

Analysis of Brownfields Cleanup Alternatives-Preliminary Evaluation
Thayer Avenue Boatyard Brownfields Cleanup
7-29 Thayer Avenue
Revere, Massachusetts
MassDEP Release Tracking Number 3-37877

I. Introduction & Background

a. Site Location

The site is located at 7-29 Thayer Avenue, Revere, Massachusetts (herein referred to as “the Site”). The Site is currently vacant and unoccupied.

b. Previous Site Use(s) and any previous cleanup/contamination

According to historical information and previous investigation reports, the Site was occupied by a boat storage and repair yard, which operated from at least the early 1950s through approximately 2018. During this period, Site operations were believed to include storing, repairing, re-painting, and maintaining boats. Additionally, a track system, similar to railroad tracks, existed at the Site to accommodate a portable lifting mechanism likely used to remove boats from the Pine River and transport them to the Site for storage, repair, and/or maintenance (e.g., travel lift or mobile crane). Typical compounds of concern at boatyards may include copper, cadmium, lead, mercury, zinc, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). The travel lift, or mobile crane may have used PCB containing hydraulic oil. Additionally, engine maintenance and repair may have generated waste fluids and petroleum-based fuels, similar to land-based vehicle repair operations.

The City of Revere (the City) is the current owner of the Site. The Site is approximately 1.6-acres in size and is improved with a 4,020 square-foot commercial building. The building was constructed circa 1930 and is constructed of slab on grade concrete and a brick façade. Exterior portions of the Site are generally unpaved and the majority of the Site is surrounded by a chain link fence. The surrounding area is generally comprised of residential properties and the City owned Gibson Park. The Site is abutted to the north by the Gibson Park; to the west by the Pine River; to the south by Mills Avenue, beyond which are residential properties; and to the east by Hayes Avenue, beyond which is Massachusetts Route 1A and residential properties.

Beginning sometime between the mid-1940s and the early 1950s, several marine service companies operated the Site, including North Shore Boat Works, Riverside Boat Works, Ruest Marine Service, and Zeolis Marine Service. According to the historical sources obtained as a part of the initial Phase I investigation (dated December 22, 2023), as early as the late nineteenth century, railroad tracks belonging to the Boston, Revere Beach, and Lynn Railroad crossed the Site in a roughly north-south direction.

After the cessation of the boat yard operations in approximately 2018, the City acquired the Site property in October of 2021. Reportedly, the Site was previously used by the City’s

Department of Public Works for storage of equipment, materials and supplies; however, this practice has been discontinued.

The Site is identified by the Massachusetts Department of Environmental Protection (MassDEP) by Release Tracking Number (RTN) 3-37877, assigned on January 19, 2023, following the identification of a release of PCBs and chromium to soil attributable to former boat yard operations.

c. Site Assessment Findings

Site assessment activities were conducted between 2022 and 2024 which included the advancement of soil borings, the installation of groundwater monitoring wells, and the collections and laboratory analysis of soil and groundwater samples. PCB and chromium impacts to soil have been identified above Massachusetts Contingency Plan (MCP) Method 1 Soil Standards at the Site. PCBs impacts have been detected at depths up to two (2) feet below ground surface (bgs) with the majority of impacts located within the upper 12-inches of Site soil. Based on site assessment results, localized PCB impacts to soil above 50 milligrams per kilograms (mg/kg) have been detected in two locations and are categorized as PCB Remediation Waste in accordance with 40 Code of Federal Regulations (CFR) 761.3. PCBs have been detected at a maximum concentration of 100 mg/kg. Chromium impacts appear to be localized and have been detected at a maximum concentration of 104 mg/kg. Impacts to groundwater have not been identified at the Site.

d. Project Goal (Site reuse plan)

The Site is currently part of the Revere RiverFront-Gibson Park Extension Project. The vision for this project includes construction of the Revere RiverFront Community Boating Center and a dock system to access the waterfront. This will include resilient and Americans with Disabilities Act (ADA) accessible access for the public to the waterfront to enjoy non-motorized water activities such as kayaking, canoeing, SUP, and rowing in the river and an extension of Gibson Park incorporating open space that includes both passive and active recreational opportunities for the community.

