

# STORMWATER MANAGEMENT FACILITIES OPERATIONS & MAINTENANCE MANUAL

*for*  
**PROPOSED ARBY'S RESTAURANT WITH DRIVE-  
THRU AND POPEYES RESTAURANT WITH DRIVE-  
THRU**

*Prepared for*

**PN Restaurants, Inc. C/O Phillipsburg Dev, LLC**

Block 1004, Lot 3  
680 Memorial Parkway (NJSH Route 22)  
Town of Phillipsburg  
Warren County, New Jersey

*Prepared by*

**BOHLER //**

N.J. Certificate of Authorization 24GA28161700

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Warren, NJ 07059  
908-668-8300

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New Jersey Professional Engineer  
License No. 47863

March 2021

BENJ File No. J200708

# Stormwater Management Measures Maintenance Plan & Field Manuals

Development Name: Proposed Arby's Restaurant with Drive-Thru and Popeyes  
Restaurant with Drive-Thru

Address: 680 Memorial Parkway (NJSH Route 22)

Block(s) / Lot(s): 1004 / 3

Township, County: Town Of Phillipsburg, Warren County, New Jersey

## Party Responsible for Maintenance:

PN Restaurants, Inc.

Address: 100 Menlo Park Mall  
Edison, NJ 088374

Contact Person(s): Lawrence BenBassett Phone: 301-613-7965

Prepared by: Bohler Engineering NJ, LLC Date: March 12th, 2021

This plan is recorded in

Deed Book # \_\_\_\_\_ Page # \_\_\_\_\_ with \_\_\_\_\_ County Clerk on Date \_\_\_\_\_

Last Revised on \_\_\_\_/\_\_\_\_/\_\_\_\_

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# Part I- Maintenance Plan

## List of Stormwater Management Measures

The stormwater management measures incorporated into this development are listed below. The corresponding Field Manuals for the stormwater management measures are located in Part II of the Maintenance Plan.

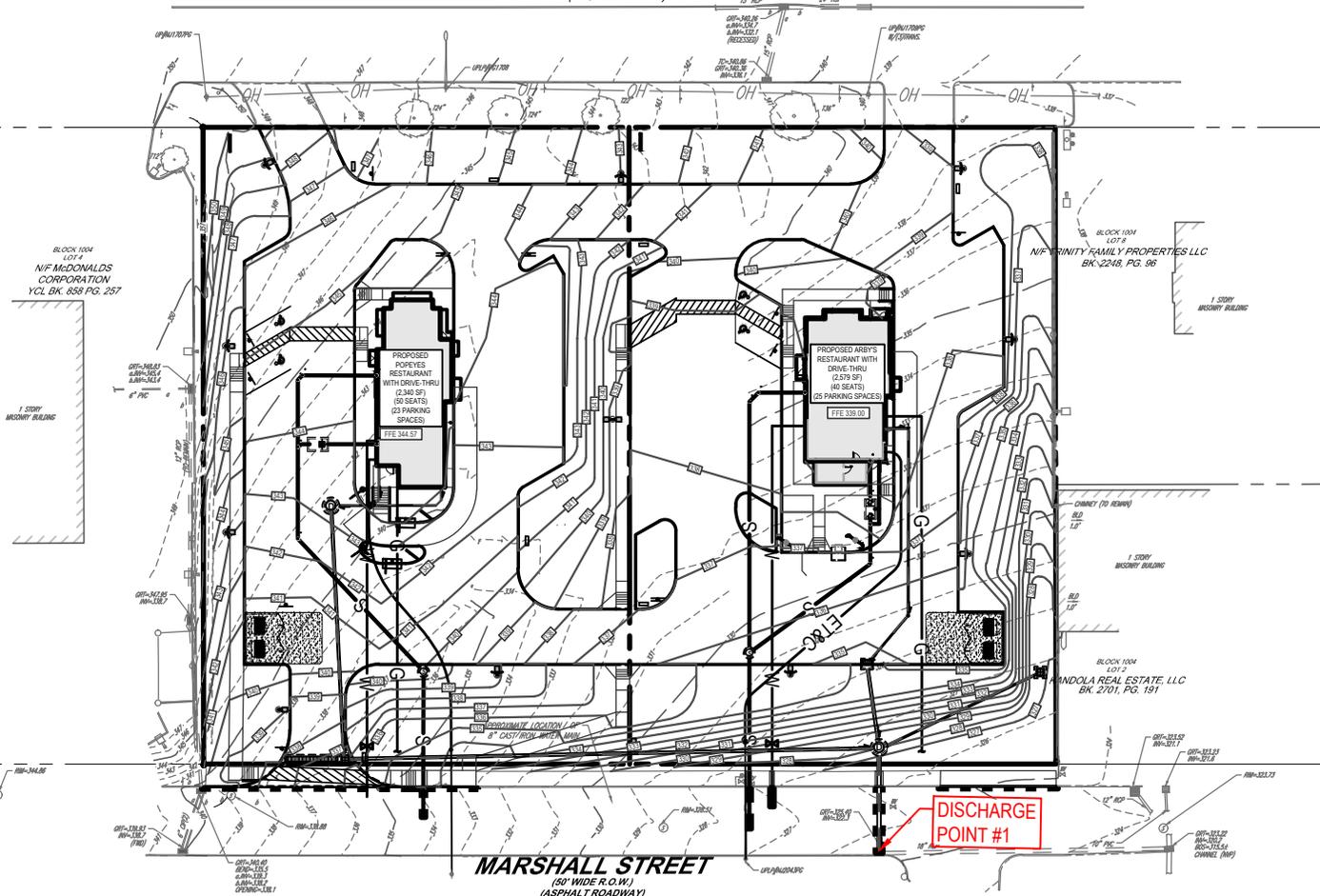
Type of Stormwater Management Measure	BMP No.	Location Description	State Plane Coordinates
Discharge Point	Discharge #1	South corner of the site	679,230 Northing 304,023 Easting

