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**Hydrogeologic and
Environmental
Consultants**

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m975MH-W&C

Barry Sheff
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

**RE: Soil and Groundwater Handling Information for Construction Documents
Bayside Railyard Subdivision, Somerset Street, Portland, Maine.**

Dear Barry:

In the process of developing soil and groundwater handling information for future construction activities on the Bayside Railyard Subdivision (BRS) site on Somerset Street in Portland, Tewhey Associates has reviewed the previous environmental studies of the area:

- ✓ **Site Assessment and Environmental Analysis: Phase I of the Portland Brownfields Project, Portland, Maine,** Tewhey Associates, April 1999.
- ✓ **Environmental Remediation Plan, Phase III of the Portland Brownfields Project, Portland, Maine,** Tewhey Associates, March 1999.
- ✓ **Phase II Environmental Site Assessment, Union Branch Rail Line Property, Portland, Maine,** Haley & Aldrich, Inc., December 2000.
- ✓ Maine DOT letter from D. Doughty et al to N. Hodgkins of the Maine DEP, RE: Voluntary Remedial Action Plan, Union Branch Rail Line Property, Portland, Maine, June 15, 2001; rev.1 July 23, 2001.
- ✓ Maine DEP letter from N. Hodgkins to D. Doughty et al of the Maine DOT, RE: Union Branch Rail Line Property, Portland, Maine, Voluntary Response Action Program No Action Assurance Letter, July 26, 2001.
- ✓ Tewhey Associates letter from J. Tewhey to R. Knowland of the City of Portland, RE: Soil Remediation Considerations Related to the Developemnt of the Union Branch Rail Line Parcel in Bayside, January 31, 2002.

- ✓ Tewhey Associates memorandum from J. Tewhey to R. Knowland of the City of Portland, RE: Results of Recent Testing of Soils at the Former Rail Yard Site in Bayside, April 8, 2003.
- ✓ Tewhey Associates Memorandum from J. Tewhey to M. Adelson of the City of Portland, RE: Results of Testing of Excavated Soil at the Former Rail Yard Site in Bayside, December 13, 2003.
- ✓ **Geotechnical Data Report, MaineHealth / United Way Development, Somerset and Chestnut Streets, Portland, Maine**, Haley & Aldrich, Inc., September 2008.
- ✓ City of Portland letter from P. Littell to N. Hodgkins of the Maine DEP, RE: Voluntary Remedial Action Plan, Bayside Railyard Subdivision – Lots 1, 2, 3, 4, and 9, Portland, Maine, November 13, 2008.
- ✓ Maine DEP letter from N. Hodgkins to P. Littell et al of the City of Portland, RE: Bayside Railyard Subdivision, Somerset Street, Portland, Maine – Voluntary Response Action Program (VRAP) No Action Assurance Letter, November 21, 2008.

Soil Conditions. The requirements for soil categorization and handling during construction at the BRS site have been developed on the basis of the documents listed above, in particular, (1) the VRAP approval document of July 2001 for the rail yard area in Bayside, (2) the revised and updated VRAP approval for the BRS site of November 2008, and (3) the soil analytical results of the previous site investigations of the BRS site completed by Tewhey Associates during the period 1997 to present. The VRAP documents describe three soil groups on the rail yard property for the purpose of testing, handling, and remediation.

The three soil groups described in the Maine DEP VRAP approvals for the BRS site are described below:

- **Group One Soils.** Group 1 soils are clean, uncontaminated soils. They have no visible or olfactory evidence of contamination and exhibit field photoionization detections (PID) of less than 20 ppm. It has been the experience of Tewhey Associates and other Bayside investigators that Group 1 soils comprise the majority of subsurface fill soils on the BRS site. Surficial soils to a depth of 1 to 3 feet are often stained black and contain coal and cinders as a result of long-term exposure to railroad operations in the Bayside area and the BRS site, in particular. The surficial soils on the BRS site and vicinity are likely to fall into the Group 2 category (see below).
- **Group Two Soils.** Group 2 soils have visible evidence of contamination. Visual evidence of contamination includes coal, ash, cinders, and dark brown or black color. Group 2 soils occasionally have a petroleum or tar odor. Group 2

soils are considered to be contaminated unless field and laboratory testing confirms that contaminant concentrations are present at levels less than one-half of the Maine DEP Remedial Action Guidelines for soil. Group 2 soils can be used in construction projects if they are capped by at least one-foot of clean gravel or are covered by foundations or paving.

