

May 19, 2025
Last revised December 30, 2025

Project # BAR-2301

**OPERATIONS & MAINTENANCE MANUAL
FOR
BEACHWAY AVENUE II REDEVELOPMENT PLAN**

**BLOCK 184; LOT 1
BOROUGH OF KEANSBURG, MONMOUTH COUNTY, NEW JERSEY**

**PREPARED FOR:
BEACHWAY AVENUE REALTY, LLC**

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I. PROJECT OVERVIEW

This O & M manual has been prepared for the Beachway Avenue Waterfront Redevelopment. The proposed project outlined in this report located on Lot 1, consists of the construction of three (3) five-story condominium buildings over garages, with a total of 64 units. Each building has parking beneath the building at ground level. The site is located in the Borough of Keansburg, Monmouth County along Beachway Avenue, containing 2.71 acres.

II. RESPONSIBLE PARTIES

The responsible party for the execution of preventive and corrective maintenance of all stormwater management systems to ensure proper functionality shall be the owner of the proposed project, located at Block 184, Lot 1. The maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in this maintenance plan must be undertaken by the current property owner.

The current property owner is:

Pizzo at Keansburg, LLC
1065 US Highway 22
Bridgewater, NJ 08807
908-526-2230

III. STORMWATER MANAGEMENT SYSTEMS OVERVIEW

In accordance with the NJDEP rules regarding stormwater management, N.J.A.C. 7:8-1.6, the criteria to handle stormwater for major developments is to design acceptable systems that effectively manage the stormwater with respect to applicable regulations regarding water quality, runoff quantity and groundwater recharge. Each of these requirements was considered in a pre- vs. post-development runoff analysis, conducted in conjunction with an evaluation of site specifications, local ordinance and proposed construction specifications. This was done to facilitate designing an appropriate stormwater management system for the proposed site, based on sound engineering principles. The proposed stormwater management system has been designed to maximize water quality and to reduce peak flows for the 2-, 10-, and 100-year storm events per the NJDEP stormwater regulations.

Green infrastructure refers to methods of stormwater management that reduce stormwater volume or flow by allowing the water to infiltrate, to be treated by vegetation or by soils; or to be stored for reuse. The use of green infrastructure encourages the idea that stormwater is a resource that can be reused, instead of being treated as a nuisance that needs to be removed quickly as possible. NJDEP green infrastructure requirements are in accordance with N.J.A.C. 7:8-5.3. The criteria of which relate to the BMPs identified in Table 5-1 or Table 5-2 at N.J.A.C. 7:8-5.2(f) and/or an alternative storm water management measure approved in accordance with N.J.A.C. 7:8-5.2(g). The BMPs selected for the project are to receive a maximum contributory drainage area when specified in section 7:8-5.3 of the N.J.A.C.

To accomplish these tasks, runoff from 2.29 acres of the 2.71 acre developed area is sent to one (1) subsurface stormwater management systems below pervious/porous paving, while the remaining 0.36 acres of disturbed area is directed overland toward the existing storm collection system in Beachway Avenue and 0.06 acres of undisturbed pervious area is directed offsite to the northwest dune area. The subsurface detention system consists of 2.75 ft thick stone storage layer designed to entirely store and reduce the developed runoff to 50%, 75% and 80% of the 2, 10 and 100-year storm of the pre-development.

In accordance with the NJDEP Stormwater rules, the proposed stormwater management measures must achieve an 80% reduction in the post-developed total suspended solids (TSS) runoff from the new impervious surfaces through the use of prescribed best management practices (BMPs). Water quality will be addressed through the use of porous pavement with underdrains within the parking areas approved for 80% TSS removal.

IV. LIST OF STORMWATER MANAGEMENT MEASURES

The stormwater management measures incorporated into this development are listed below.

Type of Stormwater Management Measure	Location Description	State Plane Coordinates
Porous Pavement	24 ft wide main drive aisle	N: 589470.79 E: 591709.31
Subsurface Detention below Porous Pavement	Located beneath 24 ft wide main drive aisle	N: 589470.79 E: 591709.31

V. INSPECTION & MAINTENANCE OVERVIEW

This Stormwater Management Maintenance Plan has two primary components: 1) Scheduled Inspections and 2) Maintenance of the Stormwater Management Systems. Discussions of each component are contained within the text of this plan.

Sample forms, to be completed by a qualified inspector, are also contained in this plan. These forms are meant to be a guide with the minimum amount of information to be reported during regular inspection and maintenance occurrences.

