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- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION
- LANDSCAPE PLANNING

December 6, 2012

Mr. Bill Needelman, AICP
Senior Planner
Planning and Development Department
City of Portland
389 Congress Street
Portland, ME 04101-3509

Subject: Canal Landing New Yard – Phase I
40 West Commercial Street
Response to Site Plan Application Review Comments

Dear Mr. Needelman:

On behalf of New Yard LLC, we are submitting modified plans that include the following:

- Phase 1 Buildings that include the Tension Fabric Building, as well as the 22,417 SF Storage and Operation Building. The alignment of the buildings has been modified and now aligns more closely with the original Master Plan configuration. The Operations Building is now included in the Phase 1 Plan due to anticipated changes in Portland Yacht Service's use at their existing Fore Street site.
- The layout of the west boat ramp and docks have been modified based on input from the Harbor Commission and Portland Pilots.
- The proposed dry dock location has been modified and remains subject to continued review by the Harbor Commission, MeDEP, and USACOE. We believe the revised location will better address concerns expressed by the Harbor pilots at a recent Harbor Commission Workshop.

In addition to the accompanying plans, we offer responses to Staff and Peer Review Comments to the Level III Final Site Plan Application submitted to the City of Portland for the Canal Landing New Yard project. For ease of review, comments are repeated below (*in italics*) followed by our response. We are providing one hard copy of this response letter and revised plans, as well as a CD with the revised materials.

DEPT. OF PUBLIC SERVICES REVIEW COMMENTS DATED NOVEMBER 21, 2012

Comment 1:

Landscaping plans need to be stamped.

Response:

The amended Landscape Plan has been stamped by Mohr and Serendin.

Comment 2:

Proposed sewer lateral to existing 42" sewer shall be less than 8" diameter to avoid the installation of a manhole and shall be installed with a backflow preventer or backwater valve.

Response:

We have corrected the drawings to identify the existing interceptor sewer as 48" diameter, based on data provided by the Portland Water District. The amended Utility Plan also reflects the installation of 6" service laterals with backwater valves tying into the 48" sewer interceptor, therefore avoiding the need for a sewer manhole at each connection.

Comment 3:

Sewer easements are not shown on the survey plan. Records may indicate, or lack of records, that sewer easements do not exist for the sewer lines crossing this property. If easements do not exist, the City and the applicant need to work together to establish easements. For the CSO discharge to the harbor, a 30' wide easement is requested, 15' each side of the centerline of pipe. The corner of the proposed building is now shown approximately 15' from the existing sewer. We would ask that the footing be no closer than 15' to the centerline of pipe. As for the 42" sewer crossing the property, please show the location of this pipe across the entire property. The applicant states an easement does exist for this sewer. Please show this easement on the survey plan. Not knowing the limits of the current easement for the 42" sewer, I am recommending a 50' wide sewer easement, again centered on the pipeline. The proposed Master Site Plan would need to be altered to accommodate a proposed 50' wide sewer easement since the face of the proposed buildings are only 11' from the 42" sewer.

Response:

The Portland Water District has provided an easement deed (Attachment A) for the 48" sewer interceptor crossing the property. The deed does not specify an easement width, but does specify that no permanent building or structure shall be constructed within ten (10) feet of the sewer pipe centerlines. The proposed layout meets this setback requirement. We have also depicted a 30' wide easement for the existing 24" CSO discharge.

Comment 4:

If an easement does not exist for the 24" CSO pipe, the City would like the applicant's permission prior to any construction to internally televise this pipe. Hopefully, an easement will be in place by this time.

Response:

The applicant will work with City staff to televise the existing CSO line to ascertain its condition.

Comment 5:

It is suggested that a back flow preventer be considered on the drain line from the stormwater management line.

Response:

The plans have been revised to include the installation of backwater valves within all sewer and stormwater connections to the City's systems.

WOODARD & CURRAN REVIEW COMMENTS DATED NOVEMBER 27, 2012

Comment 1:

The Applicant has noted that the project is subject to review under the City's delegated review authority for Site Location of Development. Site Location of Development projects are required to meet the MaineDEP Chapter 500 Standards, including conformance with the Basic, General and Flooding Standards. In addition, Section 5 of the City of Portland Technical Manual requires that Level III development projects prepare and submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards:

a) *Basic Standards: Plans, notes and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. As noted in the Site Plan Application and the Erosion and Sedimentation Control Report, the project site has environmental considerations associated with a Voluntary Response Action Plan (VRAP). As part of the VRAP compliance, MaineDEP may require additional, specialized erosion & sediment controls associated with earth removal or remediation activities performed by the Applicant or by existing landowners. In addition, the MaineDEP and USACOE are reviewing the project for impacts associated with work within and in proximity to tidal wetlands as part of the Natural Resources Protection Act permit. We recommend including a condition of approval that acknowledges that state and federal review processes may require modifications to the plans, and that any modifications shall be identified and submitted for final review as part of the condition of approval compliance.*

   Response:

   The applicant is amenable to this suggested condition of approval and we appreciate the Review Staff's consideration of the multiple levels of review associated with the project.

b) General Standards:

i) It is unclear how much new impervious surface is proposed for Phase 1 of this project from the "Project Data" sheet submitted as part of the Site Plan Application form, please clarify. Also, the Applicant references a water quality summary chart on Sheet C-9.0, however no chart indicating these values has been provided at this time.

Response:

The project data sheet and Sheet C-9.0 have been updated and are summarized in the table below:

Existing Impervious Area	51,641 SF
Proposed Impervious Area*	325,117 SF
Impervious Area Net Change	273,476 SF
	6.28 AC
Proposed Development Area	405,911 SF
	9.32 AC
Impervious Area Treated	307,781 SF
Impervious Area Untreated	17,336 SF
% Impervious Area Treated	95%
Developed Area Treated	325,117 SF
Developed Area Untreated	80,794 SF
% Developed Area Treated	80%

* Includes 42,337 SF of new building area (19,200 SF Tension Fabric; 22,417 SF Operations; and 720 SF Brokerage Buildings)

ii) The Applicant is proposing a manmade pervious surface for much of the improved area of the site to meet the General Standard. The proposed manmade pervious surface does not comply with the guidance provided in the MaineDEP BMP Manual (Section 7.7 of Volume III of the MaineDEP Stormwater BMP Manual). The pervious surface proposed by the Applicant includes a 3" to 6" surface layer of ¾" crushed stone over a layer of gravel. The surface layer of ¾" crushed stone is proposed to act as both the reservoir layer for the water quality storm event (1" storm) and the wearing surface for vehicle traffic. Without a means of retaining the stone at the surface, the stone material will shift from vehicle traffic and will vary in depth over time. MaineDEP does allow for the use of plastic grid pavers that can be infilled with crushed stone to limit the displacement of the stone surface. The Applicant should consider the use of the plastic grid paver or propose an alternate permeable manmade surface design that complies with the General Standards. In addition, the Boat Yard Surface Section detail on Sheet C-8.1 notes the use

of geo-net between the crushed stone and the gravel. This detail includes a note stating "To Be Verified Appropriate by the Geotechnical Engineer of Record." We agree with the use of a geo-net in this application to limit the intermixing of crushed stone with the gravel base, and request that the note require a geonet at this interface.

