98 Runoff=0.00 cfs 0.000 af

Subcatchment 11: Pre-2 Runoff Area=0.064 ac 34.25% Impervious Runoff Depth=0.34"
Tc=6.0 min CN=61/98 Runoff=0.02 cfs 0.002 af

Pond 12: Existing Depression Peak Elev=300.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Link 13: Plainfield Pike Inflow=0.02 cfs 0.002 af
Primary=0.02 cfs 0.002 af

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=61/98 Runoff=0.00 cfs 0.000 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=0.75"
Tc=6.0 min CN=66/98 Runoff=0.72 cfs 0.054 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=62/98 Runoff=0.77 cfs 0.058 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=0.61"
Tc=0.0 min CN=61/98 Runoff=0.05 cfs 0.003 af

Pond 104: Pond Peak Elev=300.50' Storage=381 cf Inflow=1.49 cfs 0.112 af
Discarded=0.77 cfs 0.112 af Primary=0.00 cfs 0.000 af Outflow=0.77 cfs 0.112 af

Pond 105: UDS (800s) Peak Elev=300.55' Storage=4,645 cf Inflow=0.00 cfs 0.000 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=0.00 cfs 0.000 af

Link DP-1: Plainfield Pike Inflow=0.05 cfs 0.003 af
Primary=0.05 cfs 0.003 af

A3.4.2 Drainage Network Hydraulic Calculations

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Dunkin' Development
Project Number: 3562-001

25-Year Storm
Date: 6/23/2026

Pipe Analysis

Pipe ID	Pipe Length	Pipe Size	Pipe Slope	Flow Rate	Capacity Full	Velocity	Invert Down	Invert Up
	(ft)	(in)	(%)	(cfs)	(cfs)	(ft/s)	(Ft)	(ft)
2 - 3	67.14	12	4.06%	3.3	7.79	9.5	298.50	301.22
1 - 2	168.10	12	0.75%	1.5	3.35	4.1	301.22	302.49
6 - 7	57.16	12	4.46%	3.4	8.16	9.9	298.50	301.05
5 - 6	53.83	12	1.00%	2.9	3.86	5.4	301.05	301.59
4 - 5	118.47	12	1.00%	1.7	3.86	4.8	301.59	302.77

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Dunkin' Development
Project Number: 3562-001

100-Year Storm
Date: 6/23/2026

Pipe Analysis

Pipe ID	Pipe Length	Pipe Size	Pipe Slope	Flow Rate	Capacity Full	Velocity	Invert Down	Invert Up
	(ft)	(in)	(%)	(cfs)	(cfs)	(ft/s)	(Ft)	(ft)
2 - 3	67.14	12	4.06%	4.2	7.79	10.1	298.50	301.22
1 - 2	168.10	12	0.75%	1.9	3.35	4.4	301.22	302.49
6 - 7	57.16	12	4.46%	4.4	8.16	10.6	298.50	301.05
5 - 6	53.83	12	1.00%	3.7	3.86	5.6	301.05	301.59
4 - 5	118.47	12	1.00%	2.2	3.86	5.1	301.59	302.77

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Dunkin' Development — 100-Year Storm
Project Number: 3562-001 — Date: 6/23/2026

HGL at Structure

Structure	Rim Elevation (ft)	HGL Elevation (ft)	Rim-HGL (ft)
3	299.69	0.00	N/A
2	304.86	303.18	1.68
1	305.09	304.14	0.95
7	299.69	0.00	N/A
6	304.68	302.34	2.34
5	305.66	303.30	2.36
4	305.37	304.14	1.24

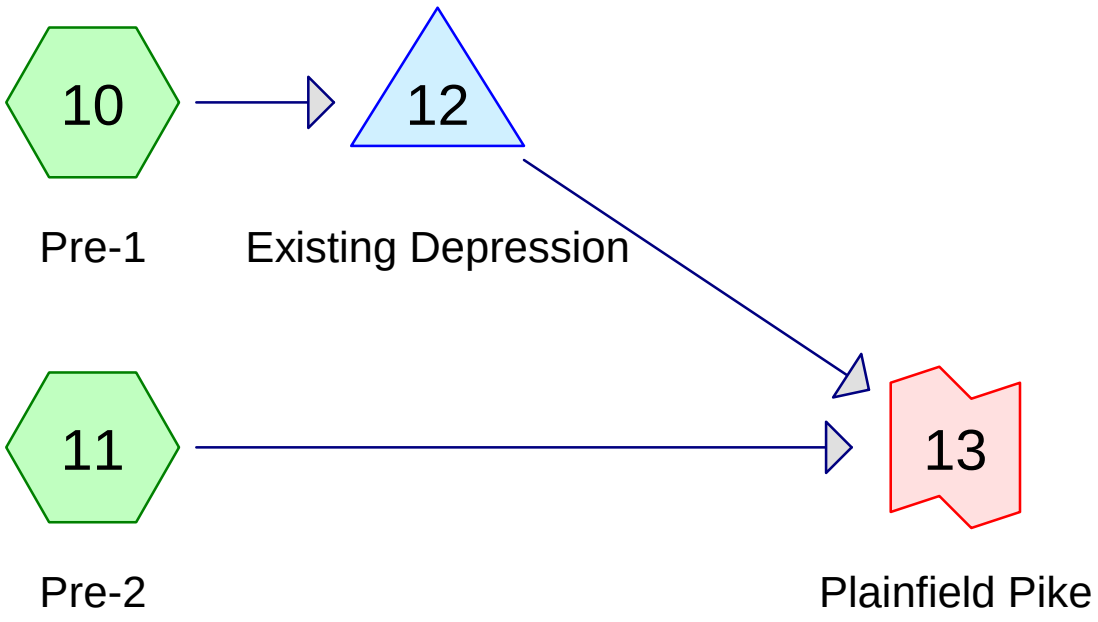
DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Dunkin' Development
Project Number: 3562-001

10-Year Storm
Date: 6/23/2026

Structure	Area	Inlet Time	Intensity	Runoff C	Q=Cia	Q Carry over	Q Captured	Q Bypassed	Bypass Structure	Inlet Type	Curb Opening	Curb Opening	Grate Length	Grate Width	Depth	Spread
	(sf)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1	10,645	6	6.94	0.71	1.21	0	1.21	0.00	---	Grate inlet	---	---	2	2	0.176	17.568
2	11,658	6	6.938	0.82	1.54	0	1.54	0.00	---	Grate inlet	---	---	4	2	0.17	16.995
4	12,875	6	6.938	0.68	1.41	0	1.41	0.00	---	Grate inlet	---	---	2	2	0.193	19.273
5	8,290	6	6.938	0.77	1.03	0	0.51	0.52	6	Grate inlet	---	---	2	2	0.1	9.955
6	3,774	6	6.938	0.75	0.46	0.518	0.97	0.00	---	Grate inlet	---	---	4	2	0.128	12.796