## Location Map



No.	TYPE OF STORMWATER MANAGEMENT MEASURE
DISCHARGE #1	DISCHARGE POINT VIA 18" RCP

**MEMORIAL PARKWAY**  
 (STATE HIGHWAY ROUTE 22)  
 (120' WIDE R.O.W.)  
 (ASPHALT ROADWAY)  
 (TWO WAY TRAFFIC)



**MARSHALL STREET**  
 (50' WIDE R.O.W.)  
 (ASPHALT ROADWAY)  
 (TWO WAY TRAFFIC)



GRAPHIC SCALE

1 INCH = 80 FEET

FOR EXHIBIT PURPOSES ONLY

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
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**REVISIONS**

REV	DATE	COMMENT	DRAWN BY	CHECKED BY

PROJECT No.: J200708  
 DRAWN BY: JZ  
 CHECKED BY: MR  
 DATE: 03/12/2021  
 CAD I.D.: J200708-OPE-0B

PROJECT:  
**O&M MANUAL**  
 FOR  
**PN RESTAURANTS, INC.**  
 C/O PHILLIPSBURG  
 DEV, LLC  
 BLK: 1004 | LOT: 3  
 680 MEMORIAL PARKWAY  
 TOWN OF PHILLIPSBURG  
 WARREN COUNTY, NEW JERSEY

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 PENNSYLVANIA LICENSE No. 76746

SHEET TITLE:  
**LOCATION MAP**  
 SHEET NUMBER:  
**01**

C:\2020\12007\BOHLER\SCHEMATIC\DRAWINGS\SUPPLEMENT\DRAWINGS\OPERATION\_MAINTENANCE\J200708-OPE-0B-LAYOUT-FINAL-LOCATION



NEW JERSEY  
 YOU MUST CALL 811 BEFORE ANY EXCAVATION  
 WHETHER IT'S ON PRIVATE OR PUBLIC LAND.  
 1-800-272-1000  
 www.nj-1-call.org

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## Description of Stormwater Management Measures

### Underground Stormwater Conveyance Piping

Design storm:

- Design Purposes:
  - 2-year storm (3.34 inches);
  - 10-year storm (4.89 inches);
  - 25-year storm (5.93 inches);
  - 100-year storm (7.82 inches)
- Deliver water from parking fields, roofs, and landscaped areas to existing stormwater infrastructure within ROW of Marshall Street.

