

Operation and Maintenance Manual

For

Renard Management, Inc.

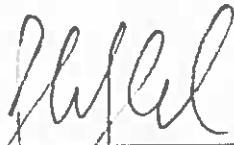
Proposed Self-Storage Facility

*Block 29002, Lots 49 & 50
1026 Georgetown Franklin Turnpike (C.R. 518)
Township of Montgomery, Somerset County, NJ*

Prepared By:



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TABLE OF CONTENTS

	Page
I. INTRODUCTION.....	2
II. RESPONSIBLE PARTY.....	2
III. INLET MAINTENANCE SUMMARY.....	2
IV. GENERAL MAINTENANCE SUMMARY.....	5
V. APPENDIX	
• Maintenance Work Order & Checklist	
• Maintenance Log	
• Inspection Log	

I. INTRODUCTION

The purpose of this report is to provide guidelines and information regarding the maintenance for the existing and proposed stormwater conveyance system in association with the redevelopment of Lots 49 & 50, in Block 29002 in the Township of Montgomery, Somerset County, New Jersey. The proposed development consists of one (1) one-story drive-up self-storage building (9,907 SF) and one (1) three-story self-storage building (123,259 SF). The proposed development also includes associated parking, driveways, landscaping, lighting, and other related site improvements. The stormwater management system includes a proposed stormwater conveyance system (pipes, inlets, manholes, etc.). Each facility will require periodic inspections and maintenance.

The stormwater management facilities will contribute toward the safe conveyance and discharge of runoff generated by the proposed redevelopment. Every stormwater management system, whether at grade or below grade, requires that basic periodic maintenance to be performed in order to maintain the proper functioning and operation of the system. This report will outline these procedures, further discuss responsibilities and highlight those responsible for performing said maintenance.

II. RESPONSIBLE PARTY

System Owner: Renard Management, Inc.
1590 Troy Avenue
Brooklyn, NY 11234
(718) 252-0126
Attn: Dino Tomassetti

III. INLET MAINTENANCE SUMMARY

The stormwater conveyance system has been designed to control and convey stormwater runoff to the proposed discharge point. Without proper routine inspection and maintenance, the system may lose some or all capability to function at full design capacity. Lack of adequate maintenance of the facilities could lead to system failures.

A consulting Professional Engineer should perform regularly scheduled maintenance inspections of the stormwater facilities at least twice each year. The primary purpose of these inspections is to observe and record the operational condition and safety of the facilities. Inspections will also provide information on the effectiveness of regularly scheduled Preventative and Corrective Maintenance Procedures, and will help to identify where changes in the extent and scheduling of the procedures are warranted. 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: Preventative and Corrective Maintenance. Note that a successful maintenance program will emphasize regularly scheduled

Preventative Maintenance over emergency-based Corrective Maintenance. Listed below are the Preventative and Corrective Maintenance procedures to be performed on a routine basis:

Preventative Maintenance Procedures:

The purpose of Preventative Maintenance is to ensure that the system remains operational and safe at all times, while minimizing the need for emergency or corrective maintenance. These procedures are as follows:

a) *Removal and Disposal of Trash and Debris*

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.

Removal of trash and debris will prevent possible damage to outlets, vegetated areas and eliminate potential mosquito breeding habitats. Disposal of debris and trash must comply with all local, county, state, and federal waste flow control regulations. Only suitable disposal and recycling sites should be utilized.

b) *Sediment Removal and Disposal*

The stormwater conveyance system should also be evaluated for excessive deposition of sediment. Accumulated sediment should be removed before it threatens the operation of the system. Before de-sedimentation activities are performed, consideration should be given to evacuating all standing water from the system. This may be accomplished by clearing any blocked openings of the structures or by mechanical means such as pumping. If stable soil conditions exist on-site, sediment deposition should not be an excessive maintenance issue. Should a recurrent stabilization situation develop, the inspector should identify the upstream sources of sediment and recommend required stabilization measures.

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 function is removal of all obstructions to natural flow patterns before stagnant water conditions can develop.

d) *Parking Lot Maintenance*

This maintenance 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 have the ability to remove finer sediment particles. Parking lots and access drives shall be swept/vacuumed at least once a month. The disposal of the swept material must be properly hauled off the site and transferred to an approved disposal site.

Corrective Maintenance Procedures:

Corrective Maintenance is required on an emergency or non-routine basis to correct problems or malfunctions and to restore the intended operation and safe condition of the conveyance system.

a) *Removal of Debris and Sediment*

Sediment, debris and trash which threaten the discharge of the conveyance system should be removed immediately and properly disposed. As noted previously, it is recommended that all water be evacuated from the system with a pump before any significant amount of sediment, settled debris or trash is removed from the system. The lack of an available disposal site should not delay the removal of trash, debris and sediment. Temporary disposal sites should be utilized if necessary.

b) *Structural Repairs*

Structural damage to stormwater conveyance system structures or piping 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 and the design and performance of structural repairs should only be undertaken by the consulting Professional Engineer.

c) *Extermination of Mosquitoes*

If neglected, the system structures can become an ideal 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) Snow and Ice Removal

Accumulations of snow and ice can threaten the functioning of the inlet and outlet structures. 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.