Response:

Our office has reviewed this comment with S. W. Cole and we have revised the section as follows to not only serve as a pervious surface, but to also address the concerns regarding structural stability as a wearing course:

Proposed Boatyard Surface:

Surface: 4 inches of MDOT 703.12 aggregate for crushed stone surface

Base Gravel: 20 inches of MDOT 703.06 Type D aggregate for subbase

Subgrade Reinforcement: Triax Geogrid by Tensor or equal

The detail on Sheet C-8.1 has been updated to reflect this.

iii) *The proposed manmade pervious surface detail indicates that the compacted subgrade will be prepared in accordance with the geotechnical report; however, it does not appear that a geotechnical report has been submitted at this time. Please include any geotechnical information that relates to preparation of the subgrade.*

Response:

S. W. Cole Engineering, Inc. has reviewed the proposed pervious surface section. They have offered the following comments pertaining to subgrade preparation:

"Subgrades shall be proofrolled with wheel loads that approximate the actual contact pressures of the boatyard equipment to be used. All soft subgrade soils must be removed and replaced with Type D gravel prior to installing the proposed boatyard section."

iv) *Please provide additional details identifying surface preparation, materials of construction, and surface vegetation for the "Stormwater Management Areas" noted on C3.1.*

Response:

The designated stormwater management areas are intended to be grassed swales that will be dry the majority of the time, but will collect and convey runoff during major storm events. A standard detail is included with the plans as Detail D on Sheet C-6.3.

v) Three "Washdown Collection" areas with "Washdown Collection Inlets" are proposed in proximity to the marine access ramps. Please provide additional information on these collection areas, including detailed grading for the washdown areas associated with inlet "G1" and inlet "F1", and information on the function and design of the inlets (Where do they discharge from? If they store water, what is their capacity and how frequently will they be cleaned/drained?

Response:

Each washdown pad consists of a CIP concrete surface graded to drain to an inlet containing a sump pump that will discharge to a series of 300 gallon aboveground holding tanks. Wash water is collected in the tanks for settling and reused. Collected sediments and solids will be removed from the collection tanks for disposal by the applicant's solid waste vendor, ENPRO, or it will be collected and disposed of at a licensed facility such as Commercial Recycling in Scarborough. Routine maintenance of the collection tanks including cleaning on a regular basis will be performed. Sediment depth in each tank will not be allowed to exceed 1' depth before cleaning and disposal. These methods are currently in use at the PYS site on Fore Street and may have been found to be acceptable by MeDEP officials including Pam Parker (Tel. 207-287-7905).

c) Flooding Standard: The Applicant is requesting a waiver from the flooding standard due to stormwater discharge to a tidal waterbody. Projects that discharge to the ocean are eligible for a waiver from the Flooding Standard. We are supportive of a waiver from the flooding standard for this project.

Response:

We appreciate the support for this waiver request.

Comment 2:

The Applicant proposes to manage stormwater through infiltration technologies such as manmade pervious surfaces and a vegetated depression/swale, with overflows for high storm events. Infiltration through the means of a manmade pervious surface does not result in any localized increase in infiltration to the subsurface beyond the existing site condition. Infiltration within the vegetated depression/swale, however, will result in an increased groundwater loading in a localized area of the site. Because portions of the site are regulated under the State's VRAP program, we request that the Applicant verify that infiltration of stormwater in these areas is acceptable to MaineDEP.

Response:

We have requested that the MeDEP's representatives, including Nick Hodgkins, review this concern and we currently await their response. A follow-up to the City Staff will be provided upon a response from the MeDEP.

Comment 3:

The Stormwater Management Plan should include a stormwater inspection and maintenance plan developed in accordance with and in reference to Chapter 32 of the City of Portland Code of Ordinances, including reference to annual reporting requirements.

Response:

In Section II – Project Overview of the Stormwater Management Inspection & Maintenance Manual we have added reference to the annual reporting requirements of Chapter 32 of the City of Portland Code of Ordinances. The revised Stormwater Management Inspection & Maintenance Manual accompanies this letter submission in Attachment B.

Comment 4:

The plans should include notes related to the size, slope, elevation and material for all stormwater drain pipes proposed on the project.

Response:

Additional information pertaining to the site's drainage measures has been placed on the amended Grading and Drainage Plan.

Comment 5:

The proposed 12"x24"x24" tee connection from "Overflow Structure D1" to the 24" RCP sewer on Sheet C3.1 is not an acceptable means of connecting to the City's sewer/drain infrastructure. A connection of this size will require a manhole.

Response:

A new 5' diameter manhole has been added to the plan.

PLANNING COMMENTS FROM BILL NEEDELMAN DATED NOVEMBER 27, 2012

Comment 1:

Sidewalk Waiver: City Staff is considering the waiver of sidewalk and granite curbing for the application. The comments below assume that if the sidewalk waiver is granted, then granite curbing would be unneeded and waived as well. As with the adjacent IMT application, which recently received a sidewalk waiver, the issues involve the industrial context of the site, the low potential for off-site foot traffic, and pedestrian accommodations for employees and patrons of the development. The first two issues point toward waiver, while the third leaves a basic transportation standard unaddressed. The above issues are complicated by the high vehicle

speeds on West Commercial Street and the poor siting distances around the Nova Seafood site across the street. The solution for the IMT project resulted in a waived sidewalk with an identified walking route to a crosswalk accessing the sidewalk network on the northerly side of Commercial Street. In the current condition, there is no such crosswalk serving the subject parcel.

In support of the waiver request, the applicant is asked to describe how the basic pedestrian transportation access needs of the use are to be, or could be, addressed.

Note: The city is currently requesting funds from PACTS to study West Commercial Street to determine the future of the corridor for multiple modes of travel. Since the future policies and configuration of the street are now unknown, it may be prudent to retain contributed funds in anticipation of the results of a future study. The value and use of such contributions have not been determined and the applicant is encouraged to provide thoughts and/or information that will further this discussion.

