

SOIL EROSION AND SEDIMENT CONTROL PLAN

BUILDING 35 ADDITION FOR RESEARCH

PROVIDENCE VETERANS AFFAIRS MEDICAL CENTER

830 CHALKSTONE AVENUE

PROVIDENCE, RI

Prepared By:

**Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865**

June 30, 2015

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ATTACHMENT A

Soil Erosion and Sediment Control Plan

1. INTRODUCTION

This Soil Erosion and Sediment Control Plan (SESC) addresses the construction of an addition to Building #35, the Research Building Center for Neurorestoration and Neurotechnology Research, at the existing Providence VA Medical Center campus located at 830 Chalkstone Avenue in Providence, Rhode Island. The project will also include site, utility, and drainage improvements.

This Plan has been prepared in accordance with the provisions of the Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for the Discharge of Stormwater Associated with Construction Activity. The basic guidelines utilized in this Plan include the Rhode Island Soil Erosion and Sedimentation Control Handbook (Rhode Island Department of Environmental Management, et. al., 2014), and the Rhode Island Stormwater Design and Installation Standards Manual (RIDEM/RICRMC 2010).

2. SITE DESCRIPTION AND PROPOSED CONSTRUCTION ACTIVITIES

2.1 Description

The basic guidelines utilized in this Plan include the Rhode Island Soil Erosion and Sedimentation Control Handbook (RISESCH) updated in February 2014 and the Rhode Island Stormwater Design and Installation Standards Manual dated December 2010.

The existing site is developed with a medical center that includes a range of inpatient and outpatient services varying from medical to rehabilitative care. The topography of the site slopes from the existing building (#35) and drains downhill to Air Force Drive on the east.

The proposed project includes the addition of neurological research facilities at the current VA Medical Center. The new facility will have two stories, with a footprint of approximately 2,400 square feet. A new patio, retaining walls, and associated drainage improvements are proposed.

A stormwater management system designed in accordance with RIDEM standards is proposed. There is one bioretention area proposed to provide total suspended solids (TSS) removal.

The development is shown on the project plans entitled “Building 35 Addition for Research”, prepared by Pare Corporation, dated June 30, 2015 (the “Plans”).

2.2 Soil Erodibility

According to the Soil Survey of Rhode Island (US Department of Agriculture Soil Conservation Service, 1981), soils situated in the eastern development area, where the existing facility is located, consist primarily of Merrimac-Urban land complex (MU). Merrimac-Urban land complex is a well drained soil.

2.3 Natural Heritage Areas

According to the Environmental Resource Map at <http://www.arcgis.com/home/webmap/viewer.html>, accessed on January 19, 2015, the site is not located in a Rhode Island Natural Heritage Area. In addition, data from the US Fish & Wildlife Service Endangered Species Consultation website at

http://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm, accessed on January 19, 2015, demonstrated that there are no federally-listed Endangered Species on the site.

2.4 Timetable

Construction of the project is expected to commence after federal bidding process, which could be until January 2016. Construction is projected to be complete two years after start date.

2.5 Sequence of Construction

A generalized sequence of the site work for the facility is provided below:

1. Contractor mobilization.
2. Install perimeter sedimentation controls and construction fencing.
3. Mark trees to remain and install tree protection.
4. Clear and grub vegetation to be removed.
5. Remove and dispose of existing site features and utilities.
6. Rough grade site.
7. Construct building addition.
8. Install drainage system.
9. Install underground utilities.
10. Site grading, place bulk fill.
11. Site grading and slope stabilization.
12. Install patio.
13. Loam and seed.
14. Complete punch list items.
15. Remove perimeter sedimentation controls and construction fence following site stabilization.

2.6 Ultimate Intended Use

The ultimate intended use for this site is to provide additional space for neurological research.

2.7 Disturbed Area

The construction limits for the project encompasses approximately 11,000 square feet (0.25 acres).

2.8 Pre- and Post-Development Runoff

Under existing conditions, the project area is comprised of a concrete walk and a steep wooded area. Runoff from the project area drains to the east and is collected by catch basins along Air Force Drive.