A3.5.4.1 HydroCAD Node Diagram

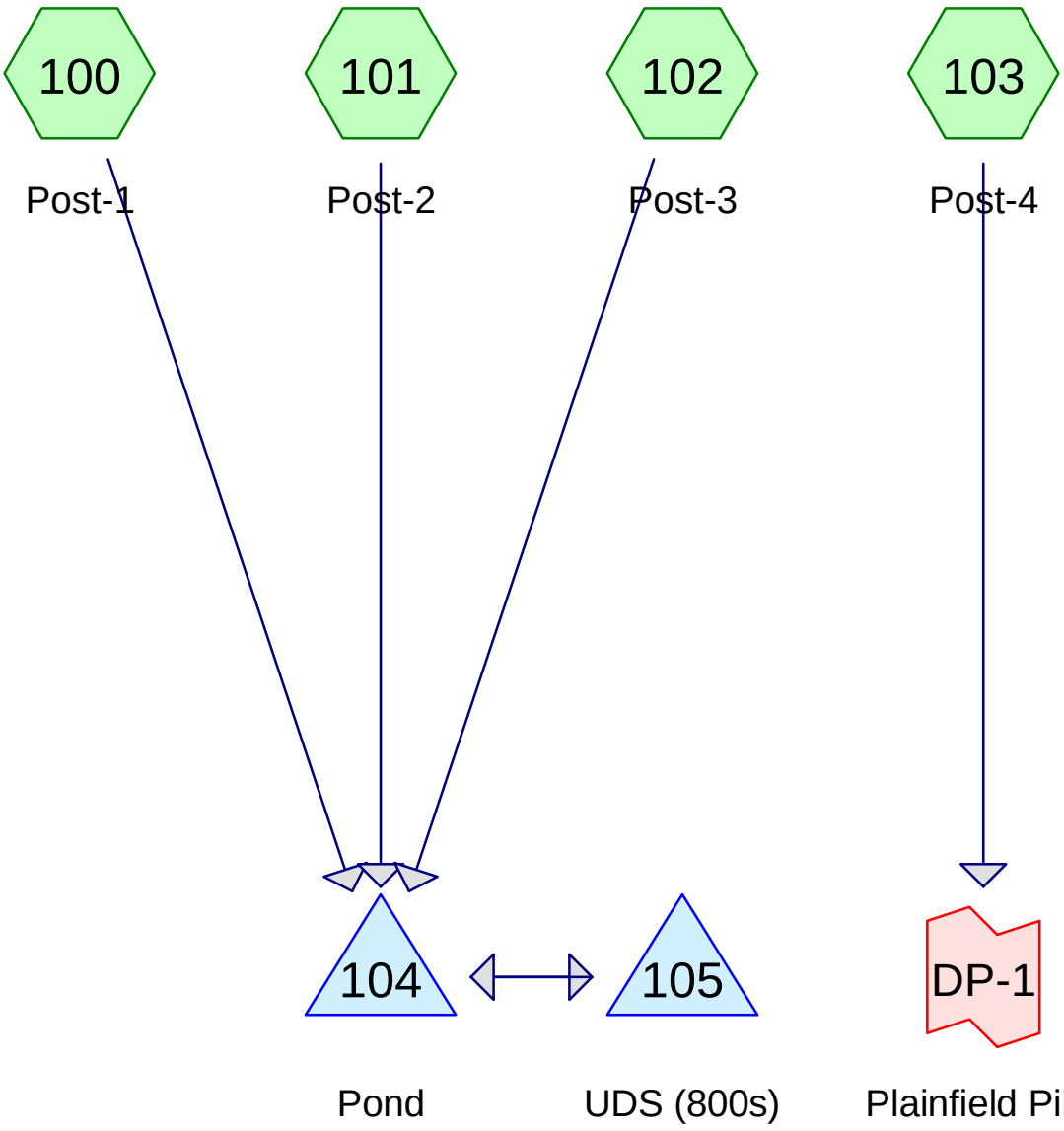


Subcat Reach Pond Link

Routing Diagram for 3562-001-ALLS-EHCD-INHS
Prepared by DiPrete Engineering, Printed 2/18/2026
HydroCAD® 10.20-8a s/n 01125 © 2025 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.678	61	>75% Grass cover, Good, HSG B (10, 11)
0.165	74	>75% Grass cover, Good, HSG C (10)
0.023	98	Offsite Impervious, HSG B (10, 11)
0.001	98	Offsite Impervious, HSG C (10)
0.134	55	Woods, Good, HSG B (10)
0.074	70	Woods, Good, HSG C (10)
2.074	**62**	**TOTAL AREA**



Subcat Reach Pond Link

Routing Diagram for 3562-001-ALLS-PHCD-INHS
Prepared by DiPrete Engineering, Printed 7/21/2026
HydroCAD® 10.20-9a s/n 01125 © 2026 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.566	61	>75% Grass cover, Good, HSG B (100, 101, 102, 103)
0.097	74	>75% Grass cover, Good, HSG C (101, 102)
0.910	98	Impervious, HSG B (100, 101, 102, 103)
0.131	98	Impervious, HSG C (101, 102)
0.103	98	Offsite Impervious, HSG B (100, 101, 102, 103)
0.001	98	Offsite Impervious, HSG C (101, 102)
0.252	98	Roofs, HSG B (101, 102)
0.001	98	Roofs, HSG C (101)
0.005	55	Woods, Good, HSG B (101)
0.009	70	Woods, Good, HSG C (101)
2.074	**87**	**TOTAL AREA**

A3.5.4.2 HydroCAD 1-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: Pre-1 Runoff Area=2.010 ac 0.13% Impervious Runoff Depth=0.29"
Flow Length=365' Tc=10.0 min CN=62 Runoff=0.28 cfs 0.048 af

Subcatchment 11: Pre-2 Runoff Area=0.064 ac 34.25% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=74 Runoff=0.05 cfs 0.004 af

Pond 12: Existing Depression Peak Elev=300.05' Storage=156 cf Inflow=0.28 cfs 0.048 af
Discarded=0.18 cfs 0.048 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.048 af

Link 13: Plainfield Pike Inflow=0.05 cfs 0.004 af
Primary=0.05 cfs 0.004 af

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=0.26"
Tc=6.0 min CN=61 Runoff=0.02 cfs 0.004 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=1.71"
Tc=6.0 min CN=90 Runoff=1.73 cfs 0.124 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=1.55"
Tc=6.0 min CN=88 Runoff=1.76 cfs 0.125 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=1.27"
Tc=0.0 min CN=84 Runoff=0.10 cfs 0.006 af

Pond 104: Pond Peak Elev=300.86' Storage=1,857 cf Inflow=3.51 cfs 0.277 af
Discarded=0.80 cfs 0.250 af Primary=0.75 cfs 0.027 af Outflow=1.55 cfs 0.277 af

Pond 105: UDS (800s) Peak Elev=300.68' Storage=5,804 cf Inflow=0.75 cfs 0.027 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=0.11 cfs 0.024 af

Link DP-1: Plainfield Pike Inflow=0.10 cfs 0.006 af
Primary=0.10 cfs 0.006 af

A3.5.4.3 HydroCAD 10-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: Pre-1 Runoff Area=2.010 ac 0.13% Impervious Runoff Depth=1.38"
Flow Length=365' Tc=10.0 min CN=62 Runoff=2.58 cfs 0.231 af

Subcatchment 11: Pre-2 Runoff Area=0.064 ac 34.25% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=74 Runoff=0.17 cfs 0.012 af

Pond 12: Existing Depression Peak Elev=300.55' Storage=3,097 cf Inflow=2.58 cfs 0.231 af
Discarded=0.51 cfs 0.231 af Primary=0.00 cfs 0.000 af Outflow=0.51 cfs 0.231 af

Link 13: Plainfield Pike Inflow=0.17 cfs 0.012 af
Primary=0.17 cfs 0.012 af

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=1.31"
Tc=6.0 min CN=61 Runoff=0.25 cfs 0.020 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=3.78"
Tc=6.0 min CN=90 Runoff=3.72 cfs 0.274 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=3.57"
Tc=6.0 min CN=88 Runoff=3.96 cfs 0.288 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=3.18"
Tc=0.0 min CN=84 Runoff=0.26 cfs 0.015 af

Pond 104: Pond Peak Elev=301.34' Storage=3,943 cf Inflow=7.92 cfs 0.713 af
Discarded=0.85 cfs 0.578 af Primary=4.44 cfs 0.134 af Outflow=5.29 cfs 0.713 af

Pond 105: UDS (800s) Peak Elev=301.21' Storage=10,186 cf Inflow=4.44 cfs 0.134 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=0.48 cfs 0.132 af

Link DP-1: Plainfield Pike Inflow=0.26 cfs 0.015 af
Primary=0.26 cfs 0.015 af

A3.5.4.4 HydroCAD 25-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: Pre-1 Runoff Area=2.010 ac 0.13% Impervious Runoff Depth=2.16"
Flow Length=365' Tc=10.0 min CN=62 Runoff=4.26 cfs 0.362 af

Subcatchment 11: Pre-2 Runoff Area=0.064 ac 34.25% Impervious Runoff Depth=3.27"
Tc=6.0 min CN=74 Runoff=0.25 cfs 0.017 af

Pond 12: Existing Depression Peak Elev=300.78' Storage=5,551 cf Inflow=4.26 cfs 0.362 af
Discarded=0.72 cfs 0.362 af Primary=0.00 cfs 0.000 af Outflow=0.72 cfs 0.362 af

Link 13: Plainfield Pike Inflow=0.25 cfs 0.017 af
Primary=0.25 cfs 0.017 af

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=2.07"
Tc=6.0 min CN=61 Runoff=0.42 cfs 0.032 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=4.94"
Tc=6.0 min CN=90 Runoff=4.79 cfs 0.358 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=4.72"
Tc=6.0 min CN=88 Runoff=5.16 cfs 0.380 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=4.29"
Tc=0.0 min CN=84 Runoff=0.35 cfs 0.021 af