Response:

The comment outlines the basic characteristics of the site's pedestrian access conditions. It is our opinion that pedestrian signage directing walkers towards the easterly project entrance may be beneficial. Currently, substantial paved conditions exist between the proposed existing easterly entrance and the IMT entrance that would allow relatively easy walking access to the existing crosswalk at the IMT. Based on the traffic volumes and roadway curve conditions at Nova Seafood directing pedestrian movements to the IMT crosswalk appears to be the safest alternative. Based on the proposed use as well as the incorporation of security fencing around the site perimeter, we foresee a very limited level of pedestrian access to/from the site, therefore the waiver request for sidewalk and curbing is reasonable in our opinion.

Comment 2:

Removal of Rail Track: The applicant is asked to provide evidence that the tracks to be removed have either been officially abandoned or a legal opinion that abandonment is not needed. State and Federal process have been required prior to the removal of track from city-owned rail track.

Response:

The amended site plans have been modified to include a 27' wide future rail line easement along the property frontage. This easement has been discussed with PanAm Railway officials and it will meet their needs in the near future if circumstances at the IMT warrant.

Comment 3:

Driveway Consolidation: The applicant is asking for two drives for phase one and up to 4 in later phases. The city encourages the fewest number of curb cuts needed. Consulting Traffic Engineer, Tom Errico will address this in greater detail.

Response:

The Phase 1 Plan includes essentially a single access into the Boatyard, located at the far easterly side. This entrance will be shared with the MDOT Maintenance Building. The existing driveway into the NGL Propane site will remain as is and boatyard access from this driveway will be restricted.

Comment 4:

Page 1-7 of the application narrative does not list Washdown Treatment areas in the phase 1 development description. Please confirm.

Response:

The wash down treatment pads are part of the Phase 1 approval request. They will consist of several concrete pads over which boats will be temporarily placed for cleaning. Wash water will be collected in aboveground storage tanks for recycling and reuse. Any collected sediments/solids are disposed at an approved offsite location. Wash water will be recycled and reused.

Comment 5:

Page 1-9. The Zoning Administrator will need to confirm the building height calculation. Generally building height is calculated from the average grade of the ground around the foundation. The narrative notes the finished floor as the benchmark. Confirm with Zoning Administrator.

Response:

It is the applicant's intent to have exterior grades at or very near fixed floor grade so that the building heights will remain compliant with the 45' height requirement in the WPDZ District.

Comment 6:

Page 1-11, Shoreland Review: Confirm with the Zoning Administrator the tree clearance approach of a 1-1 replacement to achieve a predevelopment tree count of 60% of existing minus the trees located in trash removal areas (which need to be removed regardless).

Response:

Mohr and Serendin have completed a submission to the Maine Department of Environmental Protection regarding the project's compliance with MeDEP Standards for Clearing Vegetation in the Shoreland Zone. Their correspondence along with the Department's reply will be provided to the City under separate cover once received from the Department.

Comment 7:

Page 3-5 Public Infrastructure: Utility Easements: Department of Public Services is requesting utility easements over the CSO crossing the site to the Fore River. Hydrants and water lines: Applicant indicates that additional hydrants will be provided, but the utilities plan does not show either water lines or additional hydrants.

Response:

The Utility Plan has been updated to include the appropriate easement references, as well as the layout of proposed hydrants and related activities.

Comment 8:

Page 3, Archeological Resources. Where the site was the origination/termination of the Cumberland and Oxford Canal, the subject property has significant historic interest; however, more recent grading and development has obliterated surficial evidence of the canal structure. Likewise, as noted in the Maine State Historic Preservation Commission letter, the site of the former Portland Glass Works is a significant resource, though its location appears to be sited westerly from the proposed phase one building. The proposed construction is not anticipated to disturb any evidence of the original canal structure or remains of either of these resources. The Site Plan standards additionally list historic rail beds as a specific resource for preservation and/or documentation. Given the fact that the rail and gasworks use of the site resulted in a dense web of rail beds constructed and modified over 150 years, this standard is both applicable and nearly impossible to fully address. Numerous period maps and images of the site exist, which show the evolving network of rail sidings on and around the site, serve to document the rail history of the subject property and should serve to address this standard. Planning staff will provide at least one 1882 example to the Planning Board as an example.

Response:

No further response appears necessary.

OTHER ITEMS

Page 3-3 of the Final Site Plan Application, dated October 2012, stated that "The Applicant is requesting a waiver of the cycle parking requirements based on the site use." Please note that the Applicant is a proponent of alternative transportation means for their team and although exterior

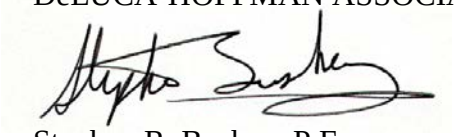
bike racks will not be provided, area within the proposed buildings will be provided to accommodate bikes. This is how employees of the Applicant currently store their bikes at their existing location.

CLOSING

We trust these responses adequately address the current City staff and peer review comments. We look forward to presenting to the Planning Board at the December 18th Public Hearing. Please contact our office with any additional questions.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.



Stephen R. Bushey, P.E.
Senior Engineer

SRB/smk

Attachments: Attachment A – Portland Water District Easement Deed

Attachment B – Revised Inspection & Maintenance Manual

Revised Plan Sheets: C-2.1 – Site Development Plan – Phase 1
C-3.1 – Grading & Drainage Plan – Phase 1
C-4.1 – Utility Plan – Phase 1
C-6.1 – Erosion & Sediment Control Plan – Phase 1
C-7.0 – Lighting Plan- Phase 1
C-8.1 – Site Details – Sheet 2 of 2
C-9.0 – Stormwater Management Strategy Schematic
L-1.0 – Landscape Plan –Phase 1

c: Phin Sprague, New Yard LLC
Bob Flight, New Yard LLC

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ATTACHMENT A

Portland Water District Easement Deed

252

KNOW ALL MEN BY THESE PRESENTS, that PORTLAND TERMINAL COMPANY, a Corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other valuable considerations paid by PORTLAND WATER DISTRICT, a municipal corporation existing under the laws of Maine, and located at 225 Douglass Street, Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby REMISE, RELEASE, BARGAIN, SELL and CONVEY and FOREVER QUIT-CLAIM unto the said PORTLAND WATER DISTRICT, its successors and assigns forever,

the right and privilege to install, maintain, repair, operate, replace and/or remove thirteen (13) sewer pipes with appurtenances, including protective casings and thrust blocks, under and across land and under certain tracks of the Grantor in the City of Portland, County of Cumberland and State of Maine, said sewer pipes to be laid in locations the center lines of which are described as follows:

The first location is for a sanitary gravity sewer pipe forty-eight (48) inches in diameter in the vicinity of State and Commercial Streets, entering onto the northeasterly side of the right of way of the Grantor at a point about thirty-two (32) feet southeasterly from, as measured normal to, the base line of location of the Grantor as established by the Federal Valuation Survey dated June 30, 1916, at or near Valuation Station 91+24 of Valuation Section 1-D; thence extending southwesterly along said right of way one hundred eighty-one (181) feet, more or less, to a manhole situated about thirty-five (35) feet southeasterly from said base line at or near Valuation Station 89+43 of said Survey; thence extending southwesterly along said right of way four hundred thirty-six (436) feet, more or less, to a manhole situated about twenty-six (26) feet southeasterly from said base line at or near Valuation Station 85+05 of said Survey; thence extending southwesterly across said right of way four hundred forty-five (445) feet, more or less, to a special structure situated about sixty-five (65) feet northwesterly from said base line at or near Valuation Station 80+55 of said Survey; thence extending southwesterly along said right of way one hundred seventeen (117) feet, more or less, to a point situated about forty-seven (47) feet northwesterly from said base line at or near Valuation Station 79+34 of said Survey; thence extending southwesterly and westerly along said right of way by a curve to the right, having a radius of four hundred (400) feet, two hundred seventy-nine (279) feet, more or less, to a point situated about fifty-six (56) feet northerly from said base line at or near Valuation Station 76+16 of said Survey; thence extending westerly along said right of way fifty-four (54) feet, more or less, to a manhole situated about sixty-one (61) feet northerly from said base line at or near Valuation Station 75+62 of said Survey; thence extending westerly along said right

of way three hundred sixty-five (365) feet, more or less, to a manhole situated about eighty-nine (89) feet northerly from said base line at or near Valuation Station 71+98 of said Survey; thence extending westerly along said right of way two hundred forty (240) feet, more or less, to a manhole situated about one hundred seven (107) feet northerly from said base line at or near Valuation Station 69+59 of said Survey; thence extending westerly along said right of way five hundred four (504) feet, more or less, to a special structure situated about one hundred (100) feet northerly from said base line at or near Valuation Station 64+54 of said Survey; thence extending northwesterly across said right of way thirty-six (36) feet, more or less, to a point in the southerly sideline of West Commercial Street situated about one hundred twenty-eight (128) feet northerly from said base line at or near Valuation Station 64+31 of said Survey.

The second location is for a sanitary gravity sewer pipe forty-two (42) inches in diameter, entering onto the right of way of the Grantor at a point situated in the northwesterly sideline of Danforth Street about eight (8) feet southwesterly from the intersection of the said northwesterly sideline of Danforth Street with the northeasterly sideline of the right of way; thence extending northwesterly across said right of way four hundred six (406) feet, more or less, to a manhole situated about thirty (30) feet easterly from the southeast corner of Pier No. 2 of Veterans Memorial Bridge; thence extending northwesterly across said right of way two-hundred five (205) feet, more or less, to a manhole situated about one hundred forty-eight (148) feet southwesterly from, as measured normal to, the said base line of location of Valuation Section 1-D at or near Station 28+05 of said Valuation Survey; thence extending northwesterly across said right of way two hundred ninety-five (295) feet, more or less, to a manhole situated about thirty-six (36) feet westerly from the center line of the westward main track of Valuation Section 1-D at or near Station 25+96 of said center line; thence extending northerly along said right of way two hundred ninety-nine (299) feet, more or less, to a manhole situated about thirty-nine (39) feet westerly from said center line, at or near Station 22+83 of said center line; thence extending northerly along said right of way three hundred sixty-eight (368) feet, more or less to a manhole situated about forty-one (41) feet westerly from said center line at or near Station 19+15 of said center line; thence extending northerly along said right of way four hundred forty-six (446) feet, more or less, to a manhole situated about forty-two (42) feet westerly from said center line at or near Station 14+69 of said center line; thence extending northerly along said right of way three hundred one (301) feet, more or less, to a manhole situated about thirty (30) feet southwesterly from, as measured normal to, the center line of Valuation Section 1-D relocation of 1952 of the Mountain Division main track at or near Station 3+78 of said center line; thence extending northwesterly along said right of way by a curve to the left having a radius of nine hundred twenty-five (925) feet, three hundred sixty-seven (367) feet, more or less, to a manhole situated about thirty (30) feet southwesterly from said center line at or near Station 7+57 of said center line; thence extending northwesterly and westerly along said right of way always about thirty (30) feet southwesterly and southerly from said center line three hundred seventy-eight (378) feet, more or less, to a manhole situated about thirty (30) feet southerly from said center line at or near Station 11+47 of said center line.

The third location is for a sanitary force main twenty-seven (27) inches in diameter, beginning at a manhole situated about thirty (30) feet southerly from said center line at or near Station 11+47 of said center line; thence extending westerly along said right of way always about thirty (30) feet southerly from said center line two hundred thirty-eight (238) feet, more or less, to a point situated about thirty (30) feet southerly from said base line at or near Station 13+90 of said center line; thence extending westerly along said right of way four hundred eighty-seven (487) feet, more or less, to a point situated about thirty-six (36) feet southerly from said center line at or near Station 18+78 of said center line; thence extending westerly along said right of way three hundred thirty-five (335) feet, more or less, to a point situated about sixty-five (65) feet southwesterly from said center line at or near Station 22+00 of said center line; thence extending northwesterly along said right of way one hundred forty-three (143) feet, more or less, to a manhole situated about forty-three (43) feet southwesterly from said center line at or near Station-23+35 of said center line; thence extending northwesterly along said right of way two hundred fifty (250) feet, more or less, to a point situated about thirty-five (35) feet southwesterly from said center line at or near Station 25+81 of said center line; thence extending northwesterly along said right of way fifty-five (55) feet, more or less, to a point situated about twenty-nine (29) feet southwesterly from said center line at or near Station 26+35 of said center line; thence extending northwesterly along said right of way sixty-five (65) feet, more or less, to a point situated about twenty-nine (29) feet southwesterly from said center line at Station 26+99.89 of said center line, said station being equal to the base line of location Station 30+10.86 of Valuation Section Two of the Grantor as established by the Federal Valuation Survey dated June 30, 1916; thence extending northwesterly along said right of way three hundred ninety-five (395) feet, more or less, to a point situated about fifteen (15) feet southwesterly from said base line at or near Station 34+06 of said Survey; thence extending westerly across said right of way seventeen (17) feet, more or less, to a point in the southwesterly sideline of said right of way situated twenty-eight (28) feet southwesterly from said base line at or near Station 34+18 of said Survey.