Low impact development techniques were incorporated into the proposed stormwater management system, wherever possible. A bioretention area is proposed to provide water quality treatment and infiltrate recharge volumes. Due to the depth of the ground water table and the hydrologic soils present on site, vertical filtration and infiltration were utilized for the sites stormwater runoff.

2.9 Potential Sources of Pollution

Potential sources of pollution during construction include sediment carried by stormwater runoff and dewatering operations, as well as the limited potential for accidental spillage of construction equipment fuel. To minimize potential pollution, erosion and sedimentation controls will be installed prior to site disturbance. All disturbed areas will be vegetated as soon as possible, but no later than 14 days after final grades are established. Temporary vegetation and/or mulching will be used for any unfinished areas that will be exposed for more than fourteen days (14) unless the activity is to resume within twenty-one (21) days. Fuel spills will be avoided as described in Section 3.5.2.

2.10 Non-Stormwater Discharges

Allowable non-stormwater discharges associated with this construction project may include the following: use of water for washdown of vehicles and external building washdowns with no detergents used, firefighting activities, pavement washdowns where no spills or leaks of toxic or hazardous materials have not occurred, dust control, landscape irrigation, and waterline flushing.

2.11 Existing Data

Existing discharges from the site include the overland runoff from the concrete walk and grassed/wooded area. There is no existing water quality data available.

2.12 Inspections

During construction, site inspections must be conducted 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 that exceeds 0.25 inches of rainfall in a 24-hour period of time.

2.13 Record Keeping

All site inspection reports and associated records must be retained for five (5) years from the date the site has undergone final stabilization.

3. CONTROLS

Standard erosion and sedimentation controls will be utilized site-wide during construction. As indicated in the Sequence of Construction (2.5), erosion and sedimentation controls will be in place prior to land disturbance. Controls to be used include perimeter sediment barrier (haybale or silt fence), construction entrances, and permanent vegetation.

3.1 Vegetative and Temporary Mulching Practices

Grass seeding and landscaping plantings will be the main vegetative control used on the site. Upon the completion of grading activities, any disturbed or otherwise unstabilized soil will be promptly protected by the application of a plantable soil, where necessary, and an appropriate permanent grass seed mixture.

Mulching is to be used as necessary to protect against erosion until a good stand of permanent vegetation is established. Mulches will consist of organic material such as hay and straw, wood chips, or bark mulch. Wood chips or bark mulch must be at least 50% decomposed for use as mulch.

These vegetative practices shall be initiated not more than fourteen (14) days after the construction activity has temporarily or permanently ceased, unless the activity is to resume within twenty-one (21) days.

3.2 Non-Structural Practices

The non-structural practices to be implemented during construction include haybale or silt fence and stabilized construction entrances.

3.2.1 Construction Entrances

Construction entrances, provided in accordance with RIDOT Standard Detail 9.9.0, shall be placed at points of ingress and egress prior to commencing work on the site. When sediment fills the voids of the stone, the construction entrance must be removed and replaced with new stone. Site conditions may require that washing be performed to remove sediment from heavy vehicles to prevent tracking of sediment off-site. Provisions to wash construction vehicles should be provided at this point. The Contractor must sweep and clean sediment tracked off the site onto adjacent roadways immediately prior to the close of the workday.

3.2.2 Perimeter Sediment Barrier

Prior to construction, a continuous line of haybales or silt fence shall be installed as shown on the plans. The barriers shall be maintained throughout the construction period. Inspection should be made after each storm event and repair and or replacement should be made as promptly as needed. Cleanout of accumulated sediment behind the barrier is necessary if ½ of the original height of the barrier becomes filled with sediment.

The silt fence shall consist of pervious fabric supported by posts or stakes driven along the contour. The fabric shall be securely fastened to the stakes and the bottoms secured within the soil. Silt fence shall be placed such that water cannot bypass the ends. Silt fence shall be installed in accordance with the manufacturer's specifications. The fence shall be inspected often and sediment shall be cleared to prevent buildup or damages.