## Preventative and Corrective Maintenance Action Plan

As per N.J.A.C. 7:8-5.8(b) & (e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include recommended corrective responses to various emergency conditions that may be encountered at the stormwater management measure. It should be noted that if the stormwater management measure includes a Class I or II dam as defined in the NJDEP Dam Safety Standards at N.J.A.C. 7:20, an emergency action plan for the dam is also required. See N.J.A.C. 7:20-1.7(f) for more information.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should address the maintenance of access points to the stormwater management measures in accordance with the following:

- all components of the stormwater management measures must be readily accessible for inspection and maintenance;
- trees, shrubs, and underbrush must be pruned or trimmed as necessary to maintain access to the stormwater management measure via roadways, paths, and ramps, including paths through perimeter vegetation to permanent pools, aquatic benches, and safety ledges to allow for the inspection and control of mosquito breeding; and
- the exact limits of inspection and maintenance easements and rights-of-way should be specified on stormwater management measure plans and included in the maintenance plan.

## **Routine Inspection and Maintenance of the Stormwater Management Facilities:**

All stormwater management facilities have been designed to control degradation of water quality. Without proper routine inspection and maintenance, the facilities may lose some or all of their capability to function to their full capacity. Lack of adequate maintenance at these facilities could lead to system failures.

Regularly scheduled maintenance inspections of the stormwater facilities should be performed at least four (4) times each year. The primary purpose of these inspections is to ascertain the operational condition and safety of the facilities, particularly the condition of embankments, outlet structures, sedimentation and other safety-related aspects. Inspections will also provide information on the effectiveness of regularly scheduled Preventative and Aesthetic Maintenance Procedures and will help to identify where changes in the extent and scheduling of the procedures are warranted. Finally, the facility inspections should also be used to determine the need for and timing of Corrective Maintenance procedures.

Routine maintenance of these facilities should be separated into two (2) basic types: Functional Maintenance and Aesthetic Maintenance. Functional Maintenance is further broken down into two (2) categories: Preventative and Corrective. Aesthetic Maintenance, which is necessary to maintain the visual appeal and aesthetic quality of these facilities, should be incorporated on the same schedule as the preventative maintenance efforts. Listed below are the Preventative, Corrective and Aesthetic Maintenance Procedures to be performed on a routine basis:

### **Preventative Maintenance Procedures:**

The purpose of Preventative Maintenance is to maximize the effectiveness of the stormwater management aspects of the catch basins so that they remain operational and safe and to minimize the need for potential emergency or extensive corrective maintenance. These procedures are as follows:

- a) **Maintenance of Adjacent Areas** – Grass areas, trees, and shrubs throughout the site require periodic routine maintenance to include fertilizing, de-thatching and soil conditioning in order to maintain healthy growth and to provide soil stabilization. The application of fertilizers should follow

manufacturer's instructions to reduce run-off of these compounds into the basins. Additionally, provisions should be made to re-seed and re-establish grass cover in areas damaged by sediment accumulation, stormwater flow, or other causes. These tasks should be performed, or at least evaluated, on a quarterly basis. Lawn areas should be mowed at least once a month during the growing season. Vegetated areas must be inspected at least annually for erosion and scour as well as unwanted growth, which should be removed with minimum disruption to the remaining vegetation.

Note: All use of fertilizers, mechanical treatments, pesticides and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management facility. All vegetation deficiencies should be addressed without the use of fertilizers and pesticides whenever possible and if necessary, the minimum amount practical.

- b) **Removal and Disposal of Trash/Debris and Sediment** – All stormwater management components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris and sediment accumulation at least four times annually as well as after every storm exceeding one inch of rainfall in 24 hours. Such components should include catch basins and discharge points.

Removal of trash and debris will prevent possible damage and minimize potential mosquito breeding habitats. Debris and trash must be properly hauled off the site and transferred to an approved disposal site.

- c) **Elimination of Potential Mosquito Breeding Habitats** – The most effective mosquito control program is one that eliminates potential breeding habitats. Almost any stagnant pool of water can be attractive to mosquitoes and may become the source of a large mosquito population. A maintenance program dedicated to eliminating potential breeding areas is preferable to chemical means of controlling mosquitoes. The most important maintenance functions are removal of all obstructions to natural flow patterns before stagnant water conditions can develop.
- d) **Parking lot Maintenance** – This management measure involves employing pavement cleaning practices, such as parking lot sweeping on a regular basis,