The fourth location is for a sanitary force main twenty-seven (27) inches in diameter entering onto the southwesterly side of the right of way of the Grantor at a point situated twenty-eight (28) feet southwesterly from, as measured normal to, the base line of location of the Grantor as established by the Federal Valuation Survey dated June 30, 1916, at or near Valuation Station 49+90 of Valuation Section Two; thence extending northerly from the southwesterly sideline of land of the Grantor fourteen (14) feet, more or less, to a point situated about eighteen (18) feet southwesterly from said base line at or near Valuation Station 50+00 of said Survey; thence extending northwesterly along said right of way three hundred fifteen (315) feet, more or less, to a point situated about eighteen (18) feet southwesterly from said base line at or near Valuation Station 53+15 of said Survey; thence extending westerly along said right of way fourteen (14) feet, more or less, to a point in the southwesterly sideline of said right of way situated twenty-eight (28) feet southwesterly from said base line at or near Valuation Station 53+25 of said Survey.

The fifth location is for a sanitary force main twenty-seven (27) inches in diameter entering onto the southwesterly side of

the right of way of the Grantor at a point situated twenty-eight (28) feet southwesterly from, as measured normal to, said base line of location of Valuation Section Two at or near Valuation Station 55+18 of said Survey; thence extending northerly from the southwesterly sideline of land of the Grantor fourteen (14) feet, more or less, to a point situated about eighteen (18) feet southwesterly from said base line at or near Valuation Station 55+28 of said Survey; thence extending northwesterly along said right of way one hundred eighty-five (185) feet, more or less, to a point situated about eighteen (18) feet southwesterly from said base line at or near Valuation Station-57+13 of said Survey; thence extending westerly along said right of way fourteen (14) feet, more or less, to a point in the southwesterly sideline of said right of way situated twenty-eight (28) feet southwesterly from said base line at or near Valuation Station 57+23 of said Survey.

The sixth location is for a sanitary force main twenty-seven (27) inches entering onto the southwesterly side of the right of way of the Grantor at a point situated forty-four and five tenths (44.5) feet southwesterly from as measured normal to said base line of location of Valuation Section Two at or near Valuation Station 68+42 of said Survey; thence extending northerly from the southwesterly sideline of land of the Grantor twenty-one (21) feet, more or less, to a point situated about thirty (30) feet southwesterly from said base line at or near Valuation Station 68+56 of said Survey; thence extending northwesterly along said right of way three hundred fifteen (315) feet, more or less, to a point situated about thirty (30) feet southwesterly from said base line at or near Valuation Station 71+71 of said Survey; thence extending westerly along said right of way sixteen (16) feet, more or less, to a point in the southwesterly sideline of said right of way situated forty-four and five tenths (44.5) feet southwesterly from said base line at or near Valuation Station 71+79 of said Survey.

The seventh location is for a sanitary gravity sewer pipe ten (10) inches in diameter entering onto the northwesterly sideline of the right of way of the Grantor at a point in the southeasterly sideline of Commercial Street opposite the International Ferry Terminal, situated about five (5) feet northwesterly from, as measured normal to, said base line of location of Valuation Section 1-D of the Grantor at or near Valuation Station 89+43 of said Survey; thence extending southeasterly across said right of way forty (40) feet, more or less, to a manhole situated about thirty-five (35) feet southeasterly from said base line at or near Valuation Station 89+43 of said Survey.

The eighth location is for a sanitary gravity sewer pipe eighteen (18) inches in diameter entering onto the northwesterly sideline of the right of way of the Grantor at a point in the southeasterly sideline of Commercial Street opposite the end of Clark Street situated about eighty-three (83) feet northwesterly from, as measured normal to, the said base line at or near Valuation Station 80+55 of said Survey; thence extending southeasterly across said right of way eighteen (18) feet, more or less, to a special structure situated about sixty-five (65) feet northwesterly from said base line at or near Valuation Station 80+55 of said Survey.

The ninth location is for a sanitary gravity sewer pipe eight (8) inches in diameter entering onto the right of way of the Grantor at a point in the northerly sideline of West Commercial Street near the West Commercial Street Ramp situated about one

hundred twenty-three (123) feet northerly from, as measured normal to, the base line of location of Valuation Section 1-D of the Grantor at or near Valuation Station 41+65 of said Survey; thence extending northerly across said right of way forty-two (42) feet, more or less, to a point in the southerly sideline of West Commercial Street Ramp situated about one hundred sixty-five (165) feet northerly from said base line at or near Valuation Station 41+59 of said Survey.

The tenth location is for a sanitary gravity sewer pipe eight (8) inches in diameter entering onto the southerly sideline of the right of way of the Grantor at a point in the northerly sideline of West Commercial Street Ramp situated about two hundred thirty (230) feet northerly from said base line at or near Valuation Station 41+51 of said Survey; thence extending northerly across said right of way forty-five (45) feet, more or less, to a point situated about two hundred seventy-five (275) feet northerly from said base line at or near Valuation Station 41+47 of said Survey.

The eleventh location is for a sanitary gravity sewer pipe eight (8) inches in diameter starting at a manhole on the right of way of the Grantor situated about one hundred forty-eight (148) feet southwesterly from, as measured normal to, the said base line of location of Valuation Section 1-D at or near Valuation Station 28+05 of said Valuation Survey; thence extending northeasterly across said right of way one hundred eighty-five (185) feet, more or less, to a manhole situated about thirty (30) feet northeasterly from said base line at or near Valuation Station 27+65 of said Survey.

The twelfth location is for a sanitary gravity sewer pipe twelve (12) inches in diameter entering onto the northeasterly side of the right of way of the Grantor at a point about fifty (50) feet northeasterly from said base line at or near Valuation Station 27+55 of said Survey; thence extending southwesterly across said right of way twenty-two (22) feet, more or less, to a manhole situated about thirty (30) feet northeasterly from said base line of location of said Valuation Section 1-D at or near Valuation Station 27+65 of said Survey; thence extending southeasterly along said right of way twelve (12) feet, more or less, to a point situated about thirty-five (35) feet northeasterly from said base line at or near Valuation Station 27+80 of said Survey.

The thirteenth location is for a gravity sewer seventy-two (72) inches in diameter entering onto the northwesterly side of the right of way of the Grantor at a point in the southwesterly sideline of Congress Street situated about fourteen (14) feet northwesterly from, as measured normal to, the said base line of location of Valuation Section Two at or near Valuation Station 73+65 of said Survey; thence extending southwesterly across said right of way sixty-two (62) feet, more or less, to a point in the southwesterly sideline of said right of way situated forty-four and five tenths (44.5) feet southwesterly from said base line at or near Valuation Station 73+45 of said Survey.

The Grantor herein further grants to the Grantee, its successors and assigns, the right to enter upon the premises of the Grantor at the aforesaid locations for the purpose of laying, maintaining, repairing, replacing and/or removing said pipes and appurtenances.