IV. GENERAL MAINTENANCE SUMMARY

An estimated total cost of approximately \$3,500.00 will be incurred to maintain the proposed stormwater management systems on an annual basis. The following is a summary of the required maintenance tasks and associated costs in written and tabular form:

- Inspections to be performed by a consulting engineer on an annual basis or as needed after a designated storm event. - **\$1,000.00**
- Inspections to be performed by the property owner and/or a maintenance designee on a monthly basis and/or after a storm event exceeding 1 inch of rainfall– **Minimal cost associated – Owners responsibility - \$500.00.**
- Stormwater conveyance system debris removal to be performed on an annual basis and/or as inspection routine dictates - **\$1,000.00.**
- Surface debris removal including garbage and organic matter to be performed in conjunction with lawn and grounds maintenance, includes leave removal in the Fall and removal of excessive amounts of snow, if necessary, in the Winter. These tasks are encouraged as necessary to maintain safe operating conditions (twice a month from Spring through Winter recommended or on as needed basis) - **\$1,000.00.**

Maintenance Schedule Summary

Task Identification	Task Frequency	Task Estimated Cost
Inspection by licensed professional consulting engineer	Once (1) per year	\$1,000.00
Inspection by property owner and/or maintenance designee	Once (1) per month (or after a storm event exceeding 1 inch of rainfall)	\$500.00
Debris removal from stormwater conveyance system (inlets, pipes, and manholes)	Once (1) per year	\$1,000.00
Surface debris removal (garbage & organic matter) including leaves in the Fall and snow in the Winter	Twice (2) per month (or on needed basis)	\$1,000.00

APPENDIX

MAINTENANCE WORK ORDER & CHECKLIST

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

NAME OF FACILITY: _____ DATE: _____
 LOCATION: _____ WORK STARTED: _____
 WEATHER: _____ WORK COMPLETED: _____
 MAINTENANCE PERFORMED BY: _____

A. PREVENTATIVE MAINTENANCE					
WORK ITEM	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTIONS		
1. GRASS CUTTING					
A. BOTTOMS					
B. EMBANKMENTS AND SIDE SLOPES					
C. PERIMETER AREAS					
D. ACCESS AREAS AND ROADS					
E. 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. POISONOUS PLANTS					
E. OTHERS					
4. TRASH AND DEBRIS REMOVAL					
A. BOTTOMS					
B. EMBANKMENTS AND SIDE SLOPES					
C. PERIMETER AREAS					
D. ACCESS AREAS AND ROADS					
E. INLETS					
F. OUTLETS AND TRASH RACKS					
G. OTHERS					
5. SEDIMENT REMOVAL					
A. INLETS					
B. OUTLETS AND TRASH RACKS					
C. LOW FLOW CHANNELS					
D. BOTTOMS					
E. OTHERS					
6. PEST CONTROL					
A. GROUND					
B. MOSQUITO BREEDING					
C. RODENTS / RODENT HOLES					
D. OTHERS					
7. STRUCTURAL REPAIRS					
A. PIPES					
B. FLARED END SECTIONS					
C. INLETS					
D. MANHOLES					
E. OUTLET CONTROL STRUCTURES					
F. LOW FLOW CHANNELS					
G. RIP-RAP					
H. EMERGENCY SPILLWAY					
I. ACCESS AREA / ROADS					
J. FENCE					
K. TRASH RACKS					
L. OTHERS					

B. BASIN REPAIR					
A. EROSION					
B. SAND LAYER REPLACEMENT					
C. HARMFUL POLLUTANT REMOVAL					
D. BASIN LAYER					
E. SNOW / ICE REMOVAL					
F. OTHERS					
9. UNDERGROUND BASIN MAINTENANCE					
A. BOTTOMS					
B. OUTLETS AND TRASH RACKS					
C. ACCESS HATCHES					
D. OTHERS					
10. INFILTRATION BASIN MAINTENANCE					
A. TILING BOTTOM					
11. POND MAINTENANCE					
A. AERATION EQUIPMENT					
B. DEBRIS AND TRASH REMOVAL					
C. WEED REMOVAL					
D. PERMANENT POOL LEVEL					
E. OTHERS					
12. OTHER PREVENTIVE MAINTENANCE					
A. PARKING LOT SWEEPING					
B. EMPTYING TRASH RECEPTACLES					
C. PUMPS AND VALVES					
D. ELECTRICAL PANEL AND WIRING					
E. DEWATERING					
F. GRAFFITI REMOVAL					
G. OTHERS					