3.2.3 Check Dams

Temporary haybale check dams are to be installed across temporary and permanent swales to reduce the velocity of concentrated stormwater flows thereby reducing erosion of the swale and trapping sediment. The contractor shall maintain temporary check dams in proper working condition as long as the structure is in place.

3.2.4 Inlet Protection

During construction, filter fabric or sediment bags shall be installed around existing and newly installed catch basins to prevent sediment accumulation in the system. These BMP's shall remain installed below the grates until the contributing area is stabilized. Sediment shall be removed and the trap restored to its original

dimensions when the sediment has accumulated to half (½) of the design depth of the trap. The sediment that is removed should be disposed in an area in which erosion will not take place.

3.2.5 Stockpile Management

Erodible material stockpiles shall be encircled with silt fence or other barriers to prevent sediment transport out of the stockpile area. If expected to remain for more than 21 days, stockpiles shall be seeded with temporary grass seed mix and mulched.

3.2.6 Soil Erosion Management

Any exposed soils that will be left exposed for a period of 14 days or longer without being subject to construction activity must be stabilized.

3.3 Structural Practices

Structural BMP's to be implemented include the following:

3.3.1 Dewatering Basin

Dewatering wastewaters shall be pumped to a dewatering basin which may consist of RIDOT Standard Detail 9.7.0, hay bale corrals, or a filter bag as appropriate. The purpose is to remove sediments in discharges from dewatering operations. More than one pipe or hose can be discharged to a designated area for dewatering purposes. The basin is to be cleared of all sediment when it reaches to half (½) the original height of the haybales enclosure. Filter bags shall be removed and replaced when full. Periodic inspections are necessary to check for signs of erosion and damages.

3.3.2 Temporary Sediment Traps

Temporary sediment traps will be located throughout the site, mainly in the lower locations where permanent stormwater basins are proposed. The basins shall be sized by the Contractor in accordance with the Rhode Island Soil Erosion and Sedimentation Control Manual during construction when the phasing plan will allow understanding of the contributing area to each BMP. The basins shall be cleaned of sediment once half of the original design volume is exceeded.

3.3.3 Temporary Diversions/Swales

As necessary, temporary diversions and swales shall be provided throughout the construction area to direct flow to the temporary sediment traps. It is anticipated that at least one temporary swale or diversion will be required for each temporary sediment trap and that the swales may need to be relocated as construction progresses. Temporary hay bale check dams may be installed in the swales to prevent scour and to trap sediment. The swales shall be routinely inspected and sediment removed as necessary.

3.3.4 Concrete Washout

Provide a below-grade concrete washout area in accordance with the RISESCH. Mark location of concrete washout with a sign to notify concrete truck drivers and contractors where washout should occur.

3.4 Post-Construction Stormwater Management

The following stormwater BMPs are proposed.

3.4.1 Bioretention Area

The bioretention area is designed with the recommended vegetation, and a raised outlet. The raised outlet creates ponding where suspended solids can settle out and stormwater can infiltrate following the storm event.

3.4.2 Outlet Protection

Riprap aprons will be placed downstream of point stormwater discharges to promote sheet flow and control potential for erosion downstream. Riprap pads will be cleaned of sediment following the construction period.

These devices will provide permanent, stabilized, maintainable slopes and stormwater drainage pathways for the site. Slope stabilization will prevent erosion and sedimentation of areas down slope. Catch basins will provide removal of sediment and separation of oil and other floatable debris.

3.4.3 Catch Basins

Catch basins with deep sumps (3') and outlet hoods will provide removal of sediment and separation of oil and other floatable debris.

These devices will provide permanent, stabilized, maintainable slopes and stormwater drainage pathways for the site. Slope stabilization will prevent erosion and sedimentation of areas down slope.

3.5 Other Controls

3.5.1 Waste Disposal

Wastes generated during construction shall be disposed consistent with the appropriate State and Federal regulations.

3.5.2 Dust Control

Dust shall be controlled by watering or other approved methods as necessary or as directed by the owner or owner's representative.