The Grantor reserves for itself, its successors and assigns, the right to construct or erect railroad tracks, or railroad fixtures over said pipes. Except for the replacement of existing build-

ings or structures, no permanent building or structure shall be constructed within ten (10) feet of the above described center lines.

By the acceptance of this deed, the Grantee herein covenants and agrees for itself, its successors and assigns, to exercise the foregoing right to install, maintain, repair, operate, replace and/or remove said pipes and appurtenances on, under and across the land of the Grantor herein at the aforesaid locations in accordance with the following terms and conditions:

1. The premises across which said pipes are to be located shall be restored to their original condition upon completion of the laying, maintenance, repair, replacement and/or removal of said pipes. All work done on said premises in exercise of this easement shall be performed to the written satisfaction of the Chief Engineer of the Grantor, its successors or assigns, who shall not unreasonably withhold the same.

2. Said Grantee shall reimburse said Grantor, its successors and assigns, for any and all expense which said Grantor, its successors or assigns, may incur by reason of the laying, maintenance, repair, replacement and/or removal of said pipes, under the terms of this easement, including cost of engineering supervision and flag protection deemed necessary by said Chief Engineer, as well as any levies, taxes or assessments on account of said pipes.

3. The said Grantee shall fully and completely indemnify and save harmless the Grantor herein, its successors and assigns, from any and all loss, cost, damage, expense, claims, suits, demands or judgments, direct or indirect, arising out of or in any way referable to the easement granted herein, the installation and maintenance of said pipes and the presence upon said premises of the agents, servants and employees of the Grantee as herein permitted or by reason of failure of the Grantee to fully perform all the terms and conditions herein contained whether such loss, cost, damage, expense, claims, suits, demands or judgments shall be suffered by reason of damage to the property of the parties hereto, their successors or assigns, or the property of others, or by reason of injury to, including death of, the agents, servants, or employees of the parties hereto, their successors or assigns, or any other person or persons whomsoever; except such losses as may arise solely from negligence of the Grantor, its servants or agents, or successors or assigns.

TO HAVE AND TO HOLD the same, together with all the privileges and appurtenances thereunto belonging, to the said PORTLAND WATER DISTRICT, its successors and assigns forever.

AND the said Grantor Corporation does covenant with the said PORTLAND WATER DISTRICT, its successors and assigns, that it will WARRANT and FOREVER DEFEND the premises to it the said

Grantee, its successors and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

IN WITNESS WHEREOF, the said PORTLAND TERMINAL COMPANY has caused this instrument to be sealed with its corporate seal and signed in its corporate name by E. S. Miller , its President , thereunto duly authorized, this 11th day of February in the year one thousand nine hundred and seventy-seven.

Signed, Sealed and Delivered
in presence of

PORTLAND TERMINAL COMPANY

By E S Miller
Its President

(Corporate Seal)

STATE OF MAINE
CUMBERLAND, ss. February 11, 1977

Personally appeared the above-named E. S. Miller , President of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

Arlyn T. Whitney
~~Justice of the Peace~~
Notary Public

MY COMMISSION EXPIRES
NOVEMBER 8, 1979

FEB 16 1977
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 H 11 MAM, and recorded in
BOOK 3975 PAGE 262. Margaret L Baker Register

ATTACHMENT B

Revised Stormwater Management Inspection & Maintenance Manual

INSPECTION AND MAINTENANCE MANUAL FOR STORMWATER MANAGEMENT AND RELATED STORMWATER FACILITIES

CANAL LANDING NEW YARD
40 WEST COMMERCIAL STREET
PORTLAND, MAINE

PREPARED FOR

NEW YARD, LLC
58 FORE STREET
PORTLAND, MAINE 04101

PREPARED BY

DELUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
(207) 775-1121

OCTOBER 2012
REVISED DECEMBER 2012

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

Relatively complex stormwater management facilities are commonly installed in development projects including, commercial facilities, and many other developments. The complexity and goals of these systems vary with the nature of the receiving water, as well as the type of development. Runoff from developed areas of the project, including rooftops, paved or lawn areas, typically contain materials that can impact the receiving waters. Source control and the installation of swales and infiltrative surfaces often combined with pretreatment measures or followed by other best management practices, can significantly reduce the non-point pollution discharge from the developed area. These measures are particularly important to projects in the watersheds of sensitive water bodies, or projects with potential impacts to groundwater.

The effectiveness of water quality management provisions and other components of the stormwater management system are dependent on their design, upkeep, and maintenance to assure they meet their intended function over an extended period of years. It is critical that the stormwater management facilities are regularly inspected, and that maintenance is performed on an as-needed basis. It must also be recognized that the effectiveness of these facilities, and their maintenance requirements, are related to the stormwater drainage facilities that collect and transport the flow to the swales and pervious/infiltrative surfaces. Thus, maintenance should be directed to the total system, not just the primary stormwater management facility.

The purpose of this document is to define, in detail, the inspection and maintenance requirements deemed necessary to assure that the stormwater management facilities function as intended when they were designed. Subsequent sections identify individual maintenance items, give a brief commentary of the function and need for the item, a description of the work required, and a suggested frequency of accomplishment. While the suggested programs and schedules must be adapted to specific projects, the material presented should provide guidance for a successful long-term program for operation and maintenance. A supplemental section provides guidance for construction monitoring of the facilities during their installation and more detailed checklists (Attachment D). Certain facilities, specifically the groundwater recharge and infiltration beds are not intended to be placed in service until the tributary catchment area has the permanent cover in place and any contributing turf areas have achieved a 90% catch of vegetation (i.e. established).

A. GUIDELINES OVERVIEW

A summary of the individual components of stormwater management facilities has been prepared. The format used in the summary is as follows:

Preface: A general description of what function/benefit the element is intended to provide. This is a short summary and not intended to provide the design basis, which can be found in other sources.

Inspection: This section provides the inspection requirements for the individual component.

Maintenance: The section provides general information on the routine maintenance requirements of this element.

Frequency: This section outlines the best judgment of the designer on the system to the frequency of maintenance.

Comments: This section provides any particular comment on the site-specific features of this element. This is a summary only. The owner/operator should review the design drawings and documents carefully to understand the particular elements of the project. The end of this section should allow the owner/operator to make notes on the specific program. This may include the selected maintenance procedure, cross-references to applicable design drawings, etc.

A list of the individual inspection/maintenance elements is provided in the table of contents. The guidelines are proposed for initial use with adjustments made as appropriate based upon specific project experience.