B. CORRECTIVE MAINTENANCE			
WORK ITEMS	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. REMOVAL OF DEBRIS AND SEDIMENT			
2. STRUCTURAL REPAIRS			
3. EMBANKMENTS AND SIDE SLOPES			
4. DEWATERING			
5. BASIN MAINTENANCE			
6. CONTROL OF MOSQUITOES			
7. EROSION REPAIR			
8. FENCE REPAIR			
9. SNOW AND ICE REMOVAL			
10. SAND LAYER REPLACEMENT			
11. OTHER			

C. AESTHETIC MAINTENANCE			
WORK ITEMS	ITEMS REQUIRED	ITEMS DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. GRAFFITI REMOVAL			
2. GRASS TRIMMING			
3. WEEDING			
4. OTHERS			

GENERAL NOTES AND REMARKS

MAINTENANCE COMPLETED AND BASED ON ALL AREAS VISIBLE AND ACCESSIBLE AT THE TIME OF INSPECTION

WORK PERFORMED BY: _____

SIGNED: _____ DATE: _____

MAINTENANCE LOG

**MAINTENANCE LOG
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY: _____ DATE: _____
 LOCATION: _____ WORK STARTED: _____
 WEATHER: _____ WORK COMPLETED: _____
 MAINTENANCE PERFORMED BY: _____

A. PREVENTATIVE MAINTENANCE					
WORK ITEMS	ITEMS REQUIRED	DATE REQUIRED	ITEMS DONE	DATE DONE	COMMENTS AND SPECIAL INSTRUCTIONS
1. GRASS CUTTING					
A. BOTTOMS					
B. EMBANKMENTS AND SIDE SLOPES					
C. PERIMETER AREAS					
D. ACCESS AREAS AND ROADS					
E. 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. POISONOUS PLANTS					
E. OTHERS					
4. TRASH AND DEBRIS REMOVAL					
A. BOTTOMS					
B. EMBANKMENTS AND SIDE SLOPES					
C. PERIMETER AREAS					
D. ACCESS AREAS AND ROADS					
E. INLETS					
F. OUTLETS AND TRASH RACKS					
G. OTHERS					
5. SEDIMENT REMOVAL					
A. INLETS					
B. OUTLETS AND TRASH RACKS					
C. LOW FLOW CHANNELS					
D. BOTTOMS					
E. OTHERS					
6. PEST CONTROL					
A. GEESE					
B. MOSQUITO BREEDING					
C. RODENTS / RODENT HOLES					
D. OTHERS					
7. STRUCTURAL REPAIRS					
A. PIPES					
B. FLARED END SECTIONS					
C. INLETS					
D. MANHOLES					
E. OUTLET CONTROL STRUCTURES					
F. LOW FLOW CHANNELS					
G. RIP-RAP					
H. EMERGENCY SPILLWAY					
I. ACCESS AREA / ROADS					
J. FENCE					
K. TRASH RACKS					
L. OTHERS					

A. BASIN REPAIR						
A. EROSION						
B. SAND LAYER REPLACEMENT						
C. HARMFUL POLLUTANT REMOVAL						
D. BASIN LAYER						
E. SNOW / ICE REMOVAL						
F. OTHERS						
9. UNDERGROUND BASIN MAINTENANCE						
A. BOTTOMS						
B. OUTLETS AND TRASH RACKS						
C. ACCESS HATCHES						
D. OTHERS						
10. INFILTRATION BASIN MAINTENANCE						
A. TILING BOTTOM						
11. POND MAINTENANCE						
A. AERATION EQUIPMENT						
B. DEBRIS AND TRASH REMOVAL						
C. WEED REMOVAL						
D. PERMANENT POOL LEVEL						
E. OTHERS						
11. OTHER PREVENTIVE MAINTENANCE						
A. PARKING LOT SWEEPING						
B. EMPTYING TRASH RECEPTACLES						
C. PUMPS AND VALVES						
D. ELECTRICAL PANEL AND WIRING						
E. DEWATERING						
F. GRAFFITI REMOVAL						
E. OTHERS						

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. EMBANKMENTS AND SIDE SLOPES						
4. DEWATERING						
5. BASIN MAINTENANCE						
6. CONTROL OF MOSQUITOES						
7. EROSION REPAIR						
8. FENCE REPAIR						
9. SNOW AND ICE REMOVAL						
10. SAND LAYER REPLACEMENT						
11. OTHER						

C. AESTHETIC MAINTENANCE						
WORK ITEMS	ITEMS REQUIRED	DATE REQUIRED	ITEMS DONE	DATE DONE	COMMENTS AND SPECIAL INSTRUCTIONS	
1. GRAFFITI REMOVAL						
2. GRASS TRIMMING						
3. WEEDING						
4. OTHERS						