VI. SAFETY

Keep safety considerations at the forefront of inspection procedures, at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure,

manhole, etc.) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Police Department at 911. Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Police Department immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

VII. FIELD INSPECTION EQUIPMENT

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Management System Inspection Report Forms
- Manhole Lid Remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VIII. INSPECTING STORMWATER MANAGEMENT FACILITIES

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent Best Management Practices (BMPs). Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual quarterly as per township requirements. Inspections should also be conducted following a major storm event.

B. Inspection Report

The person(s) conducting the inspection activities shall complete a Stormwater Management System Inspection Report Form for each stormwater management facility. Sample Inspection Report Forms are located in Appendix B of this plan. Inspection Report Forms shall be completed by the contractor completing the required inspections. The form shall then be reviewed by the property owner and retained indefinitely. A copy of the Inspection Report Form shall be provided to the Borough of Keansburg upon request.

C. Maintenance Plan Effectiveness

Bi-annually, the responsible party shall review this maintenance plan and evaluate, in writing, the effectiveness of the plan and adjust the plan and deed as needed. Specifically, the following items should be addressed:

- Measures employed to educate users of the facility on the maintenance plan components. Specifically, the proper use of receptacles for trash, and the location where parking lot spill absorbents are stored.
- Ensure property maintenance contracts include corrective and preventive maintenance measures discussed in Section VIII and IX below.
- Evaluate the frequency of inspections, and corrective and preventive maintenance and ensure accurate records are being kept.
- Monitor the accumulation of trash and sediment on the site and in the stormwater management system and adjust maintenance plan accordingly to reduce trash and sediment accumulation.

Copies of the written plan evaluations shall be kept at the facility and shall be provided to the Borough of Keansburg upon request.

IX. CORRECTIVE MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid costlier rehabilitative maintenance that results when facilities are not adequately maintained. Corrective maintenance should also be conducted following a major storm event to the extent possible.

A. Maintenance Categories

Stormwater management facility maintenance programs are separated into three broad categories of work. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

1. Routine Work

Much of this work consists of scheduled mowing's and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. Table 1 below provides a summary of recommended routine maintenance activities.

2. Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment.

3. Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. Should rehabilitation work be required, contact the site engineer of record:

Jason M. Fogler, P.E.
MidAtlantic Engineering Partners, LLC
1971 Highway 34, Suite 201
Wall, NJ 07719
(609)-910-4450 ext. 1002

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management System Maintenance Activity Form provides a record of maintenance activities. Sample Maintenance Activity Forms for each facility type are provided in this Plan. Maintenance Activity Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the

property owner and retained indefinitely. A copy of the Maintenance Activity Form shall be provided to the Borough of Keansburg upon request.

TABLE 1
Summary of Corrective Maintenance Activities

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Trash/Debris Removal	Quarterly and after a major storm event	Trash & debris structures	Remove and dispose of trash and debris*
Sediment Removal	Quarterly and after a major storm event	Accumulation of sediment, typically near outlet pipe	Remove and dispose of sediment*

* Dispose debris and sediment in a licensed disposal facility in New Jersey.

X. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain your underground detention facility and treatment device is to prevent debris from entering the facility in the first place. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.

XI. CORRECTIVE RESPONSE TO EMERGENCY CONDITIONS

The parties responsible for the stormwater management facilities should be well prepared to respond to emergencies and take necessary corrective action to prevent emergencies from happening. The following is a discussion of emergency response and emergency prevention.

Emergency Response

Below is a list of potential emergency conditions related to the detention basins and their appurtenances. In the case of any emergency, dial 911 immediately.

- Accidental or Intentional Vehicular or Pedestrian Entry – The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Flow in a detention basin can be very strong especially near the outlet structure. Only trained personnel should enter a full detention basin to attempt a rescue.
- Hazardous Waste Spill - The initial response to any emergency is to call 911. Inform the dispatcher that the emergency involves a hazardous waste spill. The dispatcher will contact the Passaic County Hazardous Materials Response Unit. Follow the directions of the emergency responders upon their arrival. Do not go near the detention basin nor allow anyone to go near the detention basin or spill area. A hazardous spill of liquid chemicals that occurs within the property will likely drain to the detention basins onsite.
- Flooding – If a detention basin appears to be approaching a condition of flooding or overflow, contact the police by dialing 911. Do not attempt to unclog a blockage in the system to remedy the problem. Follow the directions of the emergency responders upon their arrival.
- Downed Power Lines - The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Keep a safe distance from any standing water. At a safe distance, stop vehicular and pedestrian traffic from approaching the area of the downed power line.