to minimize pollutant export to the stormwater conveyance system and eventually the receiving waters. These cleaning practices are designed to remove sediment, debris, and other pollutants from access drive and parking lot surfaces that are a potential source of pollution impacting urban waterways. Mechanical machines that use vacuum assisted dry sweeping to remove particulate matter shall be utilized as these can remove finer sediment particles. Parking lots and access drives shall be swept/ vacuumed at least semi-annually or more often as conditions warrant. The disposal of the swept material must be properly hauled off the site and transferred to an approved disposal site. Other parking lot maintenance features include the use of on-site trash receptacle. These receptacles should be located in strategic areas where the majority of the pedestrian traffic occurs. These receptacles should be emptied weekly. The disposal of the solid waste must be properly hauled off the site and transferred to an approved disposal site.

#### **Corrective Maintenance Procedures:**

- a) **Removal of Debris and Sediment** – Sediment, debris and trash which threaten the discharge ability of the inlets should be removed immediately and properly disposed of. As noted previously, it is recommended that all water be evacuated from the catch basins before any significant amount of sediment, settled debris or trash is removed from inlets.
  
- b) **Structural Repairs** – Structural damage to and inlet structures, trash racks, access hatches, and roadways as a result of vandalism, flood events, settlement or other causes must be repaired promptly. The urgency of the repairs will depend upon the nature of the damage and its effects on the safety and operation of the facility. The analysis of structural damage if it occurs and the design and performance of structural repairs should only be undertaken by a Professional Engineer.
  
- c) **Extermination of Mosquitoes** – If neglected, basins can become a potential mosquito breeding area. The extermination of mosquitoes will usually require the services of the County Mosquito Commission. If mosquito control in the facility becomes necessary, the preventative maintenance program should be re-evaluated, and more emphasis should be placed on control of mosquito breeding habitats.

- d) **Erosion Repair** – Vegetative cover or other protective measures are necessary to prevent the loss of soil due to the forces of wind and water. Where a re-seeding program has not been effective in maintaining a non-erosive vegetative cover, or other factors have exposed soils to erosion, corrective steps should be initiated to prevent further loss of soil that may result in danger to the stability of the facility. Soil loss can be controlled by a variety of materials and methods, including rip-rap, gabion lining, geotextile fabrics, sod, seeding, concrete lining and re-grading.
  
- e) **Elimination of Trees, Brush, Roots and Animal Burrows** – The stability of embankments can be impaired by large roots and animal burrows. Additionally, burrows can present a safety hazard for maintenance personnel. Trees and brush with extensive, woody root systems should be completely removed to prevent destabilization and the creation of seepage routes. Regular mowing will prevent vegetation that can cause root problems. Roots should also be completely removed to prevent decomposition within the embankment. Root voids and burrows should be filled with material similar to the existing material, and capped just below grade with stone, concrete or other material. If the filling of the burrows does not discourage the animals from returning, further measures should be taken to either move the animal population or to make critical areas of the facility unattractive to them.
  
- f) **Snow and Ice Removal** – Accumulations of snow and ice can threaten the functioning of the inlets. Provision of the equipment, material and personnel to monitor and remove snow and ice from critical areas will assure the function of the facility during the winter months.

#### **Aesthetic Maintenance Procedures:**

- a) **Grass Trimming/Landscape Maintenance** – The lawn areas around the site shall be mowed on a regular basis as necessary to maintain the lawn at a height of 2 to 3-inches. These areas shall also be fertilized twice a year, once in the spring and once in the fall. Fertilizer for lawn areas shall be 10-20-10 applied at a rate of 11 lbs. per 1,000 sf. or as determined by a soil test. Any bare, dead or damaged lawn areas shall be re-seeded in accordance with the original procedures as outlined in the Soil Erosion and Sediment Control

Plans using the same mix and seeding rates. Stabilization of bare or damaged areas shall be done in a timely fashion so as to avoid exposing the soil to erosion.

If season prevents the re-establishment of turf cover, exposed areas should be stabilized with straw or salt hay mulch as described in the Soil Erosion and Sediment Control Plans until permanent seeding can be done. Seeding can be done between March 15<sup>th</sup> and June 15<sup>th</sup> and between September 15<sup>th</sup> and December 1<sup>st</sup>, only if adequate water is provided.

All shrubs should be allowed to grow together in masses as shown on the plans and not pruned into individual plants. The planting beds should be mulched with hardwood mulch every two (2) years in order to provide a suitable growing medium for the shrubbery and to retain moisture around the root zones.