Pond 104: Pond Peak Elev=301.56' Storage=4,942 cf Inflow=10.37 cfs 0.988 af
Discarded=0.87 cfs 0.767 af Primary=6.32 cfs 0.221 af Outflow=7.19 cfs 0.988 af

Pond 105: UDS (800s) Peak Elev=301.54' Storage=12,805 cf Inflow=6.32 cfs 0.221 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=0.81 cfs 0.219 af

Link DP-1: Plainfield Pike Inflow=0.35 cfs 0.021 af
Primary=0.35 cfs 0.021 af

A3.5.4.5 HydroCAD 100-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: Pre-1 Runoff Area=2.010 ac 0.13% Impervious Runoff Depth=4.11"
Flow Length=365' Tc=10.0 min CN=62 Runoff=8.40 cfs 0.688 af

Subcatchment 11: Pre-2 Runoff Area=0.064 ac 34.25% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=74 Runoff=0.42 cfs 0.030 af

Pond 12: Existing Depression Peak Elev=301.19' Storage=12,340 cf Inflow=8.40 cfs 0.688 af
Discarded=1.09 cfs 0.688 af Primary=0.00 cfs 0.000 af Outflow=1.09 cfs 0.688 af

Link 13: Plainfield Pike Inflow=0.42 cfs 0.030 af
Primary=0.42 cfs 0.030 af

Summary for Subcatchment 10: Pre-1

Runoff = 8.40 cfs @ 12.14 hrs, Volume= 0.688 af, Depth= 4.11"
Routed to Pond 12 : Existing Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (ac)	CN	Description
1.636	61	>75% Grass cover, Good, HSG B
0.165	74	>75% Grass cover, Good, HSG C
0.001	98	Offsite Impervious, HSG B
0.001	98	Offsite Impervious, HSG C
0.134	55	Woods, Good, HSG B
0.074	70	Woods, Good, HSG C
2.010	62	Weighted Average
2.008	62	99.87% Pervious Area
0.003	98	0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1010	0.23		**Sheet Flow, A** Grass: Dense n= 0.240 P2= 3.30"
2.6	265	0.0109	1.68		**Shallow Concentrated Flow, B** Unpaved Kv= 16.1 fps
10.0	365	Total			

Summary for Subcatchment 11: Pre-2

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.030 af, Depth= 5.56"
Routed to Link 13 : Plainfield Pike

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (ac)	CN	Description
0.042	61	>75% Grass cover, Good, HSG B
0.022	98	Offsite Impervious, HSG B
0.064	74	Weighted Average
0.042	61	65.75% Pervious Area
0.022	98	34.25% Impervious Area

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

Summary for Pond 12: Existing Depression

Inflow Area = 2.010 ac, 0.13% Impervious, Inflow Depth = 4.11" for 100-Year event
Inflow = 8.40 cfs @ 12.14 hrs, Volume= 0.688 af
Outflow = 1.09 cfs @ 12.99 hrs, Volume= 0.688 af, Atten= 87%, Lag= 51.1 min
Discarded = 1.09 cfs @ 12.99 hrs, Volume= 0.688 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13 : Plainfield Pike

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 301.19' @ 12.99 hrs Surf.Area= 19,610 sf Storage= 12,340 cf

Plug-Flow detention time= 131.9 min calculated for 0.688 af (100% of inflow)
Center-of-Mass det. time= 131.9 min (973.2 - 841.3)

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	97,653 cf	**Existing Depression Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	2,699	234.7	0	0	2,699
301.00	17,159	553.0	8,888	8,888	22,655
302.00	32,085	752.0	24,236	33,124	43,331
303.00	46,177	864.6	38,918	72,041	57,839
303.50	56,439	991.2	25,611	97,653	76,541

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	**2.410 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	303.15'	**20.0' long x 4.2' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Discarded OutFlow Max=1.09 cfs @ 12.99 hrs HW=301.19' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=300.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 13: Plainfield Pike

Inflow Area = 2.074 ac, 1.18% Impervious, Inflow Depth = 0.17" for 100-Year event
Inflow = 0.42 cfs @ 12.09 hrs, Volume= 0.030 af
Primary = 0.42 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=3.99"
Tc=6.0 min CN=61 Runoff=0.85 cfs 0.061 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=7.50"
Tc=6.0 min CN=90 Runoff=7.10 cfs 0.543 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=7.25"
Tc=6.0 min CN=88 Runoff=7.74 cfs 0.584 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=6.77"
Tc=0.0 min CN=84 Runoff=0.54 cfs 0.033 af

Pond 104: Pond Peak Elev=302.39' Storage=8,890 cf Inflow=15.68 cfs 1.566 af
Discarded=0.96 cfs 1.184 af Primary=9.09 cfs 0.382 af Outflow=10.00 cfs 1.566 af

Pond 105: UDS (800s) Peak Elev=302.39' Storage=18,774 cf Inflow=9.09 cfs 0.382 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=0.87 cfs 0.379 af

Link DP-1: Plainfield Pike Inflow=0.54 cfs 0.033 af
Primary=0.54 cfs 0.033 af

Summary for Subcatchment 100: Post-1

Runoff = 0.85 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 3.99"
Routed to Pond 104 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
7,931	61	>75% Grass cover, Good, HSG B
17	98	Impervious, HSG B
15	98	Offsite Impervious, HSG B
7,963	61	Weighted Average
7,931	61	99.60% Pervious Area
32	98	0.40% Impervious Area

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

Summary for Subcatchment 101: Post-2

Runoff = 7.10 cfs @ 12.08 hrs, Volume= 0.543 af, Depth= 7.50"
Routed to Pond 104 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
5,086	61	>75% Grass cover, Good, HSG B
3,523	74	>75% Grass cover, Good, HSG C
18,109	98	Impervious, HSG B
5,626	98	Impervious, HSG C
44	98	Offsite Impervious, HSG B
50	98	Offsite Impervious, HSG C
4,757	98	Roofs, HSG B
44	98	Roofs, HSG C
222	55	Woods, Good, HSG B
377	70	Woods, Good, HSG C
37,838	90	Weighted Average
9,207	66	24.33% Pervious Area
28,631	98	75.67% Impervious Area

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

Summary for Subcatchment 102: Post-3

Runoff = 7.74 cfs @ 12.08 hrs, Volume= 0.584 af, Depth= 7.25"
Routed to Pond 104 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
10,679	61	>75% Grass cover, Good, HSG B
715	74	>75% Grass cover, Good, HSG C
21,494	98	Impervious, HSG B
99	98	Impervious, HSG C
2,853	98	Offsite Impervious, HSG B
0	98	Offsite Impervious, HSG C
6,210	98	Roofs, HSG B
42,050	88	Weighted Average
11,394	62	27.10% Pervious Area
30,656	98	72.90% Impervious Area

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

Summary for Subcatchment 103: Post-4

Runoff = 0.54 cfs @ 12.00 hrs, Volume= 0.033 af, Depth= 6.77"
Routed to Link DP-1 : Plainfield Pike

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
955	61	>75% Grass cover, Good, HSG B
2	98	Impervious, HSG B
1,554	98	Offsite Impervious, HSG B
2,511	84	Weighted Average
955	61	38.04% Pervious Area
1,556	98	61.96% Impervious Area

Summary for Pond 104: Pond

Inflow = 15.68 cfs @ 12.08 hrs, Volume= 1.566 af
Outflow = 10.00 cfs @ 12.11 hrs, Volume= 1.566 af, Atten= 36%, Lag= 1.8 min
Discarded = 0.96 cfs @ 13.76 hrs, Volume= 1.184 af
Primary = 9.09 cfs @ 12.11 hrs, Volume= 0.382 af
Routed to Pond 105 : UDS (800s)

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 302.39' @ 13.76 hrs Surf.Area= 4,998 sf Storage= 8,890 cf

Plug-Flow detention time= 63.4 min calculated for 1.566 af (100% of inflow)
Center-of-Mass det. time= 63.4 min (939.8 - 876.4)

Volume	Invert	Avail.Storage	Storage Description
#1	300.40'	12,053 cf	**Infiltration Pond Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.40	3,948	343.7	0	0	3,948
301.00	4,270	349.4	2,465	2,465	4,325
302.00	4,793	358.8	4,529	6,994	4,962
303.00	5,331	368.8	5,060	12,053	5,646