3.5.3 Spill Prevention and Response Procedure

Spills related to construction vehicles and materials will be prevented by the following procedures:

- 1) No vehicles will be left unattended in project areas, which, in the event of a hazardous material spill, would flow into any portion of the drainage system.

- 2) The Contractor shall maintain a complete spill kit on-site at all times during construction.
- 3) Washing of construction vehicles on-site is prohibited.
- 4) Vehicles will be fueled in areas and using procedures that will not lead to a discharge of fuel into Waters of the State. Follow the procedures below taken from the Rhode Island Soil Erosion and Sediment Control Handbook, Revised August 2014.
 - a. Discourage “topping-off” of fuel tanks.
 - b. Make available absorbent spill cleanup materials and spill kits in fueling areas and on fueling trucks, and should be disposed of properly after use.
 - c. Use drip pans or absorbent pads during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
 - d. Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
 - e. Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
 - f. Train employees and subcontractors in proper fueling and cleanup procedures.
 - g. When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SESC Measures.
 - h. Protect dedicated fueling areas from stormwater run-on and runoff with berms and dikes to prevent run-on, runoff, and to contain spills.
 - i. Locate fueling areas at least 50 ft away from and downstream from drainage facilities and watercourses.
 - j. Perform fueling on level-grade areas.
 - k. Equip nozzles used in vehicle and equipment fueling with an automatic shutoff to control drips. Fueling operations should not be left unattended.
 - l. Use vapor recovery nozzles to help control drips as well as air pollution where required.
- 5) In the event of a release of hazardous material, the equipment operator will take all measures to stop and/or contain the leak and without exacerbating the release, and attempt to remove equipment from areas likely to cause a discharge of hazardous materials into Water of the State. Further, site supervisors, and the Owner and his Representative shall be contacted and, should it be determined that the spill is of a reportable quantity, the RIDEM shall be notified. A licensed hazardous waste remediation contractor shall be engaged to remediate any such spills in accordance with RIDEM Regulations and procedures.

Any hazardous materials used for construction will be stored away from the drainage system components and protected from precipitation. In the event of a release beyond the ability of construction staff to contain, emergency services of the City of Providence, and the State of Rhode Island, and a licensed hazardous waste remediation contractor will be contacted for assistance.

To prevent pollution of surface waters, the following construction procedures shall be prohibited:

- 1) Dumping of or discharging of spoil material or excessively turbid water into any stream corridor, any wetland, or any surface waters.
- 2) Indiscriminate, arbitrary, or capricious operations of equipment in any stream corridors, any wetlands, or any surface waters.

- 3) Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or any wetlands. All disposal of silt-laden water will be carried out within the use of approved filter basins.
- 4) Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.
- 5) Disposal of excess or unsuitable excavation material in wetlands or floodplain areas, even with permission of the property owner.
- 6) Open burning of project debris.
- 7) Location of storage stockpiles in environmentally sensitive areas.

3.5.4 Control of Allowable Non-Stormwater Discharges

Allowable non-stormwater discharges shall be monitored for erosion and sedimentation impacts and appropriate BMP's provided as necessary. Records of such BMP's shall be made and retained.

3.5.5 Good Housekeeping

Materials stored on the site will be protected from exposure to precipitation through the use of construction trailers, tarps and other overhead cover. All construction debris shall be properly disposed of and/or covered at the end of each working day to avoid contact with precipitation.

3.5.6 Maintenance

Stormwater controls will be maintained as follows:

The proposed stormwater management system has been designed to remove a net annual 80% total suspended solids from the runoff collected from new impervious areas. Several best management practices are proposed to enhance total suspended solids removal. The bioretention area has been designed to treat the water quality volume from upstream areas and remove total suspended solids through settling and filtration.

Monitoring and maintenance are important aspects of maintaining the water quality treatment capabilities of the stormwater system.

3.5.6.1 During Construction

1. The contractor shall remove sediment and debris from all catch basins, manholes, water quality structures on a routine basis, immediately following site stabilization and prior to project completion and acceptance.
2. The closed drainage system and associated structures shall be cleaned and flushed by the contractor at the completion of construction, and the contractor shall be responsible for inspection and maintenance of the drainage system until acceptance of the system by the engineer and the Owner. Following acceptance of the proposed drainage system proposed for this site the Owner of the site shall be responsible for the long term inspection and maintenance of the drainage system.