Emergency Prevention

Below is a list of measures that can be taken to help to prevent emergency situations from happening at the onsite detention basins.

- Outlet Works Cleaning – Flooding at the detention basins is typically caused by clogging at the outlet structure. The outlet structures should be maintained in accordance with the schedule above.
- Tree Pruning – Periodically inspect tree branches that could impact power lines. Contact either PSE&G and/or JCP&L for tree pruning in the vicinity of power lines.

APPENDIX A

- **UNDERGROUND DETENTION SYSTEM MAINTENANCE**
- **PERVIOUS/POROUS PAVING SYSTEM MAINTENANCE**

APPENDIX A

Underground Detention Basin Maintenance

The stormwater detention system design provides easy access for inspection and maintenance.

Inspection

Quarterly inspections of the underground stormwater management systems are recommended. Initially, the system should be inspected every 3 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition but maintain quarterly inspections per township ordinance. The detention system includes standard manholes at each end for ease of access. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted at each manhole to determine the depth of sediment. When the average depth of sediment exceeds **2.5 inches** in the system, clean-out should be performed.

Maintenance

If inspection indicates the potential need for maintenance, access is provided by standard manholes located at each ends for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself through the system while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best.

Step 1) Inspect detention system for sediment:

- A) Remove all manhole cover at all components of the detention system.
- B) Using a flashlight, inspect the detention system through the outlet pipe.
 - a. Mirrors on poles or cameras may be used to avoid a confined space entry.
 - b. Follow OSHA regulations for confined space entry if entering manhole.
- C) If the average sediment level is approximately 2.5 inches in depth, proceed to Step 2. If not, proceed to Step 3.

Step 2) Clean out detention system using the JetVac process:

- A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable.
- B) Apply multiple passes of JetVac until backflush water is clean.
- C) Vacuum manhole sump as required.

Step 3) Replace all lids and covers. Record observations and actions.

Step 4) Inspect & clean catch basins and manholes upstream of the detention system.

Pervious/Porous Paving System Maintenance

General Maintenance

- Failure to correctly maintain a pervious paving system will shorten its lifespan or result in system failure; therefore, the maintenance plan must ensure proper training of personnel and include the special equipment necessary in accordance with the industry's or manufacturer's requirements.
- The surface course must be inspected after every storm exceeding 1 inch of rainfall. If mud or sediment is tracked onto the surface course, it must be removed as soon as possible. Removal should take place when all runoff has drained from the surface course.
- The surface course must be inspected, at least once annually, for cracking, subsidence, spalling, erosion, deterioration and unwanted vegetation. Remedial measures must be taken as soon as possible. Herbicides must not be applied.
- The surface course of a pervious paving system must be vacuum swept, not power swept, at least four times per year. Vacuum sweeping must be followed by either air blowing or high-pressure power washing performed in accordance with the specifications recommended for the particular type of system. All dislodged material must be promptly removed.
 - The first annual maintenance must be performed in the spring.
 - Maintenance must additionally be performed in the autumn, after the fallen leaves are collected and removed.
- Each spring, after the last snow or ice event, the infiltration rate of the surface course must be tested in accordance with the methods of either ASTM C1701 or C1781, as corresponds to the post-construction test performed for the system. At least 3 locations must be tested. One of the locations must be in an area where sediment is most likely to be deposited, such as, but not limited to, a parking lot entrance. The other test locations must be evenly spaced across the system surface. The locations and results obtained must be recorded in the maintenance plan for future reference and compared to the as-built testing results as a metric for determining if a system requires corrective action. The chart provided below shows the approximate infiltration rate based upon the time it takes to infiltrate either 8 or 40 pounds of water specified in the above-cited tests. This chart should be included in the maintenance plan for future reference. The infiltration rate, I , is based upon the following calculation:

$$I = (K * M) / (D^2 * t), \text{ where}$$

$K = 126,870$ in-lbs

$M =$ water mass, lbs

$D =$ ring diameter = 12 inches

$t =$ time, in seconds

Test Methods Per ASTM C1701 or C1781		
Time to Infiltrate the Specified Amount of Water (seconds)	Approximate Surface Infiltration Rate (inches per hour)	
	M = 8 lbs	M = 40 lbs
30	235	1175
60	115	587
100	70.5	352
200	35.2	176
350	20.1	100.7
360	19.6	97.9
380	18.5	92.7
900	7.8	39.2
1760	4.0	20.0
1910	3.7	18.5
3600	2.0	9.8
5400	1.3	6.5
5470	1.3	6.4
6000	1.2	5.9