e. Regional and Site Vulnerabilities

The Site is located within the Federal Emergency Management Administration (FEMA) 100-year flood plain and is surrounded by tidal flats. According to the Massachusetts Climate Change Adaption Report¹, the impacts of climate change are wide-ranging and growing in severity in Massachusetts, with impacts from sea level rise, storm events, flooding, greenhouse gas emissions and changing weather patterns. As a coastal state, storm surges have broad implications and impacts to infrastructure, natural resources and ecosystems, including drinking water supplies. The financial impacts are expected to be very high.

The Site and the surrounding area have long been subject to flooding issues, both from stormwater events and from storm surge affecting the area. There are documented issues with

¹ Climate Change Adaptation Report. Executive Office of Energy and Environmental Affairs and the Adaptation Advisory Committee. September 2011

overtopping the sea wall, dune erosion, and accretion of sand and seawall deterioration. At the corner of Thayer Avenue, Mills Avenue, and River Avenue, high tide flooding occurs eight to twelve times per year. Sea level rise and increased precipitation events are anticipated to flooding concerns in the target area.

II. Applicable Regulations and Cleanup Standards

a. Cleanup Oversight Responsibility

Site Cleanup will be conducted pursuant to the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000 under a Massachusetts Licensed Site Professional (LSP)² and US EPA Toxics Substances Control Act (TSCA) regulatory requirements. Additional applicable local, state and federal regulatory requirements will be adhered to, including the appropriate procurement of contractors.

b. Cleanup Standards for major contaminants

The applicable MCP Standards for the Site are MCP Method 1 Soil Cleanup Standards and MCP Method 1 (S-1) Soil and Groundwater (GW-2/GW-3) Standards. The cleanup objective under the US EPA Self-Implementing Cleanup Plan (SICP) for PCBs will be 1 mg/kg. These standards reflect unrestricted future reuse scenarios.

c. Laws & Regulations Applicable to the Cleanup

The Massachusetts Contingency Plan is the state's environmental regulation that provides for the protection of health, safety, public welfare and the environment by establishing requirements and procedures for the activities and cleanup of oil or hazardous materials. The EPA TSCA regulation applies to PCB remediation at the Site.

The City is conducting voluntary site cleanup. Additional laws and regulations applicable to the Cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act and Town by-laws. Federal, state and local laws regarding procurement of contractors to conduct the cleanup will be followed.

III. Evaluation of Cleanup Alternatives

a. Cleanup Alternatives

To address contamination at the Site, three different alternatives were considered including Alternative #1: No Remedial Action; Alternative #2, Cleanup and Post-Remedial Monitoring #3, Institutional Controls, Passive Containment

² In 1993, Massachusetts created a model program that privatized the cleanup of hazardous waste sites in the Commonwealth. Licensed Site Professionals (LSPs) are authorized by the Commonwealth to work on behalf of property owners, operators, and other responsible parties to oversee the assessment and cleanup of contamination that has been released into the environment. LSPs are scientists, engineers, and public health specialists with significant professional expertise in oil and hazardous material contamination. LSPs are governed by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals, also known as the LSP Board

Alternative #1: No Remedial Action

The “No Remedial Action” alternative assumes that no additional remedial efforts are implemented to address elevated PCBs and chromium at the Site. The “No Action” alternative can provide a basis for assessing the effects of implementing remedial actions; however, it does not directly reduce the toxicity, mobility or volume of impacted soils. This response action alternative does not reduce Site risks associated with groundwater that may be impacted in the future and provides no additional protection to human health or public welfare. Additionally, the contaminants of concern are at levels that do not naturally attenuate and therefore “No Action” does not reduce potential risk to human health and/or the environment in the long term.