II. PROJECT OVERVIEW

Key permits issued (or applied for) on the project include:

- City of Portland Planning Board Level III Site Plan Approval and Shoreland Zoning Approval
- City of Portland Building Permit(s)
- MeDEP Natural Resource Protection Act (NRPA)
- City of Portland Delegated Review of the Site Location of Development Act (SLDA)
- MeDEP Voluntary Response Action Program (VRAP)
- U.S. ACOE Water Quality Certification/Federal Channel Review
- State of Maine Submerged Lands Lease
- Harbor Commissioner's Review

The permit applications pending for the project include the design information for the stormwater system.

A copy of the permits and Stormwater Management Report should be appended to this manual as Attachment B. The Owner/Operator of the stormwater management system should review these permits for a general description and background of the project, as well as any specific permit conditions or requirements of the project.

The applicant has retained DeLuca-Hoffman Associates, Inc. for civil engineering for the Canal Landing New Yard Project in Portland, Maine. DeLuca-Hoffman Associates, Inc. has prepared the design for the stormwater management facilities and may be contacted at:

DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, Maine 04106
(207) 775-1121

It is recommended the preparer of the plan be contacted with any particular questions on the design intent or similar issues.

The applicable plans/design documents which apply to the project are:

1. Civil Site Plans/Permit Applications Prepared by DeLuca-Hoffman Associates, Inc.
2. The Erosion Control/Sedimentation Control Plan for the project.
3. The Stormwater Management Plan for the project.

A copy of these documents should be retained with the manual.

The proposed design will include deep sump catch basins, manmade pervious/infiltrative surfaces, grassed swales, overflow, collection, conveyance, and discharge systems.

The project is subject to the requirements of the City of Portland Code of Ordinances, Chapter 32. Specifically the post construction stormwater management plan. The City requirements have been reiterated for ease of reference; however, the owner shall be responsible to meet the current City code.

"Any person owning, operating or otherwise having control over a BMP required by a post construction stormwater management plan shall maintain the BMP's in accordance with the approved plan and shall demonstrate compliance with that plan as follows:

(a) Inspections. The owner of operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMP's, 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.

(b) Maintenance and repair. 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.

(c) Annual report. 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 require maintenance or repair, including the record of the deficiency and corrective action (s) taken.

(d) Filing fee. Any persons required to file an annual certification under this section shall include with the annual certification a filing fee established by DPS to pay the administrative and technical costs of review of the annual certification.

(e) Right of entry. In order to determine compliance with this article and with the post-construction stormwater management plan, DPS may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMP's."

III. STANDARD INSPECTION/MAINTENANCE DESCRIPTIONS

The following narratives describe the inspection/maintenance provisions for the Stormwater Management area. These O&M procedures will complement scheduled sweeping of the pavement areas anticipated to occur at least twice per year. Proper O&M is necessary to make sure the system will provide its intended purpose of conveying runoff, removing a substantial amount of the suspended solids, and other contaminants in the stormwater runoff.

A. CONTROL STRUCTURES

Preface: The proposed grassed swale that wraps around the easterly edge of the site collects overflow runoff from the infiltrative surface during major storm events, and discharges to the 24" CSO line via one of two outlet control overflow structures. The outlet control structures are designed with a StormRax trash rack as the only outlet measure.

The control structure is to be inspected by removing the trash rack covers and inspection channels. Debris should be removed whenever observed and reported to key maintenance personnel since any debris would indicate lack of proper system O&M in the collection and conveyance system. Entry may require CONFINED SPACE ENTRY procedures and appropriately trained personnel.

Inspection: The outlet control structures must be inspected to assure it maintains its intended hydraulic characteristics. The inspection would note any debris or sediment which may accumulate in the structure and in the outlet pipes. It is noted that it does not take much debris or silt to alter the hydraulic characteristics of the discharge. The inlet should be inspected to assure it is not blocked or restricted or there is sediment to the extent that its flow characteristics may be altered.

Maintenance: Maintenance of the control structure will consist primarily of removing debris which may accumulate.

Frequency: The control structure should be inspected semi-annually, and after a high intensity rainfall event (in excess of 3 inches in a 24-hour period).

Maintenance/Inspection Responsibility:

Inspection Personnel: The Maintenance Personnel of New Yard, LLC will perform the scheduled maintenance/inspection.

Dates of inspections, maintenance performed, and any observed problems should be noted in the logs/records maintained by New Yard, LLC.

Outside Contract Services: The outlet structure should be opened/inspected by the Maintenance Personnel of New Yard, LLC on a quarterly basis. The logs and records of inspections and maintenance of the control structures should also be reviewed by the

contract agent if New Yard, LLC elects to retain an outside agent for assistance in operation and maintenance of the system.

B. STORMWATER INLETS

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets include the few overflow catch basins proposed toward the north of the site and the basins within the concrete washdown areas along the shorefront. This section is directed at maintenance of the actual inlet point. A later section addresses more substantive maintenance of the structures and conveyance facilities.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Roadway/parking lot maintenance areas
- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets in parking lots/roadway areas. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the building.

Frequency: All inlets should be inspected on a monthly basis, and after/during significant storm events. A windshield survey is suitable for most inlets but off road inlets and pond structures require more rigorous inspection by walking the parcel.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and culvert crossings.

Comments: Maintenance of inlets is critical on this project.

POORLY STABILIZED INLET ALLOWS ENTRANCE OF DEBRIS AND REDUCED CAPACITY

STABILIZED INLETS REDUCE DEBRIS ACCUMULATION AND MAINTAIN DESIGN CAPACITY

C. TRIBUTARY DRAINAGE SYSTEM

Preface: Overflow stormwater from portions of the project will be directed through a conveyance system which transports the flow to 24" CSO line that crosses the site. This conveyance system will be principally overland flow discharging to piped drain systems. Most of the sediment (minimal amounts anticipated) is carried by the drainage system is intended to be trapped in the catch basin sumps or grassed swale. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the site.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems

the inlets must be inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with leaves or other debris. The inlet basins are normally equipped with sumps which will remove large sediment particles from the flow stream with hooded outlets.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

In some projects most of the stormwater is carried in open swales, channels, or ditches. These conveyance channels may be rip rapped or vegetated, depending on the gradient and expected flow velocities. These facilities must be inspected to insure debris or sedimentation does not reduce their carrying capacity. Excess vegetative growth must also be noted. The surface protection for the channels, either stone or vegetation, must be inspected to insure its integrity. Any areas subject to erosion should be noted.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sedimentation to any downstream detention pond, or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. When the filter bag in an inlet restricts capacity and is coated with silt or other deleterious materials, the bag should be removed and Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the retail center. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed. In general a sump or sediment trap should be used where it can be flushed into the detention pond, since it will reduce pond volume and hasten the time when it must be cleaned.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

Maintenance/Inspection Responsibility:

Maintenance Personnel: New Yard, LLC Maintenance Personnel.