Pruning of shrubs should also be done on a regular basis to maintain the shape and appearance of the shrub masses. The height of the shrubs may vary according to the plant's natural growth habits but should not exceed 6-feet. Pruning should be done as necessary throughout the year to remove dead branches and to control new growth. Any pruning, other than the removal of dead branches, should be done in either late winter/early spring or after the shrub has flowered in the spring.

In the event that a shrub should experience more than 2/3 die back, it should be replaced in kind as soon as possible in either the spring or fall planting season. The replacement shrub should be the same species as the original and installed at the size and condition as specified on the original landscape plans. If, for any reason, a substitution of species or size must be made, it shall be subject to the approval of the project Landscape Architect.

The trees surrounding the site shall be maintained regularly to ensure good health and exhibit an attractive appearance. Their maintenance should include fertilization twice annually, with one application in the spring and another in early fall. The trees shall be pruned in the late winter or early spring. However, dead branches should be removed as soon as they are noticed. Care should be taken to avoid cutting off the central leader of a tree if one is present.

If a tree is severely damaged or experiences more than 2/3 die back, it should be replaced in either the spring or fall planting season, whichever comes first. The only exception to this is if the replacement tree has a fall transplanting hazard. Replacement trees should be planted at the same size and condition as specified on the landscape plans. Any tree or shrub maintenance, tree pruning, or plant material substitution of species or size shall be subject to the approval of the project Landscape Architect.

The recording of all maintenance work and inspections provide valuable data on the facility's condition. Review of this information will also help to establish more efficient and beneficial maintenance procedures and practices. As the owner is ultimately responsible for site maintenance, all recorded information should be directed to the owners of the basins for review and subsequent follow-up on recommendations. Data obtained from informal inspections should be retained; however, under current regulations, this data does not have to be submitted to NJDEP.

- b) **Control of Weeds** – Although a regular grass maintenance program will minimize weed intrusion, some weeds will appear. Periodic weeding, either chemically or mechanically, will help to maintain a healthy turf, and keep grassed areas looking attractive. Application of chemicals should be minimized and monitored closely so as not to affect the ecosystems within the detention basin. Excessive growth of weeds within the basin can be controlled mechanically as discussed in the previous section.

The recording of all maintenance work and inspections provide valuable data on the facility's condition. Review of this information will also help to establish more efficient and beneficial maintenance procedures and practices. As the owner is ultimately responsible for site maintenance, all recorded information should be directed to the owners of the basins for review and subsequent follow-up on recommendations. Data obtained from informal inspections should be retained; however, under current regulations, this data does not have to be submitted to NJDEP.

### Preventative Maintenance Actions

Frequency	Preventative Maintenance Actions	Stormwater Measures/ No.
Monthly	Vegetation mowing and removal in growing season	-
Quarterly	Quarterly inspection (Sediment removal, depending on the type of measure)	e.g., Discharge Point #1
Unscheduled	Quick inspection after every 1" rain	All Stormwater Management Measures

### Corrective Maintenance Actions

Potential Corrective Maintenance Actions	Stormwater Management Measures/No.
Repair/replacement of eroded or damaged riprap	-
Repair/ Replacement of missing or damaged trash racks	-
Repair/Replacement of outlet pipes or orifices	-
Repair/Replace Stormwater Manufactured Treatment Devices	-

## Inspection and Logs of All Preventative and Corrective Maintenance

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

As per NJDEP BMP Manual Ch. 8 (Feb, 2004), a maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

Inspection Checklists in the Field Manual for the stormwater management measures on this site include:

- “Maintenance Work Order and Checklist” – a comprehensive form outlining both required and completed maintenance work.
- “Maintenance Log” – a summary table for recording of all maintenance work at the site.
- “Inspection Log” – a summary table for recording the results of all inspections of the basins.

The logs of all inspections, and both preventative and corrective maintenance performed should be attached in the “**Maintenance Logs and Inspection Records**” section. See Part II of the Maintenance Plan

## Maintenance Personnel, Equipment, Tools, and Supplies

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided.

This section applies to both maintenance tasks that are performed by in-house personnel or are outsourced. The design engineer has to list the required amount of maintenance personnel, equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. In addition, the sources of specialized, proprietary, and nonstandard equipment, tools and supplies for specific measures, such as manufactured treatment devices should also be listed.

### Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name	Quantity
General Maintenance Crew	4
General Landscape Equipment	1
Vacuum Truck	1
Power Washer	1

## **Disposal Plan**

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should include approved disposal and recycling sites and procedures for sediment, trash, debris and other material removed from stormwater management measures during maintenance operations.

### **Disposal Field – Onsite**

**Location of the Onsite Disposal Field:**

None.

### **Disposal Field – Offsite**

**Description of the Offsite Disposal:**

Private hauler handles disposal, unloading and covering offsite

## Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. Below is an illustration of a cost breakdown and estimation for maintenance of stormwater management measures. The design engineer should estimate the cost based on the expected maintenance required for each stormwater management measure. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods.

### COST ESTIMATES

#### Opinion of Probable Annual Stormwater Management Maintenance Costs

Item	Description	Rate	Unit	Total Units	Frequency Per Year	Item Total
1	Mowing	\$100.00	Acre	0.96	35	\$ 3,360.00
2	Landscape Maintenance	\$400.00	Acre	0.96	2	\$ 768.00
3	Landscape Maintenance Materials	\$1,200.00	Acre	0.96	2	\$ 2,304.00
4	General Maintenance	\$500.00	L/S	1	2	\$ 1,000.00
5	Preventative Maintenance	\$2,000.00	L/S	1	1	\$ 2,000.00
6	Corrective Maintenance (every 5 years)	\$10,000.00	L/S	1	0.2	\$ 2,000.00
7	Engineering Inspection	\$500.00	L/S	1	6	\$ 3,000.00
8	Parking Lot Sweeping	\$50.00	Acre	1.44	12	\$ 864.00
9	Trash Collection	\$50.00	Day	1	365	\$18,250.00
Estimated Annual SWM Maintenance Cost						\$33,546.00
Estimated Annual Insurance Cost						\$ 500.00
Total Estimated Annual SWM Maintenance Costs						\$34,046.00

The responsible party shall review and updated this “Opinion of Probable Annual Stormwater Management Maintenance Costs” table at least once annually. The update shall reflect the task items and quantity to be performed, the cost for each task item, and the frequency.

## Safety Measures and Procedures

All maintenance activities must comply with all local, state and federal regulations regarding occupational safety. These include but are not limited to the following:

1. N.J.A.C. 7:26G-1 – Hazardous Waste Regulations
2. N.J.A.C. 7:8 – Stormwater Management
3. O.S.H.A. Permit-Required Confined Spaces and all other OSHA regulations applicable to any work that is conducted on site

The stormwater inspection/maintenance company is required to follow the above referenced requirements. At this time the owner is anticipating using the following stormwater maintenance company:

To be determined

## Training Plan and Records

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

### I. Training Plan

#### Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable
- OSHA Confined Space Entry Certification

#### Content of Training

- **Stormwater Management Basic Training**
  - Vegetation Care
    - Training Material
      - NJDEP Stormwater BMP Manual, Chapter Seven: Landscaping (*provides information on vegetation and landscaping for stormwater management measures*)
  - Field Manual Usage Training
    - Training Material
      - Field Manuals attached to this Maintenance Plan
  - Equipment and Tools Operation Training
    - Training Material
      - Equipment or tool manufacturer's Operation & Maintenance Manual
  - Occupational Safety Training
    - Training Material
      - OSHA Confined Space Entry Certification
      - Equipment or tool manufacturer's Operation & Maintenance Manual
- More training information is available at NJ Stormwater.org (<http://www.nj.gov/dep/stormwater/training.htm>)

## II. Training Records

Training attendance sheets should be attached by the responsible party after each training.

## Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

### Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		<input type="checkbox"/> Maintain current version OR  <input type="checkbox"/> Revise current version Revision date _____ (also update the last revision date on the cover page)  <input type="checkbox"/> Requires a new deed recording (also update the last recording information on the cover page)
		<input type="checkbox"/> Maintain current version OR  <input type="checkbox"/> Revise current version Revision date _____ (also update the last revision date on the cover page)  <input type="checkbox"/> Requires a new deed recording (also update the last recording information on the cover page)
		<input type="checkbox"/> Maintain current version OR  <input type="checkbox"/> Revise current version Revision date _____ (also update the last revision date on the cover page)  <input type="checkbox"/> Requires a new deed recording (also update the last recording information on the cover page)

## Documents

- Drainage and Utilities Plan, prepared by Bohler Engineering, dated March 12, 2021

# Part II- Field Manuals

## **Attachment of Field Manuals for Stormwater Management Measures on this Site**

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e). Design engineers should prepare the field manuals in accordance with the design of each measure and the specific requirements of the site. See the sample field manuals for further guidance.