- **Group Three Soils.** If Group 2 soils are found to fall into the category of hazardous waste on the basis of Toxic Characteristic Leaching Procedure (TCLP) or other laboratory testing, those soils are characterized as Group 3 soils. Group 3 soils must be removed from the BRS site and be properly disposed of as hazardous waste. Extensive testing of soils at the BRS site has shown that no Group 3 soils are present on the BRS site.

Soil Handling Recommendations. Group 1 soils at the BRS site typically consist of gray-olive-blue marine clay fill and light brown to yellow sand fill. Group 1 soils are typically subsurface soils and are rarely found at the ground surface. Group 2 soils are typically surficial fill materials that have been stained and contaminated by past railroad and industrial operations. In past construction projects in the rail yard area, soils that have Group 2 characteristics have typically been stockpiled adjacent to the construction project and either (1) utilized judiciously on the construction site as fill material in low areas and subsequently covered as required by VRAP requirements or (2) spread under controlled conditions on other portions of the rail yard site that require filling. No Group 2 soils have been removed from the rail yard site in former construction projects.

At the BRS site, it is expected that most surficial soils will fall into the Group 2 category. Upon encountering these soils during construction, they will typically be removed, stockpiled, and reused in the manner described above. On previous rail yard construction projects in Bayside, a Tewhey Associates representative was present on the site during initial soil excavation and was available to assist in the identification and handling of Group 2 soils. Stockpiled Group 2 soils should be covered and protected from erosion by means of standard construction site practices. A Tewhey Associates representative or other City of Portland representative will be available during construction to (1) brief construction crews on soil handling and safety issues and (2) assist in soil classifications and handling decisions.

Volatile Organic Compounds in Shallow Soil. During the Haley & Aldrich site exploration work on the BRS site in the summer of 2008, there were two boring locations on Lot 3 in which moderate levels of volatile organic compounds (VOCs) were detected in shallow soils. The boring locations were designated as HA08-5 and HA08-4. The potential presence of VOCs in shallow soil in the western portion of Lot 3 will be addressed in the field by a Tewhey Associates representative prior to the start of site excavation. Any VOC-contaminated soils will be identified and mitigated prior to the start of site development.

Groundwater Conditions. There are three groundwater monitoring wells on the BRS site. The three wells were installed by the firm of Haley & Aldrich on Lot 3 of the BRS site in August 2008. The three monitoring wells are designated HA08-5, HA08-7, and HA08-12. Transducers were installed in the three wells and groundwater elevation data were collected during the period August 7-22, 2008. Groundwater levels were measured between 6 and 8 feet below existing ground surface and did not appear to be influenced by tidal fluctuations in Back Cove. The field and laboratory data indicate that (1) the average depth to perched groundwater at the three locations is 7 feet, (2) there were no PID indications of volatile organic contaminants in the groundwater regime on the BRS site, (3) there is no significant organic or inorganic contaminants in groundwater as determined by previous testing in monitoring wells that are adjacent to the BRS site, and (4) there has been no free-product petroleum floating on groundwater in monitoring wells within or adjacent to the BRS site. The analytical results of previous soils investigations at the BRS site by Tewhey Associates supports the premise that that is little or no volatile organic contaminants (VOCs) in groundwater on and near the BRS site. The quality of groundwater beneath the BRS site is likely to be acceptable by the Portland Water District for release to the municipal sewer subsequent to settling of sediments in a holding tank. A Tewhey Associates representative will be available to conduct groundwater testing, should groundwater management and handling be necessary on the BRS site.

Groundwater Handling Recommendations. It is unlikely that dewatering will be required at the BRS site. Perched groundwater is common in areas of clay fill material. A perched water table consists of the presence of a shallow groundwater perched on layers of clay fill. Breaching the clay layer allows the perched water to drain to the static water table. The static water table is at a depth of about 7 feet. On the basis of monitoring wells installed within and immediately adjacent to the BRS site, the water quality of the static water table is such that it is likely that, if dewatering were to be necessary, it could be released to the municipal sewer after solids are settled out. A settling or holding tank will be required for settling of solids if dewatering should be required. Steve Harris of the City of Portland Engineering Department can provide information on the VOC and metals limits for discharge to the Portland POTW. A Tewhey Associates representative or City of Portland representative will be available during construction to (1) provide field and lab testing of groundwater encountered on the site and (2) assist in safety and handling issues associated with groundwater.

Very truly yours,

Tewhey Associates

signed

John D. Tewhey, Ph.D
Principal