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.40'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	300.55'	**10.00" Round Culvert (WQ Elev = 300.50) X 4.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 300.55' / 300.55' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf

Discarded OutFlow Max=0.96 cfs @ 13.76 hrs HW=302.39' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.96 cfs)

Primary OutFlow Max=8.82 cfs @ 12.11 hrs HW=301.92' TW=301.21' (Dynamic Tailwater)
↑—**2=Culvert (WQ Elev = 300.50)** (Inlet Controls 8.82 cfs @ 4.04 fps)

Summary for Pond 105: UDS (800s)

Inflow	=	9.09 cfs @	12.11 hrs, Volume=	0.382 af
Outflow	=	0.87 cfs @	20.51 hrs, Volume=	0.379 af, Atten= 90%, Lag= 503.6 min
Primary	=	0.87 cfs @	20.51 hrs, Volume=	0.379 af

Routed to Pond 104 : Pond

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 300.55' Surf.Area= 10,556 sf Storage= 4,645 cf
Peak Elev= 302.39' @ 13.78 hrs Surf.Area= 10,556 sf Storage= 18,774 cf (14,129 cf above start)

Plug-Flow detention time= 570.4 min calculated for 0.273 af (71% of inflow)
Center-of-Mass det. time= 433.7 min (1,178.6 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	299.72'	8,020 cf	**72.25'W x 146.10'L x 3.75'H Field A** 39,584 cf Overall - 15,280 cf Embedded = 24,304 cf x 33.0% Voids
#2A	300.22'	15,280 cf	**ADS_StormTech SC-800 +Cap** x 300 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 300 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		23,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.55'	**10.00" Round Culvert (WQ Elev = 300.50) X 4.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 300.55' / 300.55' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf

Primary OutFlow Max=0.87 cfs @ 20.51 hrs HW=301.38' TW=301.38' (Dynamic Tailwater)
↑—**1=Culvert (WQ Elev = 300.50)** (Inlet Controls 0.87 cfs @ 0.40 fps)

Summary for Link DP-1: Plainfield Pike

Inflow Area = 0.058 ac, 61.96% Impervious, Inflow Depth = 6.77" for 100-Year event
Inflow = 0.54 cfs @ 12.00 hrs, Volume= 0.033 af
Primary = 0.54 cfs @ 12.01 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

A3.5.4.6 HydroCAD 100-Year Emergency Outlet Calculations

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 100: Post-1 Runoff Area=7,963 sf 0.40% Impervious Runoff Depth=3.99"
Tc=6.0 min CN=61 Runoff=0.85 cfs 0.061 af

Subcatchment 101: Post-2 Runoff Area=37,838 sf 75.67% Impervious Runoff Depth=7.50"
Tc=6.0 min CN=90 Runoff=7.10 cfs 0.543 af

Subcatchment 102: Post-3 Runoff Area=42,050 sf 72.90% Impervious Runoff Depth=7.25"
Tc=6.0 min CN=88 Runoff=7.74 cfs 0.584 af

Subcatchment 103: Post-4 Runoff Area=2,511 sf 61.96% Impervious Runoff Depth=6.77"
Tc=0.0 min CN=84 Runoff=0.54 cfs 0.033 af

Pond 104E: Pond Emergency Peak Elev=303.39' Storage=14,601 cf Inflow=15.68 cfs 3.275 af
Primary=7.53 cfs 2.496 af Secondary=1.81 cfs 0.477 af Outflow=7.53 cfs 2.973 af

Pond 105E: UDS (800s) Emergency Peak Elev=303.39' Storage=23,034 cf Inflow=7.53 cfs 2.496 af
10.00" Round Culvert x 4.00 n=0.012 L=10.0' S=0.0000 '/' Outflow=1.15 cfs 2.089 af

Link DP-1: Plainfield Pike Inflow=0.54 cfs 0.033 af
Primary=0.54 cfs 0.033 af

Summary for Subcatchment 100: Post-1

Runoff = 0.85 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 3.99"
Routed to Pond 104E : Pond Emergency

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
7,931	61	>75% Grass cover, Good, HSG B
17	98	Impervious, HSG B
15	98	Offsite Impervious, HSG B
7,963	61	Weighted Average
7,931	61	99.60% Pervious Area
32	98	0.40% Impervious Area

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

Summary for Subcatchment 101: Post-2

Runoff = 7.10 cfs @ 12.08 hrs, Volume= 0.543 af, Depth= 7.50"
Routed to Pond 104E : Pond Emergency

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
5,086	61	>75% Grass cover, Good, HSG B
3,523	74	>75% Grass cover, Good, HSG C
18,109	98	Impervious, HSG B
5,626	98	Impervious, HSG C
44	98	Offsite Impervious, HSG B
50	98	Offsite Impervious, HSG C
4,757	98	Roofs, HSG B
44	98	Roofs, HSG C
222	55	Woods, Good, HSG B
377	70	Woods, Good, HSG C
37,838	90	Weighted Average
9,207	66	24.33% Pervious Area
28,631	98	75.67% Impervious Area

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

Summary for Subcatchment 102: Post-3

Runoff = 7.74 cfs @ 12.08 hrs, Volume= 0.584 af, Depth= 7.25"
Routed to Pond 104E : Pond Emergency

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
10,679	61	>75% Grass cover, Good, HSG B
715	74	>75% Grass cover, Good, HSG C
21,494	98	Impervious, HSG B
99	98	Impervious, HSG C
2,853	98	Offsite Impervious, HSG B
0	98	Offsite Impervious, HSG C
6,210	98	Roofs, HSG B
42,050	88	Weighted Average
11,394	62	27.10% Pervious Area
30,656	98	72.90% Impervious Area

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

Summary for Subcatchment 103: Post-4

Runoff = 0.54 cfs @ 12.00 hrs, Volume= 0.033 af, Depth= 6.77"
Routed to Link DP-1 : Plainfield Pike

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.70"

Area (sf)	CN	Description
955	61	>75% Grass cover, Good, HSG B
2	98	Impervious, HSG B
1,554	98	Offsite Impervious, HSG B
2,511	84	Weighted Average
955	61	38.04% Pervious Area
1,556	98	61.96% Impervious Area

Summary for Pond 104E: Pond Emergency

Inflow = 15.68 cfs @ 12.08 hrs, Volume= 3.275 af
Outflow = 7.53 cfs @ 12.14 hrs, Volume= 2.973 af, Atten= 52%, Lag= 3.2 min
Primary = 7.53 cfs @ 12.14 hrs, Volume= 2.496 af
Routed to Pond 105E : UDS (800s) Emergency
Secondary = 1.81 cfs @ 12.74 hrs, Volume= 0.477 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 303.39' @ 12.74 hrs Surf.Area= 8,558 sf Storage= 14,601 cf

Plug-Flow detention time= 349.2 min calculated for 2.972 af (91% of inflow)
Center-of-Mass det. time= 129.6 min (2,033.1 - 1,903.5)

Volume	Invert	Avail.Storage	Storage Description
#1	300.40'	14,712 cf	**Infiltration Pond Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.40	3,948	343.7	0	0	3,948
301.00	4,270	349.4	2,465	2,465	4,325
302.00	4,793	358.8	4,529	6,994	4,962
303.00	5,331	368.8	5,060	12,053	5,646
303.30	7,140	463.0	1,864	13,917	11,883
303.40	8,777	505.5	794	14,712	15,158

Device	Routing	Invert	Outlet Devices
#1	Primary	300.55'	**10.00" Round Culvert (WQ Elev = 300.50) X 4.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 300.55' / 300.55' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Secondary	303.20'	**4.0' long x 0.5' breadth Emergency Overflow Weir (Curb Opening) X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.22 cfs @ 12.14 hrs HW=302.72' TW=302.25' (Dynamic Tailwater)
1=Culvert (WQ Elev = 300.50) (Inlet Controls 7.22 cfs @ 3.31 fps)

Secondary OutFlow Max=1.81 cfs @ 12.74 hrs HW=303.39' (Free Discharge)
2=Emergency Overflow Weir (Curb Opening) (Weir Controls 1.81 cfs @ 1.21 fps)