- Maintenance Logs and Inspection Records

## MAINTENANCE LOGS AND INSPECTION RECORDS

## Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance record

**MAINTENANCE WORK ORDER AND CHECKLIST  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_ DATE \_\_\_\_\_  
 CREW \_\_\_\_\_ WORK STARTED \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_ WORK COMPLETED \_\_\_\_\_  
 WEATHER \_\_\_\_\_ TOTAL MANPOWER OF WORK \_\_\_\_\_

**A. PREVENTATIVE MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTIONS
<b>1. GRASS CUTTING</b>			
A. PERIMETER AREAS			
B. ACCESS AREAS AND ROADS			
C. OTHERS			
<b>2. GRASS MAINTENANCE</b>			
A. FERTILIZING			
B. RE-SEEDING			
C. DE-THATCHING			
D. PEST CONTROL			
E. OTHERS			
<b>3. VEGETATIVE COVER</b>			
A. FERTILIZING			
B. PRUNING			
C. PEST CONTROL			
D. OTHERS			
<b>4. TRASH AND DEBRIS REMOVAL</b>			
A. PERIMETER AREAS			
B. ACCESS AREAS AND ROADS			
C. INLETS			
D. OUTLETS AND TRASH RACKS			
E. OTHERS			
<b>5. SEDIMENT REMOVAL</b>			
A. INLETS			
B. OTHERS			
<b>6. ELIMINATION OF POTENTIAL MOSQUITO BREEDING HABITATS</b>			
<b>7. OTHER PREVENTIVE MAINTENANCE</b>			
A. PARKING LOT SWEEPING			
B. EMPTYING TRASH RECEPTACLES			

**MAINTENANCE WORK ORDER AND CHECKLIST  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_ DATE \_\_\_\_\_  
 CREW \_\_\_\_\_ WORK STARTED \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_ WORK COMPLETED \_\_\_\_\_  
 WEATHER \_\_\_\_\_ TOTAL MANPOWER OF WORK \_\_\_\_\_

**B. CORRECTIVE MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. REMOVAL OF DEBRIS AND SEDIMENT			
2. STRUCTURAL REPAIRS			
3. DEWATERING			
4. CONTROL OF MOSQUITOES			
5. EROSION REPAIR			
6. SNOW AND ICE REMOVAL			
7. OTHER			

**C. AESTHETIC MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED ( X )	ITEMS DONE ( X )	LOCATION AND COMMENTS
1. GRASS TRIMMING			
2. WEEDING			
3. OTHERS			

REMARKS (REFER TO ITEM NO. IF APPLICABLE) \_\_\_\_\_

WORK ORDER PREPARED BY: \_\_\_\_\_

**MAINTENANCE LOG  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_ DATE \_\_\_\_\_  
 CREW \_\_\_\_\_ WORK STARTED \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_ WORK COMPLETED \_\_\_\_\_  
 WEATHER \_\_\_\_\_ TOTAL MANPOWER OF WORK \_\_\_\_\_

**A. PREVENTATIVE MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED	DATE REQUIRED	ITEMS DONE	DATE DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. GRASS CUTTING					
A. PERIMETER AREAS					
B. ACCESS AREAS AND ROADS					
C. OTHERS					
2. GRASS MAINTENANCE					
A. FERTILIZING					
B. RE-SEEDING					
C. DE-THATCHING					
D. PEST CONTROL					
E. OTHERS					
3. VEGETATIVE COVER					
A. FERTILIZING					
B. PRUNING					
C. PEST CONTROL					
D. OTHERS					
4. TRASH AND DEBRIS REMOVAL					
A. PERIMETER AREAS					
B. ACCESS AREAS AND ROADS					
C. INLETS					
D. OUTLETS AND TRASH RACKS					
E. OTHERS					
5. SEDIMENT REMOVAL					
A. INLETS					
B. OTHERS					
6. ELIMINATION OF POTENTIAL MOSQUITO BREEDING HABITATS					
7. OTHER PREVENTIVE MAINTENANCE					
A. PARKING LOT SWEEPING					
B. EMPTYING TRASH RECEPTACLES					

