



Stormwater Management Report

Portland Public Works Building Expansion
250 Canco Road
Portland, Maine 04103

General

The following Stormwater Management Plan has been prepared for the City of Portland Department of Public Services to evaluate stormwater runoff changes and erosion control associated with the addition and renovations to the existing Public Works building at 250 Canco Road. Project improvements will include an 11,900 square foot building addition and renovations to the existing building, associated grading, replacement of pavement in affected paved parking areas, and changes to the closed stormdrainage system. The building addition will replace a portion of paved parking area, therefore stormwater runoff characteristics are not anticipated to change significantly and there is no increase in impervious area or change in landscaped area. The existing gravel wetland will continue to be the only means of stormwater treatment on-site; however the proposed building expansion will go untreated because the pavement it is replacing is currently untreated.

A Level II – Site Plan Development Review Application is being submitted for this project because it involves a building expansion of less than 20,000 square feet within the Industrial Zone. The project does not require a Maine DEP Site Location of Development Amendment Application. The proposed Stormwater Management Plan satisfies the Basic, General, and Flooding Standards described in Maine DEP Chapter 500 because the City of Portland requires compliance with these standards per the Stormwater Ordinance.

Existing Site Conditions

The project is located on the northwest side of Canco Road, roughly 0.3 miles northwest of the Canco Road and Read Street intersection. Land in the vicinity of the project site is predominantly developed for industrial uses. The existing facility is bound by a residential neighborhood to the north, industrial and commercial uses to the south and west, and Canco Road to the east. A retirement community is located across Canco Road from the site.

A portion of runoff from the site drains to the existing gravel wetland via a closed stormdrain system. Remaining runoff, including runoff from the parking area on the northwest end of the existing building, which is where the building expansion will be constructed, currently is conveyed through a closed drainage system, which bypasses the gravel wetland and ties into the City of Portland's drainage system within Canco Road.

The site currently has approximately 157,252 square feet (3.61 acres) of impervious area and 14,278 square feet (0.33 acres) of landscaped area. Landscaped areas consist of vegetated sideslopes, shallow swales for stormwater conveyance and stormwater best management practices (BMPs) for stormwater detention and treatment.

Proposed Improvements

Project improvements will include an 11,900 square foot building addition and renovations to the existing building, associated grading, replacement of pavement in affected paved parking areas, and changes to the closed storm drainage system. The building addition will replace a portion of paved parking area, therefore stormwater runoff characteristics are not anticipated to change significantly and there is no increase in impervious area or change in landscaped area.

Runoff from the proposed building expansion will go untreated and be conveyed through a closed drainage system that bypasses the gravel wetland and ties into the City of Portland's stormdrain infrastructure within Canco Road, as it does in the existing condition. The closed drainage system that exists currently will be partially replaced and its general location will move northwesterly in order to collect runoff from the building expansion and the majority of the paved parking lot northwest of the building. The aforementioned parking lot will be regraded to drain accordingly.

Stormwater Management

To mitigate peak runoff and treat stormwater in the existing condition, a gravel wetland, which has the capacity to treat a large volume of runoff, was installed in 2015. The gravel wetland was designed in accordance with the latest MDEP Chapter 500 regulations. As mentioned previously, a portion of stormwater runoff leaving the site receives treatment from the gravel wetland however; the building addition will go untreated as the portion of pavement being replaced by the expansion currently does.

Stormwater infrastructure is designed with the capacity to handle runoff from a 25-year storm event. A HydroCAD model was created for the previous project to examine pre- and post-development peak rates of runoff at two study points and to examine pipe capacity within the proposed closed storm drainage system. The model predicted slight decreases in peak flow rates during the 2-, 10- and 25-year storm events, thus satisfying the Flooding Standard. The Flooding Standard has also been satisfied for this project because there has been no change in the amount of impervious area analyzed in the HydroCAD model.

The General Standard, which requires 80% of runoff from developed areas and 95% of runoff from impervious areas, has also been satisfied for this project because the standard was met for the existing condition and there is no net change in proposed impervious or landscaped areas.

Inspection & Maintenance

Provisions for periodic inspection and maintenance of the gravel wetland, catch basins, storm pipes and other stormwater infrastructure are outlined in the Inspection, Maintenance, and Housekeeping Plan, which is included in this report as **Attachment A**.

Summary

The site will be graded so that development will not significantly alter natural drainage patterns, and will include a comprehensive grading and drainage plan responsive to site characteristics and topographical conditions. Temporary erosion control measures, which are defined in the Grading and Utility Plan, shall be implemented by the contractor during the construction phase of the project. An Erosion and

Sedimentation Control Plan has also been included in the plan set for use by the contractor, thus satisfying the Basic Standard.

There is no net change in the amount of impervious area being proposed for this project, therefore the treatment areas from the previous design are unchanged and general stormwater characteristics will remain the same in the post-condition. In order to satisfy requirements set forth in the City of Portland's Stormwater Ordinance, Maine DEP Chapter 500 Standards have been met, including Basic, General, and Flooding Standards.

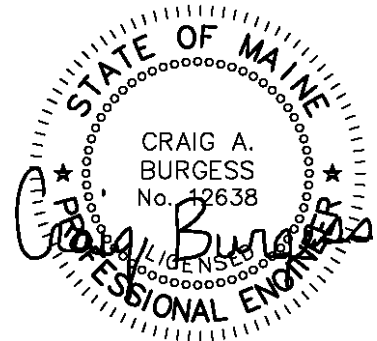
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CAB/kjr



03/03/2018

Attachment A

Inspection, Maintenance, and Housekeeping Plan

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Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the “Maine Erosion and Sedimentation Control BMP” manual and/or the “Stormwater Management for Maine: Best Management Practices” manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor’s responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.
2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).
3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was

taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

- A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
- C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.
- D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.
- E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread

through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of the City of Portland or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. The owner shall inspect and maintain the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the department of public services (“DPS”) in the annual report
 - A. **Vegetated Areas:**
 - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
 - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

 - B. **Ditches, Swales and Other Open Channels:**
 - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
 - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
 - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
 - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Removal of Winter Sand:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

3. Documentation:

- A. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPS in a form provided by DPS, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they required maintenance or repair, including the record of the deficiency and corrective action(s) taken.
- B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as **Attachment 1** of this Inspection, Maintenance, and Housekeeping Plan.

- 4. Duration of Maintenance:** Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or

association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Sample Stormwater Inspection and Maintenance Log Form

Attachment 1

Stormwater Inspection and Maintenance Log

Portland Public Works Building Expansion
250 Canco Road
Portland, Maine 04103

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the proposed buildings and paved areas at 250 Canco Road, Portland, Maine. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality. Qualified personnel familiar with drainage systems shall perform all inspections.

	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Gravel Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Culverts & Catch Basins			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Inspect and clean sump			Annually