



Technical Memo

400 Commercial Street, Suite 404, Portland, Maine 04101, Tel (207) 772-2891, Fax (207) 772-3248

Byfield, Massachusetts Portsmouth, New Hampshire Hamilton, New Jersey Providence, Rhode Island

www.ransomenv.com

Date: September 5, 2012
To: Thomas Kittredge, City of Belfast
From: Kristin Gill, Erik Phenix, and Peter Sherr, Ransom Consulting, Inc.
cc: Tracy Kelly and Molly King, MEDEP
AmyJean McKeown, US EPA
Subject: **Conceptual Remedial Action Plan and Cost Estimate**
Belfast Boatyard, 39 & 41 Front Street, Belfast, Maine
Project No: R111.06134

This memorandum has been prepared to summarize the preliminary Conceptual Remedial Action Plan (RAP) and associated estimated costs for the Belfast Boatyard located at 39 and 41 Front Street in Belfast, Maine (the "Site"). Phase I and II Environmental Site Assessments (ESAs) were completed for the Site through the City of Belfast's Brownfields Assessment Program. Refer to the attached Figure 1 for a layout of the Site, key Site features, and proposed remedial action areas.

Surficial and subsurface soils throughout the Site were determined to contain apparent urban fill materials, including wood, metal, brick, and coal. Laboratory analysis of soil samples collected from surficial and subsurface soils indicate that these soils contain elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals (specifically arsenic and copper) at concentrations that exceed their corresponding Maine Department of Environmental Protection (MEDEP) Remedial Action Guidelines (RAGs) for the "Outdoor Commercial Worker" and/or "Excavation/Construction Worker" exposure scenarios. The proposed remedial actions to address these impacted soils include the following:

1. Permitting & Erosion Control Measures

Appropriate local, State, and Federal permitting requirements should be conducted, prior to commencing with remediation activities. At this time, it is anticipated that a MEDEP Voluntary Response Action Program (VRAP) application (currently being completed), Natural Resources Protection Act (NRPA) permit, and a Maine Construction General Permit (MCGP) for stormwater discharges under the Maine Pollutant Discharge Elimination System (MPDES) Program will be required for this remedial action project.

Given that the proposed remediation activities are adjacent to (but not within) Belfast Bay, a Natural Resources Protection Act (NRPA) Permit-by-Rule is proposed to be completed for the project. In addition, under the MCGP, erosion control measures are proposed to be implemented and maintained throughout the project in accordance with the Maine Erosion and Sediment Control Best Management Practices (BMPs).

2. Gravel Cover System

As shown on the attached Figure 1, a cover system is proposed to be installed on the Site throughout exterior areas not occupied by the Spar Shed, Shop Office, or boat launch. The cover system will be designed to prevent direct contact exposure to contaminants of concern identified at the Site. The cover system is proposed to be a gravel cover system consisting of a minimum of 8 inches of clean, compacted gravel over a geotextile fabric marker layer. The marker layer will indicate the extent of clean materials above the contaminated materials.

The area of impacted soil on the Site to be covered in-place with a gravel cover system is approximately 17,100 square feet.

Periodic inspections and long-term maintenance of the gravel cover system will be required.

3. Deed Restriction

A deed restriction in the form of a Declaration of Environmental Covenant (DEC) is proposed to be established and filed for the Site, which will:

- (a) Notify future Site owners and occupants of the existence and location of soil contamination at the Site;
- (b) Prohibit the extraction of groundwater;
- (c) Prohibit excavation activities within the footprint of cover system(s), without prior MEDEP and United States Environmental Protection Agency (US EPA) notification and approval; and
- (d) Require long-term maintenance of the cover system(s).

The estimated costs associated with the proposed remedial actions summarized above are outlined in the attached Table 1. The cost estimates provided in Table 1 are engineering estimates for budgetary purposes only and do not include final engineering design or bidding contract documents; actual costs will be based on contractor bids and/or quotes, received prior to initiating the proposed remedial actions. Costs associated with long-term inspections and maintenance of the gravel cover system are not included in the estimated costs. Long-term monitoring and maintenance activities can likely be performed by the owner or their designated representative.

Table 1: Summary of Estimated Remediation Costs

Gravel Cover Alternative ¹	Number	Units	Unit Cost	Total
Cover Construction				
Excavator/Dozer & Operator	40	Hrs	\$150	\$6,000
Clean Gravel for Cover Systems ²	422	CY	\$21	\$8,862
Geotextile Fabric	1,900	SY	\$2.60	\$4,940
Erosion Control	1	LS	\$2,500	\$2,500
Engineering Oversight/Closure Report ³				
Permitting ⁴	12	Hrs	\$85	\$1,020
Part-time Oversight	20	Hrs	\$85	\$1,700
Closure Report	1	LS	\$3,500	\$3,500
Deed Restriction/VRAP Assistance ^{5,6}	1	LS	\$5,000	\$5,000
<i>Subtotal</i>				<i>\$33,500</i>
Contingency 20%				\$6,700
TOTAL				\$40,200

1 - Cost estimates are for budgetary purposes only.

2 - Includes 8 inches of clean, compacted Type D gravel with geotextile fabric marker layer placed over exterior areas of the Site, estimated to be 17,100 SF.

3 - Cost estimates are for remediation only and do not include final design engineering or preparation of bidding documents

4 - Assumes NRPA Permit-by-Rule will be completed for remediation activities.

5 - Cost estimate includes a \$500 application fee to MEDEP VRAP.

6 - Cost estimates do not include required ongoing inspections and maintenance of gravel cover system.

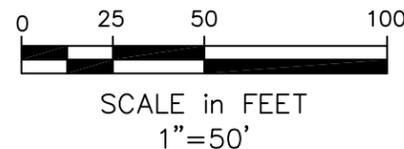


LEGEND:

- B101/MW101  SOIL BORING/MONITORING WELL
- SS111  SURFICIAL SOIL SAMPLE LOCATION
- SV101  SOIL VAPOR SAMPLE LOCATION
-  AREA OF PROPOSED CAP
-  APPROXIMATE SITE BOUNDARY (BOUNDARY TAKEN FROM CITY OF BELFAST TAX MAP)

NOTES:

1. SITE PLAN BASED ON OBSERVATIONS MADE BY RANSOM CONSULTING, INC. ON MAY 23, 2012. AERIAL IMAGE PROVIDED BY GOOGLE EARTH.
2. SOME FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
3. THIS PLAN HAS BEEN PREPARED FOR THE CITY OF BELFAST. ALL OTHER USES ARE NOT AUTHORIZED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM RANSOM CONSULTING, INC.



RANSOM Consulting, Inc.

PREPARED FOR:
CITY OF BELFAST
131 CHURCH STREET
BELFAST, MAINE

SITE:
BELFAST BOATYARD
39 & 41 FRONT STREET
BELFAST, MAINE

**PROPOSED
REMEDIAL ACTION
AREAS**

DATE: SEPTEMBER 2012
PROJECT: 111.06134
FIGURE: 1