3. Any accumulation of ponding water in areas within the limits of disturbance, other than designated areas, shall be removed accordingly and prevented in the future.

3.5.6.2 Post Construction

Following construction, the completion of the inspection and maintenance requirements below shall be the responsibility of the Property Owner.

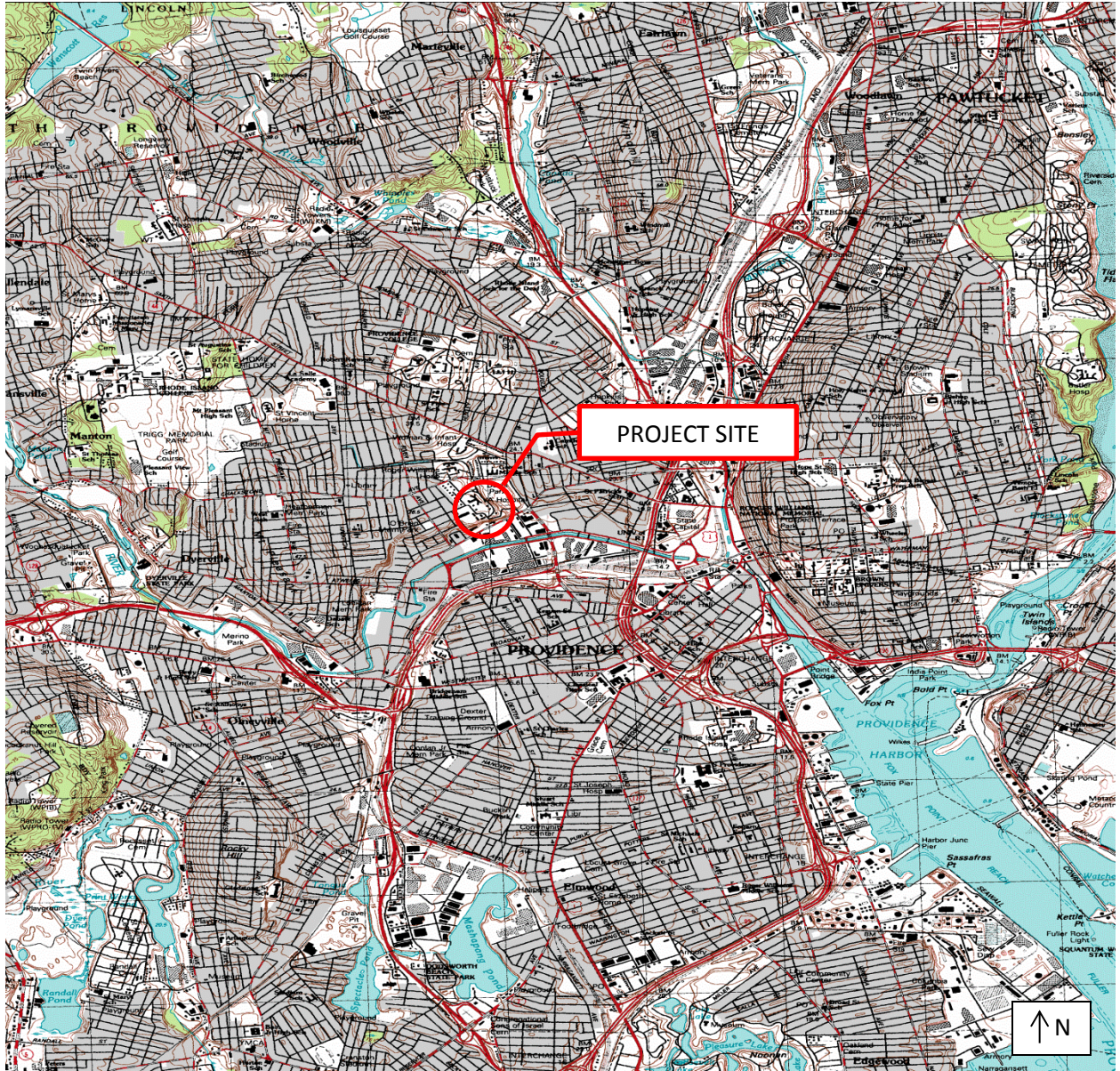
1. Trash, litter, sediment and other debris shall be removed from any stormwater facility (including catch basins, manholes, inlet and outlet structures, and the stormwater treatment system) at least twice a year, preferably spring and fall, at the cost of the Owner.
2. The parking lot and entry drives shall be swept by the Owner as early as possible every spring and once in the fall to remove sediments.
3. All sediments removed shall be disposed of at an approved and permitted location.
4. All cleaning and maintenance of drainage system BMP's shall be the responsibility of the property owner. See additional inspection, maintenance, and repair notes for the stormwater system.