**MAINTENANCE LOG  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_ DATE \_\_\_\_\_  
 CREW \_\_\_\_\_ WORK STARTED \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_ WORK COMPLETED \_\_\_\_\_  
 WEATHER \_\_\_\_\_ TOTAL MANPOWER OF WORK \_\_\_\_\_

**B. CORRECTIVE MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED	DATE REQUIRED	ITEMS DONE	DATE DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. REMOVAL OF DEBRIS AND SEDIMENT					
2. STRUCTURAL REPAIRS					
3. DEWATERING					
4. CONTROL OF MOSQUITOES					
5. EROSION REPAIR					
6. SNOW AND ICE REMOVAL					
7. OTHER					

**C. AESTHETIC MAINTENANCE**

WORK ITEMS	ITEMS REQUIRED	DATE REQUIRED	ITEMS DONE	DATE DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. GRASS TRIMMING					
2. WEEDING					
3. OTHERS					

REMARKS (REFER TO ITEM NO. IF APPLICABLE) \_\_\_\_\_

WORK PERFORMED BY: \_\_\_\_\_

**INSPECTION LOG  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_  
 DATE \_\_\_\_\_  
 WEATHER \_\_\_\_\_

**A. PREVENTIVE MAINTENANCE**

FACILITY ITEM	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTION
<b>1. GRASS CUTTING</b>			
A. PERIMETER AREAS			
B. ACCESS AREAS AND ROADS			
C. OTHERS			
<b>2. GRASS MAINTENANCE</b>			
A. FERTILIZING			
B. RE-SEEDING			
C. DE-THATCHING			
D. PEST CONTROL			
E. OTHERS			
<b>3. VEGETATIVE COVER</b>			
A. FERTILIZING			
B. PRUNING			
C. PEST CONTROL			
D. OTHERS			
<b>4. TRASH AND DEBRIS REMOVAL</b>			
A. PERIMETER AREAS			
B. ACCESS AREAS AND ROADS			
C. INLETS			
D. OUTLETS AND TRASH RACKS			
E. OTHERS			
<b>5. SEDIMENT REMOVAL</b>			
A. INLETS			
B. OTHERS			
<b>6. ELIMINATION OF POTENTIAL MOSQUITO</b>			
<b>7. OTHER PREVENTIVE MAINTENANCE</b>			
A. PARKING LOT SWEEPING			
B. EMPTYING TRASH RECEPTACLES			

**INSPECTION LOG  
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY \_\_\_\_\_  
 LOCATION \_\_\_\_\_  
 DATE \_\_\_\_\_  
 WEATHER \_\_\_\_\_

**B. CORRECTIVE MAINTENANCE**

FACILITY ITEM	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTION
1. REMOVAL OF DEBRIS AND SEDIMENT			
2. STRUCTURAL REPAIRS			
3. CONTROL OF MOSQUITOES			
4. EROSION REPAIR			
5. SNOW AND ICE REMOVAL			
6. OTHER			

**C. AESTHETIC MAINTENANCE**

FACILITY ITEM	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTION
1. GRASS TRIMMING			
2. WEEDING			
3. OTHERS			

REMARKS (REFER TO ITEM NO. IF APPLICABLE) \_\_\_\_\_

- (1) ITEMS CHECKED ARE IN GOOD CONDITION, AND THE MAINTENANCE PROGRAM IS ADEQUATE.
  - (2) ITEMS CHECKED REQUIRE ATTENTION, BUT DOES NOT PRESENT AN IMMEDIATE THREAT TO THE FACILITY FUNCTION OR OTHER FACILITY COMPONENTS.
  - (3) THE ITEMS CHECKED REQUIRES IMMEDIATE ATTENTION TO KEEP THE FACILITY OPERATIONAL OR TO PREVENT DAMAGE TO OTHER FACILITY COMPONENTS.
  - (4) PROVIDE EXPLANATION AND DETAILS IF COLUMNS 2 OR 3 ARE CHECKED.
- REMARKS (REFER TO ITEM NO. IF APPLICABLE)

INSPECTOR: \_\_\_\_\_