GENERAL NOTES AND REMARKS

MAINTENANCE COMPLETED AND BASED ON ALL AREAS VISIBLE AND ACCESSIBLE AT THE TIME OF INSPECTION

WORK PERFORMED BY: _____

SIGNED: _____ DATE _____

INSPECTION LOG

**INSPECTION LOG
FOR STORMWATER MANAGEMENT FACILITIES**

NAME OF FACILITY: _____ DATE: _____
 LOCATION: _____
 WEATHER: _____
 INSPECTION PERFORMED BY: _____

A. PREVENTATIVE MAINTENANCE				
FACILITY ITEM	OK (1)	ROUTINE (2)	URGENT (3)	COMMENTS (4)
1. GRASS CUTTING				
A. BOTTOMS				
B. EMBANKMENTS AND SIDE SLOPES				
C. PERIMETER AREAS				
D. ACCESS AREAS AND ROADS				
E. 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. POISONOUS PLANTS				
E. OTHERS				
4. TRASH AND DEBRIS REMOVAL				
A. BOTTOMS				
B. EMBANKMENTS AND SIDE SLOPES				
C. PERIMETER AREAS				
D. ACCESS AREAS AND ROADS				
E. INLETS				
F. OUTLETS AND TRASH RACKS				
G. OTHERS				
5. SEDIMENT REMOVAL				
A. INLETS				
B. OUTLETS AND TRASH RACKS				
C. LOW FLOW CHANNELS				
D. BOTTOMS				
E. OTHERS				
6. PEST CONTROL				
A. GEESE				
B. MOSQUITO BREEDING				
C. RODENTS / RODENT HOLES				
D. OTHERS				
7. STRUCTURAL REPAIRS				
A. PIPES				
B. FLARED END SECTIONS				
C. INLETS				
D. MANHOLES				
E. OUTLET CONTROL STRUCTURES				
F. LOW FLOW CHANNELS				
G. RIP-RAP				
H. EMERGENCY SPILLWAY				
I. ACCESS AREA / ROADS				
J. FENCE				
K. TRASH RACKS				
L. OTHERS				
8. BASIN REPAIR				
A. EROSION				
B. SAND LAYER REPLACEMENT				
C. HARMFUL POLLUTANT REMOVAL				
D. BASIN LAYER				
E. SNOW / ICE REMOVAL				
F. OTHERS				

9. UNDERGROUND BASIN MAINTENANCE				
A. BOTTOMS				
B. OUTLETS AND TRASH RACKS				
C. ACCESS HATCHES				
D. OTHERS				
10. INFILTRATION BASIN MAINTENANCE				
A. TILING BOTTOM				
11. POND MAINTENANCE				
A. AERATION EQUIPMENT				
B. DEBRIS AND TRASH REMOVAL				
C. WEED REMOVAL				
D. PERMANENT POOL LEVEL				
E. OTHERS				
12. OTHER PREVENTIVE MAINTENANCE				
A. PARKING LOT SWEEPING				
B. EMPTYING TRASH RECEPTACLES				
C. PUMPS AND VALVES				
D. ELECTRICAL PANEL AND WIRING				
E. DEWATERING				
F. GRAFFITI REMOVAL				
G. OTHERS				

B. CORRECTIVE MAINTENANCE				
FACILITY ITEM	OK (1)	ROUTINE (2)	URGENT (3)	COMMENTS (4)
1. REMOVAL OF DEBRIS AND SEDIMENT				
2. STRUCTURAL REPAIRS				
3. EMBANKMENTS AND SIDE SLOPES				
4. DEWATERING				
5. BASIN MAINTENANCE				
6. CONTROL OF MOSQUITOES				
7. EROSION REPAIR				
8. FENCE REPAIR				
9. SNOW AND ICE REMOVAL				
10. SAND LAYER REPLACEMENT				
11. OTHER				

C. AESTHETIC MAINTENANCE				
FACILITY ITEM	OK (1)	ROUTINE (2)	URGENT (3)	COMMENTS (4)
1. GRAFFITI REMOVAL				
2. GRASS TRIMMING				
3. WEEDING				
4. OTHERS				

REMARKS

- (1) ITEM CHECKED IS IN GOOD CONDITION, AND THE MAINTENANCE PROGRAM IS ADEQUATE.
- (2) ITEM CHECKED REQUIRES ATTENTION, BUT DOES NOT PRESENT AN IMMEDIATE THREAT TO THE FACILITY FUNCTION OR OTHER FACILITY COMPONENTS.
- (3) THE ITEM 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.

GENERAL NOTES AND REMARKS

INSPECTION COMPLETED AND BASED ON ALL AREAS VISIBLE AND ACCESSIBLE AT THE TIME OF INSPECTION.

WORK PERFORMED BY: _____

SIGNED: _____ DATE: _____