Bioretention Area Inspection, Maintenance, and Repair Notes

1. The bioretention area shall be inspected after every major storm of 1 inch or greater for trash, debris, sediment, erosion, standing water, and overall performance. Defects shall be repaired by the Owner.
2. Owner shall mow grass within bioretention area twice annually, once in late spring and once in early fall. The vegetation shall not exceed 18" in height.
3. Owner shall re-mulch bioretention areas in spring every year.
4. In spring, owner shall trim vegetation and remove dead vegetation from the bioretention area.
5. Remove accumulated sediment from the bioretention cells twice annually in late spring or early fall if sediment exceeds 1" in the bioretention area or sediment forebay.
6. If ponding exceeds 48 hours, the owner shall remove all discolored material and re-mulch filter surface.
7. Following the first 6 months after construction, the owner shall inspect filter practices after the first two storms of 2.7" of greater.

ATTACHMENT B

Location Map



SITE LOCATION MAP

Providence Veterans Affairs Medical Center
Building 35 Addition for Research
830 Chalkstone Avenue
Providence, RI



PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

ATTACHMENT C

***Erosion Control Inspection Form
SESC Amendment Log***

**EROSION CONTROL INSPECTION FORM
AND
MAINTENANCE REQUEST**

Providence VA Medical Center
Providence, RI

Registration No.:	Date:	Weather:	Inspector:
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Note: Inspection procedures shall be conducted by qualified personnel (provided by the permittee), who shall inspect disturbed areas of the construction activity that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.25 inches or greater. Where areas have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months. This report shall be retained as part of the Storm Water Pollution Prevention Plan for at least three years after the date of inspection.

General:

Any evidence of, or the potential for, pollutants entering the drainage system or wetland areas. Y___ N___

Remarks:

Maintenance Required:

Maintenance Date:

Erosion control measures are effective in preventing significant impacts to receiving waters. Y___ N___

Remarks:

Maintenance Required:

Maintenance Date:

Haybale or Silt Fence Barriers:

Evidence of failure, including overtopping, undercutting or bypass of flowing water, displaced or damaged hay bales or significant deterioration. Y___ N___

Remarks:

Sediment height exceeds 1/2 the height of the exposed bale. Y___ N___

Remarks:

Maintenance Required:

Maintenance Date:

Catch Basin Inlet Protection

Evidence of failure, including overtopping, undercutting or bypass of flowing water, displaced or damaged hay bales or significant deterioration. Y___ N___

Remarks:

Sediment height exceeds 1/2 the height of the exposed bale. Y___ N___

Remarks:

Maintenance Required:

Maintenance Date:

Construction Entrance:

Evidence of tracking or washing of sediment onto paved surfaces. Y___ N___

Remarks:

Maintenance Required:

Maintenance Date:

Stockpile Area

Perimeter barrier is effective in containing sediment. Y___ N___ N/A ___

Poly cover is in good condition Y___ N___ N/A ___

Remarks:

Maintenance Required:

Additional Remarks

Signature of Inspector _____ Date: _____

Signature of Operator _____ Date: _____

ATTACHMENT D

***Demolition Plan
Prepared by Pare Corporation
June 30, 2015***