Summary for Pond 105E: UDS (800s) Emergency

Inflow = 7.53 cfs @ 12.14 hrs, Volume= 2.496 af
Outflow = 1.15 cfs @ 12.64 hrs, Volume= 2.089 af, Atten= 85%, Lag= 30.2 min
Primary = 1.15 cfs @ 12.64 hrs, Volume= 2.089 af
Routed to Pond 104E : Pond Emergency

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 300.55' Surf.Area= 10,556 sf Storage= 4,645 cf
Peak Elev= 303.39' @ 12.72 hrs Surf.Area= 10,556 sf Storage= 23,034 cf (18,389 cf above start)

Plug-Flow detention time= 823.1 min calculated for 1.983 af (79% of inflow)
Center-of-Mass det. time= 305.5 min (2,542.8 - 2,237.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	299.72'	8,020 cf	**72.25'W x 146.10'L x 3.75'H Field A** 39,584 cf Overall - 15,280 cf Embedded = 24,304 cf x 33.0% Voids
#2A	300.22'	15,280 cf	**ADS_StormTech SC-800 +Cap** x 300 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 300 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		23,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.55'	**10.00" Round Culvert (WQ Elev = 300.50) X 4.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 300.55' / 300.55' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf

Primary OutFlow Max=1.13 cfs @ 12.64 hrs HW=303.39' TW=303.38' (Dynamic Tailwater)
↑—**1=Culvert (WQ Elev = 300.50)** (Inlet Controls 1.13 cfs @ 0.52 fps)

Summary for Link DP-1: Plainfield Pike

Inflow Area = 0.058 ac, 61.96% Impervious, Inflow Depth = 6.77" for 100-Year event
Inflow = 0.54 cfs @ 12.00 hrs, Volume= 0.033 af
Primary = 0.54 cfs @ 12.01 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Appendix B – Mounding Calculations

DiPrete Engineering has prepared groundwater mounding calculations for the proposed infiltration pond. The infiltration pond has been designed to infiltrate.

DiPrete Engineering has calculated the groundwater mounding using the USGS Hantush Calculator. The calculator is available online at http://pubs.usgs.gov/sir/2010/5102/.

The calculator provided by the USGS requires several variables:

R – Recharge infiltration rate (feet/day):
Recharge rate is the vertical conductivity (Kv) of the soil. The vertical conductivity was determined based on soil texture and table 5-3 in section 5.3.4 of the RISDISM of the RISDISM. A value of 8.27 in/hr or 16.54 ft/day has been used for these calculations.

Sy – Specific Yield:
Specific Yield is specific to the parent material through which the infiltration occurs. Onsite soil evaluations classified the soils as coarse sand. A value for Sy has been obtained from Table 4.3 of Hydrology and Hydraulic Systems by Ram S. Gupta:

TABLE 4.3 REPRESENTATIVE VALUES OF SPECIFIC YIELD FOR SOILS AND ROCKS

Material	Specific Yield (%)
Gravel, coarse	23
Gravel, medium	24
Gravel, fine	25
Sand, coarse	27
Sand, medium	28
Sand, fine	23
Silt	8
Clay	3
Sandstone, fine-grained	21
Sandstone, medium-grained	27
Limestone	14
Dune sand	38
Loess	18
Peat	44
Schist	26
Siltstone	12
Till, predominantly silt	6
Till, predominantly sand	16
Till, predominantly gravel	16
Tuff	21

Source: Todd, 1980.

HYDROLOGY & HYDRAULIC SYSTEMS

RAM S. GUPTA, PH.D., P.E.
Roger Williams University, Bristol, RI
Delta Engineers, Inc., Bristol, RI

K – Hydraulic conductivity, Kh (feet/day):
Mounding calculations require the hydraulic conductivity (Kh) value of the soils. According to USGS SIR 2010-5102, Vertical Conductivity is approximately 1/10 of horizontal conductivity. The vertical conductivity was determined based on soil texture and table 5-3 in section 5.3.4 of the RISDISM of the RISDISM. The vertical conductivity is 8.27 in/hr, which equates to a horizontal conductivity of 82.7 in/hr or 165.4 ft/day.

x & y – ½ of the basin length:
The x and y variables represent the length and width of the system. The overall system is approximately 106' x 27' and the ½ basin length and width is 53' x 13.5'.

t – Duration of infiltration period in (days):
The time of infiltration is calculated from volume infiltrated dived by the square footage of the pond and the infiltration rate (Kv).

Volume Infiltrated (af)	Pond Infiltrating Surface Area (sf)	Infiltration Rate (ft/day)	T (days)
1.187	2,858	165.4	0.11

hi(0) – initial thickness of saturated zone (feet):
The initial thickness of the saturated zone is the depth from the water table to the impervious limiting layer. The soil evaluations that were performed did not encounter ledge. As part of the geotechnical study for the site, several onsite borings were completed. The deepest boring reached a total depth of 31' without encountering ledge. As a conservative approach, the impervious limiting layer is considered to be the bottom of that boring. Ledge could be deeper in the area of the infiltration basin but based on available data we have assumed the bottom of the boring.

Conclusion:

System Bottom	System Top	100-Year Mound height (ft)	100-Year Mound Elevation
300.40	303	2.04	299.37

The mounding height is obtained from the USGS Hantush Calculator. The mound elevation is determined by adding the mound height to the average seasonal high groundwater for the storm system.

The mounding calculation for the system shows that for the 100 year storm, the mound is below the bottom of the infiltration pond. This means the basin will function as designed for all storm events through the 100 year storm.

See attached Mounding Calculation Sheets and HydroCAD.

Watershed Maps

Pre-Development Watershed Map

Dunkin' Development

DiPrete Engineering

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Z:\DEMAIN\PROJECTS\3562-001 DUNKIN DEVELOPMENT\AUTOCAD DRAWINGS\3562-001-WAMP.DWG Plotted: 7/21/2026


PLAINFIELD PIKE (ROUTE 14)
(VARIABLE WIDTH - PUBLIC RIGHT OF WAY)
(RI HIGHWAY PLAT 1269)
103
102
101
100
104
POND
105
UDS
106
PLAINFIELD PIKE MS4
LEGEND
WOODS - B SOILS
WOODS - C SOILS
GRASS - B SOILS
GRASS - C SOILS
IMPERVIOUS
LEGEND
TC LINE WITH ELEVATIONS
A
B
SUBCATCHMENT AREA
SOIL BOUNDARY
SUBCATCHMENT
100
POND/UDS
100
DESIGN POINT
100
SCALE: 1"=20'
0
10'
20'
40'
POST-DEVELOPMENT WATERSHED MAP
DUNKIN' DEVELOPMENT
DiPrete Engineering

DiPrete Engineering

Project # 3562-001

June 29, 2026

Stormwater System Operation & Maintenance

Dunkin' Development

Plainfield Pike, Cranston, RI

Assessors Plat 36-2, Lots 99 & 169

Prepared For:

Mineral Enterprises, Inc.
383 Smithfield Avenue
Pawtucket, RI 02860

Table of Contents

Operation & Maintenance Plan Overview

An essential component of a successful Stormwater System (SS) is the ongoing Operation and Maintenance (O&M) of the various components of the stormwater drainage, control, and conveyance systems. These components include swales, pipes, catch basins, and treatment/ control devices are commonly referred to as Best Management Practices (BMPs). Failure to provide effective maintenance can reduce the hydraulic capacity and the pollutant removal efficiency of stormwater practices.

Many people expect that stormwater facilities will continue to function correctly forever. However, it is inevitable that deterioration of the stormwater system will occur once it becomes operational. The question is not whether stormwater system maintenance is necessary but how often.

This plan has been developed to proactively address operations and maintenance to minimize potential problems and maximize potential stormwater runoff treatment and management. Ongoing inspections and maintenance will extend the service life of the Best Management Practices.

This plan addresses:

1. Stormwater management system(s) owners;
2. The party or parties responsible for operation and maintenance, including how future property owners will be notified of the presence of the stormwater management system and the requirement for proper operation and maintenance;
3. A description and delineation of public safety features;
4. The routine (scheduled) and non-routine (corrective) maintenance tasks for each BMP to be undertaken after construction is complete and a schedule for implementing those tasks;
5. A plan that is drawn to scale and shows the location of all stormwater BMPs in each treatment train along with the discharge point;
6. An estimated operation and maintenance budget; and
7. Funding source for operation and maintenance activities and equipment.