Alternative #2: Ex-Situ Remediation

Soil excavation is an effective approach for source removal. The primary purpose of excavation is to remove impacted media, and thus control potential exposure risks. Excavation involves the removal of impacted soil that presents a potential direct contact risk, along with soil which may serve as a continuing source of contaminant impacts to groundwater. The impacted media are removed from its current setting and transported off-Site for off-Site disposal to appropriate facilities that are licensed to receive the material. Soil containing PCB Remediation Waste (e.g., total PCB concentrations over 50 mg/kg) will be managed at a TSCA-approved Subtitle C landfill for disposal. Confirmatory soil sampling is performed following excavation of impacted soil.

Alternative #3: Institutional Controls, Passive Containment, Monitoring

Institutional controls are mechanisms to limit access to impacted media and include alternatives such as fencing, barriers, and Activity and Use Limitations (AULs) in the form of deed restrictions. While institutional controls do not eliminate contamination, they can provide an effective, low cost means of reducing exposure potential, and thus risk, if properly maintained and enforced. Institutional controls may be effective in mitigating exposure to PCB and chromium impacted soils in locations at which it may be infeasible to reach background conditions. Implementation of an AUL on a Site property to restrict access to impacted groundwater (other than as “exposure pathway elimination measures” or to restrict access to drinking water) is not supported by MassDEP. However, AULs may be implemented to ensure that engineering controls be maintained to mitigate potential risk. In accordance with TSCA regulations, bulk PCB remediation wastes may be left in place in a low occupancy area if total PCB concentrations do not exceed 100 mg/kg and if the site is covered with a cap.

Passive Containment: The primary purpose of containment technologies is to isolate impacted media, and thus control potential exposure risks. Passive containment involves placement of horizontal physical barriers, such as a cap, sealant or membrane, or vertical barriers such as a grout curtain, slurry wall, or sheet piling in the areas of contamination.

Monitoring: Refer to Alternative #1

b. Cost Estimate of Cleanup

Effectiveness-Including Vulnerability/Resiliency Considerations:

Alternative #1: No Remedial Action: Alternative #1 is not effective in controlling or preventing the exposure of Site OHM to human or environmental receptors.

Alternative #2: Ex-Situ Remediation and Post-Remedial Groundwater Monitoring:

Alternative #2 is effective at removing the sources of OHM and preventing the migration of OHM sources to human and environmental receptors. Groundwater monitoring is effective at assessing the success of the cleanup.

Alternative #3: Institutional Controls, Passive Containment and Monitoring: Although Alternative #3 mitigates direct exposure to contaminated soil, it does not remediate the OHM sources and does not prevent migration of OHM in groundwater to human or environmental receptors. Long-term groundwater monitoring is effective at assessing potential impacts to receptors. Implementation of an AUL is an effective administrative control to mitigate potential contaminated media impacts to receptors. This alternative does not support proposed unrestricted future reuse scenarios.

Implementability:

Alternative #1: No Remedial Action and Monitoring

- No remedial action is conducted and is readily implementable;
- Monitoring: There is low to moderate technical complexity associated with implementability.

Alternative #2: Ex-Situ Remediation

- Ex-Situ Technologies: There is moderate technical complexity associated with implementability.
- Monitoring: There is low to moderate technical complexity associated with implementability.

Alternative #3: Institutional Controls, Passive Containment and Monitoring Institutional Controls:

- An AUL is readily implementable.
- Passive Horizontal Containment: There is moderate technical complexity associated with implementability.
- Monitoring: There is low to moderate technical complexity associated with implementability.

Cost:

Alternative #1: No Remedial Action and Monitoring: The estimated cost to implement this option is \$200,000.

Alternative #2: Ex-Situ Remediation: The estimated cost to implement this option is \$1,300,000.

Alternative #3: Institutional Controls, Passive Containment and Monitoring: The estimated cost to implement this option is \$930,000.

c. Recommended Cleanup Up Alternative

The recommended cleanup alternative is: **Alternative #2: Ex-Situ Remediation**

Green and Sustainable Remedial (GSR) Measures for Selected Alternative: Storm water design will be incorporated as part of Site development. In addition, the cleanup design will include the implementation of storm water controls. Bid documents will incorporate GSR measures for implementation by the Cleanup contractor.