Special Services: The owner may elect to contract with an independent agent for cleaning of replacement of sorbent booms, catch basins, sumps, and pipelines. Remedial source control measures may be performed by the owner or an outside service depending upon the nature of the particular situation.

Comments: Maintenance of inlets is critical on this project.

A WELL STABILIZED VEGETATED SWALE SHOWS LITTLE SIGNS OF EROSIVE VELOCITIES OR FLOWS. THIS SWALE ALSO FUNCTIONS AS A POND SPILLWAY

D. VEGETATED SWALES

Preface*:* Vegetated swales are often used to convey stormwater. Swales can be intended to be:

1. Mowed and maintained
2. Reverted to wetlands
3. Naturalized

Inspection*:* Swales should be inspected for erosion and sedimentation.

Maintenance*:* Eroded or silted channels need to be repaired when discovered. If erosion is a problem, the swale design should be examined. Likewise, if situation is a continuing problem, the upgradient conditions should be assumed.

Frequency*:* It is recommended vegetated swales be inspected quarterly until vegetation is established and a year after installation. Thereafter, if no problems have been noticed, the frequency can be reduced to once per year.

Design Guidelines*:* The vegetated swale should consider channel cover at the time of concentration as well as several years after construction.

Design computations should state the assumed channel of vegetation and provide the basis for the Manning's or other roughness coefficient and for design.

Applicability*:* Canal Landing New Yard has a swale along the easterly edge of the property collecting overflow from the previous surface.

VEGETATED SWALE WITH HAY BALE CHECK DAM TO REDUCE VELOCITIES UNDER CONSTRUCTION

A WELL STABILIZED VEGETATED SWALE SHOWS LITTLE SIGNS OF EROSIVE VELOCITIES OR FLOWS. THIS SWALE ALSO FUNCTIONS AS A POND SPILLWAY

E. INFILTRATION SYSTEMS

Preface: Infiltration systems required careful design and need to consider protection of the underlying groundwater.

The basic function of an infiltration system is to treat surface runoff by causing to be pass through unsaturated soil. Surface runoff is collected in a ¾" stone reservoir course designed to store the water until it can infiltrate into the soil beneath. Sediment and organic matter, if allowed to pass on to the infiltration area, reduce holding capacity by filling voids in the stone and impede infiltration by blocking soil pores at the infiltrative surface. It is occasionally acceptable to use uncovered stone infiltration areas but only when runoff water is normally free of sediment or organic matter.

Inspection: An infiltration area shall be equipped with a minimum 4-inch-diameter PVC pipe riser with cap (flush with the top of the infiltration area) to allow for observation of the infiltration area and a determination of its performance (water buildup).

Maintenance:

- Inspect infiltration areas annually for erosion. Repair damaged area if erosion is occurring.
- Inspect infiltration areas routinely for clogging and sediment buildup.
- Minimize placement of heavy objects or traffic on stone areas.
- Inspect the overflow channel for erosion and blockage.

The permit may have specific monitoring and reporting criteria which need to be reported to specific agencies.

This project does employ infiltration for stormwater from the roof.

F. BOAT YARD SURFACE

To protect the infiltrative/pervious surface, it is recommended the prepared boatyard surface be re-graded at mid winter and spring (or as needed).

Maintenance: The maintenance crew may from time to time need to remove the stone surface and remove accumulated sediment in specific areas.

G. LITTER

Litter should be removed as a matter of course by workers and a part of the grounds maintenance contract.

H. SUMMARY CHECKLIST

The above described inspection and maintenance items have been summarized on a checklist attached hereto as Attachment C.

IV. PROGRAM ADMINISTRATION

A. GENERAL

A reliable administrative structure must be established to assure implementation of the maintenance programs described in the foregoing section. Key factors that must be considered in establishing a responsive administrative structure include:

1. Administrative body must be responsible for long-term operation and maintenance of the facilities.

2. Administrative body must have the financial resources to accomplish the inspection and maintenance program over the life of the facility.

3. The administrative body must have a responsible administrator to manage the inspection and maintenance programs.

4. The administrative body must have the staff to accomplish the inspection and maintenance programs, or must have authority to contract for the required services.

5. The administrative body must have a management information system sufficient to file, retain, and retrieve all inspection and maintenance records associated with the inspection and maintenance programs.

If any of the above criteria cannot be met by the entity assigned inspection and maintenance responsibilities, it is likely that the system will fail to meet its water quality objectives at some point during its life. While each of the above criteria may be met by a variety of formats, it is critical to clearly establish the assigned administrative body in a responsible and sustainable manner.

B. RECORD KEEPING

Records of all inspections and maintenance work accomplished must be kept and maintained to document facility operations. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by appropriate regulatory bodies. Where possible, copies of such records should also be filed with the designated primary regulatory agency for their review for compliance with permit conditions. Typical inspection and maintenance record forms are attached hereto as Attachment B.

C. CONTRACT SERVICES

In some instances or at specific times, the Maintenance Personnel may not have the staff to conduct the required inspection and/or maintenance programs as outlined in this document. In such cases the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

ATTACHMENT A

Sample Inspection Logs

CANAL LANDING NEW YARD
PORTLAND, ME

INFILTRATIVE/PERVIOUS
BOATYARD SURFACE
ANNUAL INSPECTION & MAINTENANCE LOG

FACILITY:		**YEAR:**	
LOCATION:		**CONTRACTOR:**	
FUNCTION:		**INSPECTOR:**	
DATE OF INSPECTION:			
ITEM IDENTIFICATION	**DESCRIPTION OF CONDITIONS**	**MAINTENANCE ACCOMPLISHED**	**DATE OF MAINTENANCE**
GENERAL COMMENTS:			

ATTACHMENT B

Permits for Project

(To be Added at a Subsequent Time)

ATTACHMENT C

Summary Checklist
Inspection and Maintenance

Stormwater Management System Maintenance Program Summary Checklist						
		Frequency				
Item	Commentary	Monthly	Quarterly	Semi-Annual	Annual	Long Term
Control Structure	Inspect outlet control to assure it maintains its hydraulic characteristics. Inspect inlets for blockage.		X			
Stormwater Inlets in Series	Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas.	X			X Clearing	
Tributary Drainage	Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.				X	
Vegetated Swales	Swales should be inspected for erosion and sedimentation		X (until vegetation established)		X	
Infiltration Systems	Observation of the infiltration area and a determination of its performance				X	
Boat Yard Surface	Observe area for clogging and repair surface as needed including regrading/shaping of surface.	X				
Litter	Litter should be removed daily.					