A major contributor to unmaintained stormwater facilities is a lack of clear ownership and responsibility definition. In order for an inspection and maintenance program to be effective, the roles for each responsibility must be clearly defined prior to construction of a system. This can be accomplished with a maintenance agreement between the site owners and the responsible authority.

This report is suitable for recording as an attachment to a maintenance agreement between the site owner and the responsible authority. A copy of a sample agreement prepared by RIDEM is attached to this report as Appendix B.

Stormwater System Owner / Party Responsible for O&M

Stormwater BMPs are maintained during construction by the site contractor as identified in the Soil Erosion and Sediment Control Plan (SESC) for the site. A copy of the SESC is required to be kept on site during construction. The SESC requires maintenance and inspection of the BMPs during the construction phase of project and requires a log be kept of these activities. Once construction is complete and the contractor's warranty period is elapsed, the contractor must obtain the signature of the stormwater system's owner releasing the contractor from his maintenance and inspection responsibilities. A copy of this release of contractor's responsibility must be attached to this document.

The property owner will also be the owner of the stormwater system. Upon completion of construction, the owner of the property along with mailing and emergency contact information must be added below.

Owner: _____

Mailing Address: _____

_____

Emergency Contact Name: _____

Phone: _____

Transfer of Ownership

In the event that the owner of the property changes, the current owner (grantor) must provide a copy of this document to the new owner (grantee). The new owner must notify the Rhode Island Department of Environmental Management of the change of ownership and provide a signed updated Operations and Maintenance Plan to the Rhode Island Department of Environmental Management.

Public Safety

Public safety was a critical factor in designing the stormwater system. Public safety features included in this design are:

- Accessibility to Stormwater BMPs
- Winter & Non-Winter Maintenance

Accessibility to Stormwater BMPs
The stormwater BMPs are accessible directly from the parking lot area and from Plainfield Pike.

Winter Maintenance
The following tasks must be performed to protect public safety during the winter season:

- Roadways and parking lots will be salted/ sanded/ plowed in accordance with applicable City of Cranston and RIDOT guidelines;
- Inspect the open and closed drainage networks adjacent to the snow stockpiles to ensure they are free of clogging and debris;
- Inspect roadways and drainage structures post-storm event to alleviate any signs of icing or damming.

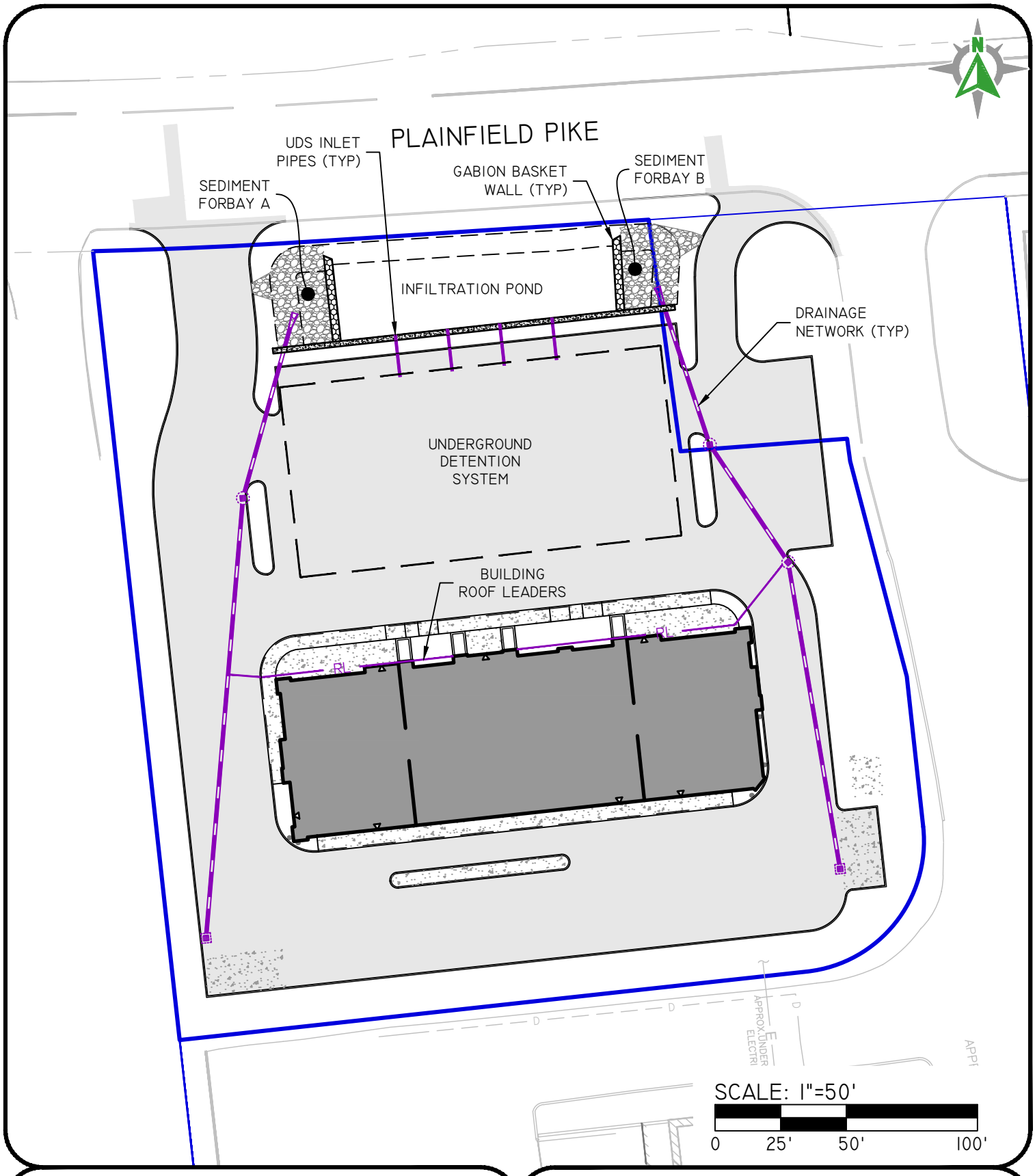
Non-Winter Maintenance
The following tasks must be performed to protect public safety during the non-winter seasons:

- Roadways and parking lots will be swept in accordance with applicable City of Cranston and RIDOT guidelines;
- The stormwater management systems must be inspected and maintained in accordance with the enclosed Operations & Maintenance Plan.

Particular care must be taken in the operation and maintenance of these features.

Stormwater System Plan

A plan identifying each component of the stormwater system is included on the following page.



OPERATIONS & MAINTENANCE
DUNKIN' DEVELOPMENT

CRANSTON, RHODE ISLAND

PREPARED FOR:

MINERAL ENTERPRISES, INC.

383 SMITHFIELD AVE, PAWTUCKET, RHODE ISLAND 02860

DATE: 06-22-2026

SHEET 1 OF 1

DiPrete Engineering
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Inspections & Maintenance

Inspections must be performed on a regular basis and scheduled based on the BMP type and configuration. It is not mandatory that all inspectors be trained engineers, but they must have some knowledge or experience with stormwater systems and in general, trained stormwater engineers should direct the inspectors. Follow-up inspections by registered professional engineers must be performed where a routine inspection has revealed a question of structural or hydraulic integrity affecting public safety.

Not all inspections can be conducted by direct human observation. For subsurface systems, video equipment may be required. There may be cases where other specialized equipment is necessary. The inspection program must be tailored to address the operational characteristics of the system.

The inspection process must document observations made in the field and must cover structural conditions, hydraulic operational conditions, evidence of vandalism, condition of vegetation, occurrence of obstructions, unsafe conditions, and build-up of trash, sediments and pollutants.

Maintenance of the stormwater management system is essential and can be divided into two types, scheduled and corrective.

Scheduled maintenance tasks are those that are typically accomplished on a regular basis and can generally be scheduled without referencing inspection reports. These items consist of such things as vegetation maintenance (such as mowing) and trash and debris removal. These tasks are required at well-defined time intervals and are a requirement for all stormwater structural facilities.

Corrective maintenance tasks consist of items such as sediment removal, stream bank stabilization, and outlet structure repairs that are done on an as-needed basis. These tasks are typically scheduled based on inspection results or in response to complaints.

Since specialized equipment may be required, some maintenance tasks can be effectively handled on a contract basis with an outside entity specializing in that field. In addition, some maintenance may also require a formal design and bid process to accomplish the work.