- Corrective action must be immediately taken to restore the infiltration capacity of the pervious paving system under the following scenarios: □ Standing water is observed on the surface course; or □ The testing methods above show an infiltration rate of 20 inches per hour or less for a system designed for quantity control or 6.4 or less for a system designed for water quality control only.
- Disposal of debris, trash, sediment and other waste material must be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.
- Under no circumstances may any sealants or coatings be applied to pervious paving systems, except for those approved by the manufacturer to improve surface course resistance to de-icing chemicals or refresh traffic striping.
- Over the lifetime of the surface course, no more than 10% of its surface area may be patched with impervious material such as bituminous asphalt or concrete. All patching must be recorded in the maintenance manual for future reference to prevent exceedance of this maximum.
- A detailed, written log of all preventative and corrective maintenance performed on the pervious paving system must be kept, including a record of all inspections and copies of maintenance related work orders. Additional maintenance guidance can be found at https://www.njstormwater.org/maintenance_guidance.htm.

Storage Bed Drain Time

- The approximate drain time for the maximum design storm runoff volume below the top of the surface course must be indicated in the maintenance manual.
- If the actual drain time is significantly different from the design drain time, the components and groundwater levels must be evaluated and appropriate measures taken to return the pervious paving system to minimum and maximum drain time requirements.
- If the system fails to drain the maximum design storm volume within 72 hours, corrective action must be taken.

Cold Weather Maintenance

- Care must be taken when removing snow from the surface course; pervious paving surface courses may be damaged by snowplows or loader buckets set too low to the ground or not equipped with a rubber blade guard. Sand, grit or cinders may not be used on surface courses for snow/ice control.
- De-icing chemicals may not be used on pervious concrete less than one year old.
- De-icers containing magnesium chloride, calcium magnesium acetate or potassium acetate may never be used on pervious concrete.

APPENDIX B

- **BASIN INSPECTION CHECKLISTS**
- **BASIN MAINTENANCE CHECKLIST**
- **BASIN MAINTENANCE LOG**

Basin Inspection Checklist

Name of Facility:	
Location:	
Date of Inspection:	
Weather:	

Embankments and Side Slopes

Facility Item	O.K. ⁱ	Routine ⁱⁱ	Urgent ⁱⁱⁱ	Comments ^{iv}
A. Vegetation				
B. Linings				
C. Erosion				
D. Settlement				
E. Sloughing				
F. Trash and Debris				
G. Seepage				
H. Aesthetics				
I. Other				

Basin Invert

Facility Item	O.K.	Routine	Urgent	Comments
A. Vegetation				
B. Erosion				
C. Settlement				
D. Standing Water				
E. Trash and Debris				
F. Seepage				
G. Aesthetics				
H. Other				

Low Flow Channels

Facility Item	O.K.	Routine	Urgent	Comments
A. Vegetation				
B. Linings				
C. Erosion				
D. Settlement				
E. Standing Water				
F. Trash and Debris				
G. Sediment				
H. Other				

Basin Inspection Checklist

Inlet Structure

Facility Item	O.K.	Routine	Urgent	Comments
A. Condition of Structure				
B. Erosion				
C. Trash and Debris				
D. Sediment				
E. Aesthetics				
F. Other				

Outlet Structure

Facility Item	O.K.	Routine	Urgent	Comments
A. Condition of Structure				
B. Erosion				
C. Trash and Debris				
D. Sediment				
E. Trash Rack				
F. Aesthetics				
G. Other				

Emergency Spillway

Facility Item	O.K.	Routine	Urgent	Comments
A. Vegetation				
B. Lining				
C. Erosion				
D. Settlement				
E. Trash and Debris				
F. Other				

Perimeter

Facility Item	O.K.	Routine	Urgent	Comments
A. Vegetation				
B. Erosion				
C. Fences and Gates				
D. Trash and Debris				
E. Aesthetics				
F. Other				

Basin Inspection Checklist

Access Roads

Facility Item	O.K.	Routine	Urgent	Comments
A. Vegetation				
B. Road Surface				
C. Fences and Gates				
D. Erosion				
E. Aesthetics				
F. Other				

Miscellaneous

Facility Item	O.K.	Routine	Urgent	Comments
A. Effectiveness of Existing Maintenance Program				
B. Dam Inspection				
C. Potential Mosquito Habitats				
D. Mosquitoes				

Remarks:

Basin Inspection Checklist

Name of Facility:	
Location:	
Date of Inspection:	
Weather:	

Preventive Maintenance

Grass Cutting

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Basin Invert			
B. Embankment			
C. Side Slopes			
D. Perimeter			
E. Access Areas			
F. Other			

Grass Maintenance

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Fertilizing			
B. Re-Seeding			
C. De-Thatching			
D. Aeration			
E. Pest Control			
F. Other			

Vegetative Cover

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Fertilizing			
B. Pruning			
C. Pest Control			
D. Removal			
E. Other			

Basin Inspection Checklist

Trash and Debris Removal

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Invert			
B. Side Slopes			
C. Perimeter Areas			
D. Outlet / Trash Rack			
E. Access Areas			
F. Inlets			
G. Other			

Sediment Removal

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Inlets			
B. Outlet			
C. Invert			
D. Other			

Mosquito Habitat Removal

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Inlets			
B. Outlets			
C. Low Flow Channel			
D. Invert			
E. Other			

Other Preventative Maintenance

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Gates / Fences			
B.			
C.			
D.			

Basin Inspection Checklist

Corrective Maintenance

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Removal of Debris and Sediment			
B. Structural Repairs			
C. Slope Repairs			
D. Embankment Repairs			
E. Pond Maintenance			
F. Dewatering			
G. Mosquito Control			
H. Erosion Repair			
I. Fence / Gate Repair			
J. Elimination of Trees/Brush			
K. Elimination of Burrows			
L. Snow and Ice Removal			
M. Other			

Aesthetic Maintenance

Facility Item	Required	Completed	Location, Comments and Special Instructions
A. Graffiti Removal			
B. Grass Trimming			
C. Weeding			
D. Other			

Remarks:

Basin Maintenance Log

Name of Facility:

Location:

Preventive Maintenance

Grass Cutting

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Basin Invert							
B. Embankment							
C. Side Slopes							
D. Perimeter							
E. Access Areas							
F. Other							

Grass Maintenance

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Fertilizing							
B. Re-Seeding							
C. De-Thatching							
D. Aeration							
E. Pest Control							
F. Other							

Vegetative Cover

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Fertilizing							
B. Pruning							
C. Pest Control							
D. Removal							
E. Other							

Basin Maintenance Log

Trash and Debris Removal

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Invert							
B. Side Slopes							
C. Perimeter Areas							
D. Outlet / Trash Rack							
E. Access Areas							
F. Inlets							
G. Other							

Sediment Removal

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Inlets							
B. Outlet							
C. Invert							
D. Other							

Mosquito Habitat Removal

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Inlets							
B. Outlets							
C. Low Flow Channel							
D. Invert							
E. Other							

Other Preventative Maintenance

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Gates / Fences							
B.							
C.							
D.							

Basin Maintenance Log

Corrective Maintenance

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Removal of Debris and Sediment							
B. Structural Repairs							
C. Slope Repairs							
D. Embankment Repairs							
E. Pond Maintenance							
F. Dewatering							
G. Mosquito Control							
H. Erosion Repair							
I. Fence / Gate Repair							
J. Elimination of Trees/Brush							
K. Elimination of Burrows							
L. Snow and Ice Removal							
M. Other							

Aesthetic Maintenance

Facility Item	Date	Date	Date	Date	Date	Date	Date
A. Graffiti Removal							
B. Grass Trimming							
C. Weeding							
D. Other							

Remarks:

-
- ⁱ The item checked is in good condition, and the maintenance program is adequate.
 - ⁱⁱ The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.
 - ⁱⁱⁱ The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.
 - ^{iv} Provide explanation and details if column 2 or 3 is checked.

APPENDIX C

- **CORRECTIVE AND PREVENTATIVE MAINTENANCE COST ESTIMATE**

Corrective and Preventative Maintenance Cost Estimate

Ref.	Description	Frequency (per year)	Cost	Total
Corrective Maintenance Activities				
1	Trash/Debris removal from site	4	\$200.00	\$800.00
2	Trash/Debris removal from Inlets	4	\$100.00	\$400.00
3	Sediment Removal from Systems	1	\$1,000.00	\$1,000.00
4	Structure Repair – If required (basin outlet structures)	1	\$1,000.00	\$1,000.00
Preventative Maintenance Activities				
5	Lawn/Vegetation Maintenance	12	\$100.00	\$1,200.00
6	Revegetate Bare Surfaces	2	\$100.00	\$200.00

Annual Maintenance Cost: \$4,600.00