Appendix A provides an "Inspection Schedule & Maintenance Checklist" for the stormwater system components on this site. Completed checklists must be maintained as an ongoing record of inspections for each component of the stormwater system.

In addition to the maintenance of the stormwater system, maintenance of other site improvements can significantly enhance the ability for the BMPs to function as designed. Several of these have been listed below, along with the recommended maintenance.

Lawn, Garden and Landscape Management

- Lawns should be cut no shorter than 1-1/2" in the spring and fall to stimulate root growth, and no shorter than 2 to 3 inches throughout the summer.
- Infiltration ponds should be mowed at least twice per year.
- Fertilize no more than twice per year, once in May-June and once in September-October.
- Avoid spreading fertilizer on impervious surfaces.
- Weeds should be dug or pulled out. Large areas of weeds can be removed by covering with large plastic sheet(s) for a few days.
- Chemical pesticides should be used as a last resort. A healthy lawn is naturally disease resistant.
    - Visible insects can be removed by hand, by spraying with water, or even vacuum cleaning.
    - Store bought traps, specific for a species, can be used.
    - Slugs and other soft bodied insects can be eliminated using diatomaceous earth.
    - Plants infected with bacteria and fungi should be removed and disposed of.
    - Beneficial organisms should be maintained on the property and should be encouraged/ attracted to the property. Homeowners and property facility maintenance personal should become familiar with beneficial organisms.
- Irrigation should be minimal if required at all. Most lawns do not require watering and will become dormant during dry periods.
    - Established lawns require no more than one inch of water per week.
    - Areas should be watered before 9am to avoid evaporation.

Road and Parking Area Management

Street and Parking Lot Sweeping

- All driveways and parking areas on site must be swept a minimum of 2 times per year.

Deicing:

- Salt storage areas must be completely covered and located on an impervious surface.
- Runoff must be contained in appropriate areas.
- See The Rhode Island Stormwater Design and Installation Standards Manual Appendix G for approved deicing agents and ways to reduce deicer impacts. The manual Appendices can be found online at: http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/pdfs/swdsnapd.pdf

Sealants:

- Only asphalt based sealants are permitted, no coal-tar based asphalt sealants can be used on site.

Snow Removal:

- Snow must not be dumped in any water body including rivers, reservoirs, ponds, lakes, wetlands, bays, or the ocean.
- Avoid disposing of snow on top of storm drain catch basins or stormwater drainage swales or ditches.
- Snow must be stored in upland areas, not in or adjacent to water bodies or wetlands. Snow must be stored in a location that will allow snow melt and enter the onsite drainage system so it can be treated by onsite BMPs.

Solid Waste Containment

- Trash and recycling receptacles must be located onsite for all commercial areas.

Reference; Additional information relating to operation and maintenance of specific BMPs can be found in the Rhode Island Stormwater Design and Installation Standards Manual.
(www.dem.ri.gov/pubs/regs/regs/water/swmanual.pdf)

Estimated Inspections & Maintenance Budget

It is important to be able to budget for the O&M costs associated with the stormwater system. To assist the owner in budgeting, below is an estimate of the costs that may be incurred in maintaining the system. The costs have been estimated on a yearly basis.

Infiltration Structure:
For a 25 year finance period, Infiltration Structures cost approximately $1,277.77 per acre of tributary area per year. The site contains approximately 2.01 acres of area flowing to infiltration structures. This equals an approximate cost of $2,569 per year to maintain the infiltration structures.

Extended Detention Structure:
For a 25 year finance period, detention structures cost approximately $268.59 per acre of tributary area per year. The site contains approximately 2.01 acres of area flowing to detention structures. This equals an approximate cost of $540 per year to maintain the detention structure.

Based on the costs outlined above, the stormwater system will cost approximately $3,109 per year to maintain. This is only an estimate and costs may vary.

These costs are the responsibility of the stormwater system owner. Funding for the costs will be provided by the owner.

Reference; Maintenance costs are based on information provided by Horsley Witten during the January 19, 2011 Stormwater Manual Training.
(http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/t4guide/slides/sess210.ppt)

Appendix A – Inspection Schedule & Maintenance Checklists

Sediment Forebay
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Notes:

- Beyond inspection frequency noted in parenthesis, i.e. (quarterly), inspections shall be completed after storms equal to or greater than the 1-year 24-hour Type III storm event (2.7" of rain fall)
- All Checklist Maintenance items are MANDATORY.
- During inspections, if maintenance items are found not to be applicable, note as N/A in comments
- All removed sediments shall be disposed at an approved and permitted location.
- All hazardous debris removed shall be disposed of in accordance with state and federal regulations by a properly licensed contractor

MAINTENANCE ITEM	SATISFACTORY (YES/NO)	COMMENTS
1. Debris Cleanout (Quarterly)		
The sediment forebay and sediment trap isolation chamber clear of debris or		
Inflow pipes / inlet area clear of debris		
Outflow pipes / outlet area clear of debris		
Overflow Weir / outlet area clear of debris		
2. Sedimentation (Quarterly)		
Obvious trapping of sediment		
Greater than 50% of storage volume remaining. If less than 50% of storage volume remaining, sediments to be removed and disposed of. (see notes at end of Forebay		

Sediment Forebay
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

3. Vegetation (Quarterly)		
Vegetation within sediment forebay to be limited to 18" in height.		
4. Embankments (Quarterly)		
Evidence of erosion		
Seeps/leaks on downstream face		
Slope protection or riprap failure		
Slopes stabilized with vegetation, slope protection, riprap, etc		

COMMENTS:

Sediment Forebay
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

ACTIONS TO BE TAKEN:

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project:	Date:
Location:	Time:
Site Status:	Inspector:

Notes:

- Beyond inspection frequency noted in parenthesis, i.e. (quarterly), inspections shall be completed after storms equal to or greater than the 1-year 24-hour Type III storm event (2.7" of rain fall)
- All Checklist Maintenance items are MANDATORY.
- During inspections, if maintenance items are found not to be applicable, note as N/A in comments
- All removed sediments shall be disposed at an approved and permitted location.
- All hazardous debris removed shall be disposed of in accordance with state and federal regulations by a properly licensed contractor
- Sediment shall be removed from stormwater basins when the sediment volume exceeds 10% of the total basin volume. Sediment shall be disposed of in an acceptable manner at an approved and permitted location.
- Infiltration Ponds Only: When infiltration rates decrease below design infiltration rates, remove accumulated surface sediments and rototill pond bottom. Revegetate bottom of infiltration pond as needed

MAINTENANCE ITEM	SATISFACTORY (YES/NO)	COMMENTS
1. Embankment and Emergency Spillway (Annual)		
Vegetation and Ground Cover Adequate		
Embankment Erosion		
Animal Burrows		
Unauthorized Planting		
Cracking, bulging or sliding of dam		
• Upstream face		
• Downstream face		

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

• At or beyond toe		
• Downstream		
• Upstream		
• Emergency Spillway		
Basin, toe & chimney drains clear and functioning		
Seeps/leaks on downstream face		
Slope protection or riprap failure		
Vertical/horizontal alignment of top of dam "As-Built"		
Emergency Spillway clear of obstructions and debris		
2. Riser and Principal Spillway (Annual)		
Type: Reinforced Concrete___ Corrugated Pipe_____ Masonry_____ Low-flow orifice obstructed		
Internal Low-flow orifice obstructed. Remove filter sock and riser to check.		
Low-flow trash rack • Debris removal necessary		
• Corrosion control		
Low Flow Filter Sock (Filter Fabric) • Signs of deterioration, replace if necessary		
Weir trash rack maintenance • Debris removal necessary		
• Corrosion control		

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Excessive Sediment accumulation inside riser		
Concrete/Masonry condition riser and barrels • cracks or displacement		
• Minor spalling (<1”)		
• Major spalling (rebars exposed)		
• Joint failures		
• Water tightness		
Metal pipe Condition		
Control Valve • Operational/ Exercised		
• Chained and Locked		
Basin Drain Valve • Operational/ Exercised		
Outfall channels functioning		
3. Dry Basin Areas (Annual)		
Vegetation adequate		
Undesirable vegetative growth		
Undesirable woody vegetation		
Low-flow channels clear of obstructions		
Standing water or wet spots		
Annual mowing of vegetation along the maintenance access roads.		

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Annual inspection of vegetation within basin.		
Prune all dead or dying vegetation within the extents of the basin or WVTS.		
Sediment and/or trash accumulation *		
Remove all herbaceous vegetation root stock when overcrowding of the maintenance access to the facility, remove any vegetation that has a negative impact on stormwater flowage through facility, and trim any overgrown vegetation within the basin.		
Replace any/all original vegetation that has died off or has not fully established, as determined at the time of the inspection.		
Vegetation should be reinforced to its original design standards if less than 50% of the original vegetation is established after two years.		
Any invasive vegetation encroaching upon the perimeter of the facility should be pruned or removed if it is prohibiting access to the facility, compromising sight visibility and/or compromising original design vegetation.		
4. Condition of Outfalls (Annual)		
Riprap Failures		
Slope erosion		
Storm drain pipes		
Endwalls/ Headwalls		
Other (specify)		
1. Emergent Vegetation (Annual)		

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Annual mowing of vegetation: Annual mowing of the basin setback is only required along maintenance rights-of-way and the embankment. The remaining setback can be managed as rangeland (mowing every other year) or forest		
Vegetation healthy and growing maintaining 50% surface area coverage of emergent plants after the second growing season (If unsatisfactory, reinforcement plantings needed)		
Dominant emergent plants: Survival of desired emergent plant species. Distribution according to planting plan?		
Evidence of invasive species		
Maintenance of adequate water depths for desired emergent plant species		
Harvesting of emergent plantings needed		
Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		

Infiltration Pond
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

COMMENTS:

ACTIONS TO BE TAKEN:

Underground System
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Notes:

- Beyond inspection frequency noted in parenthesis, i.e. (quarterly), inspections shall be completed after storms equal to or greater than the 1-year 24-hour Type III storm event (2.7" of rain fall)
- All Checklist Maintenance items are MANDATORY.
- During inspections, if maintenance items are found not to be applicable, note as N/A in comments
- All removed sediments shall be disposed at an approved and permitted location.
- All hazardous debris removed shall be disposed of in accordance with state and federal regulations by a properly licensed contractor
- Repair or complete replacement to Underground Infiltration System Practice is required if system fails to infiltrate fully within 48 hours.
- Inspection Ports are provided over each row of the chambers for inspections. Manholes are provided at one end of each isolator row for access and maintenance.

MAINTENANCE ITEM	SATISFACTORY (YES/NO)	COMMENTS
1. Debris Cleanout (Quarterly)		
The isolator row chamber(s) clear of debris/ floatables or accumulated sediment.		
Inflow pipes clear of debris/ floatables		
Overflow spillway clear of debris/ floatables		
Inlet area clear of debris/ floatables		
2. Dewatering (Annual)		
Chamber dewaters between storms		
Outlet devices shall be cleaned/repaired when draw down exceeds 36 hours.		

Underground System
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

3. Sediment Cleanout of Chamber (Annual)		
No evidence of sedimentation in chamber		
Sedimentation accumulation doesn't yet require cleanout		
Sediment Shall be removed from the system when sediment volume exceeds 10% of the total vault volume		
Remove sediments by hydro-jetting of sediments and vactoring (vacuuming)		
4. Inlets (Quarterly)		
Good condition		
No evidence of disrepair (presence of structural damage)		
5. Aggregate Repairs (Annual)		
Annual inspection for damage		
Annual inspection for hydrocarbon build-up and removal if detected.		
Annual inspection for sediment accumulation in the facility		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Chamber does not need rehabilitation (presence of structural damage)		

Underground System
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

COMMENTS:

ACTIONS TO BE TAKEN:

Drainage Structures
(Catch Basins, Manholes, etc.)
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Notes:

- Beyond inspection frequency noted, inspections shall be completed after storms equal to or greater than the 1-year 24-hour Type III storm event (2.7" of rain fall)
- All Checklist Maintenance items are MANDATORY.
- During inspections, if maintenance items are found not to be applicable, note as N/A in comments
- All removed sediments shall be disposed at an approved and permitted location.
- All hazardous debris removed shall be disposed of in accordance with state and federal regulations by a properly licensed contractor

MAINTENANCE ITEM	SATISFACTORY (YES/NO)	COMMENTS
Semi-annually inspect drainage structures for damage		
Use a vacuum truck or other means to clean out any sediment or debris present in any drainage structure or whenever sediments reach ½ of the sump depth, which ever comes first.		
Semi-annually inspect drainage structures for debris and remove as necessary		

Drainage Structures
(Catch Basins, Manholes, etc.)
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

COMMENTS:

ACTIONS TO BE TAKEN:

Street Sweeping
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

Notes:

- Beyond inspection frequency noted in parenthesis, i.e. (quarterly), inspections shall be completed after storms equal to or greater than the 1-year 24-hour Type III storm event (2.7" of rain fall)
- All Checklist Maintenance items are MANDATORY.
- During inspections, if maintenance items are found not to be applicable, note as N/A in comments
- All removed sediments shall be disposed at an approved and permitted location.
- All hazardous debris removed shall be disposed of in accordance with state and federal regulations by a properly licensed contractor

MAINTENANCE ITEM	SATISFACTORY (YES/NO)	COMMENTS
Sweep all roadways two times per year. One of these sweepings must occur after winter sanding operations have concluded.		

COMMENTS:

Street Sweeping
Operation, Maintenance, and Management
Inspection Checklist

Project: Date:

Location: Time:

Site Status: Inspector:

ACTIONS TO BE TAKEN:

Appendix B – RIDEM Sample Stormwater Facility Maintenance Agreement

A site-specific Stormwater Facility Maintenance Agreement between the Owner and the responsible authority must be developed prior to construction

Sample Stormwater Facility Maintenance Agreement

THIS AGREEMENT, made and entered into this ___ day of _____, 20___, by and between (Insert Full Name of Owner) _____ hereinafter called the "Landowner", and the [Local Jurisdiction], hereinafter called the "[Town/City]". WITNESSETH, that WHEREAS, the Landowner is the owner of certain real property described as (Tax Map/Parcel Identification Number) _____ as recorded by deed in the land records of [Local Jurisdiction] Deed Book _____ Page _____, hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and WHEREAS, the Site Plan/Subdivision Plan known as _____, (Name of Plan/Development) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the [Town/City], provides for detention of stormwater within the confines of the property; and

WHEREAS, the [Town/City] and the Landowner, its successors and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of [Local Jurisdiction] require that on-site stormwater management facilities be constructed and maintained on the Property; and

WHEREAS, the [Town/City] requires that on-site stormwater management facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site stormwater management facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater management facilities in accordance with the required Operation and Maintenance Plan. This includes all pipes, channels or other conveyances built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions. The Stormwater Best Management Practices Operation, Maintenance and Management Checklists are to be used to establish what good working condition is acceptable to the [Town/City].

3. The Landowner, its successors and assigns, shall inspect the stormwater management facility and submit an inspection report annually. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, basin areas, access roads, etc. Deficiencies shall be noted in the inspection report.
4. The Landowner, its successors and assigns, hereby grant permission to the [Town/City], its authorized agents and employees, to enter upon the Property and to inspect the stormwater management facilities whenever the [Town/City] deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The [Town/City] shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.
5. In the event the Landowner, its successors and assigns, fails to maintain the stormwater management facilities in good working condition acceptable to the [Town/City], the [Town/City] may enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow the [Town/City] to erect any structure of permanent nature on the land of the Landowner outside of the easement for the stormwater management facilities. It is expressly understood and agreed that the [Town/City] is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the [Town/City].
6. The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. In the event a maintenance schedule for the stormwater management facilities (including sediment removal) is outlined on the approved plans, the schedule will be followed.
7. In the event the [Town/City] pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner, its successors and assigns, shall reimburse the [Town/City] upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the [Town/City] hereunder.
8. This Agreement imposes no liability of any kind whatsoever on the [Town/City] and the Landowner agrees to hold the [Town/City] harmless from any liability in the event the stormwater management facilities fail to operate properly.
9. This Agreement shall be recorded among the land records of [Local Jurisdiction] and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowners association.

WITNESS the following signatures and seals:

_____

Company/Corporation/Partnership Name (Seal)

By: _____

_____
(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of _____, 20___, by _____.

_____
NOTARY PUBLIC
My Commission Expires: _____

By: _____
_____
(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of _____, 20___, by _____.

_____
NOTARY PUBLIC
My Commission Expires: _____

Approved as to Form:

_____ _____
[Town/City] Attorney Date