80 HASTINGS STREET SITE

CITY OF BRIDGEPORT, CT

ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES (ABCA)

March 2016

AECOM

INTRODUCTION AND SITE HISTORY

The site is located at 80 Hastings Street, in the City of Bridgeport, Fairfield County, Connecticut. The site is identified in the City of Bridgeport Tax Assessor's office as Block 2022 Lot 36 and is located between Coggswell and Rockland Streets to the north and south, respectively, and west of Asylum Street. A site location map is provided as Figure 1. The site is in an area of mixed residential and commercial/industrial land uses and consists of approximately 1.25 acres of land.

The site is zoned I-LI and improved with a 37,312 square foot concrete/cinder block light manufacturing building, 480 square feet of which consists of finished mezzanine level offices and break rooms. Asphalt pavement encompasses approximately 12,000 square feet along the eastern portion of the site. An approximate six foot by eight foot concrete vault filled with asphalt and debris is present on the southern portion of the asphalt parking lot area. The eastern and southern portions of the perimeter of the site consist of a seven-foot high chain link fence and entrance gate along Hastings Street. Electrical transformer housing is present on the northern portion of the asphalt parking lot area.

The site topography gradually slopes from north to south with an approximate elevation of 50 feet National Geodetic Vertical Datum (NGVD), 1929 above mean sea level (see Figure 1). The 100-year flood plain boundary in Bridgeport along the coast is 10 feet NGVD. Therefore, the site does not lie within the 100-year flood plain.

Properties nearby 80 Hastings Street have various site uses. The site is bordered on the northwest by residential properties and on the north-northeast by two buildings occupied by Emtec Metal Products, American Machinery, and Vitramon, located at 200 Cogswell Street and 315 Asylum Street. An approximate 4,000 square foot storage building is located just north of the site at 305 Asylum Street. North of Cogswell Street is Unger Quality Tools, manufacturer of cleaning tools.

The site is bound to the east by City Park, east of Asylum Street. Lakeview Cemetery is located east of Asylum Street. A small industrial complex is located to the south-southeast of the site, located at 231-265 Asylum Street. The complex consists of following businesses: The Griffith Company, warehouse distributors, Lake Grinding, TNL, LLC, Centro Company, and Turnpike Furnace Company. A parking area for the industrial complex is located to the southwest, and a residential neighborhood is located to the west.

Groundwater at the site is classified as GB. The flow direction is not exactly known, but is assumed to be to the south-southeast, toward Stillman Pond. Groundwater does not appear to be much shallower than the natural bedrock surface directly beneath the site. The depth to groundwater ranges from approximately two to seven ft below ground surface (bgs).

ENVIRONMENTAL INVESTIGATION FINDINGS

The building is not adequately enclosed and portions are exposed to the weather. The building was subject to a fire that destroyed a portion of the roof and significantly damaged sections of the structural support elements. Mold, asbestos containing materials (ACM) and lead based paint were identified in the building during various environmental investigation phases.

Historical site operations, building materials, and fill materials constitute potential sources of contamination. The site operations were likely conducted after filling had occurred, therefore the Recognized Environmental Conditions (RECs) related to historical site operations overlap onto the fill-related RECs creating a mosaic of RECs in portions of the site, such as the parking lot area located on the western end of the site. Contaminants of concern (COCs) identified in soil at the site include: petroleum hydrocarbons and ETPH, metals (primarily arsenic, and to a lesser extent, cadmium, chromium, thallium, lead, zinc, nickel, and copper) and cyanide.

COCs in site groundwater include metals (cadmium, copper, lead, and zinc) and cyanide, near the former plating wastewater treatment structures beneath the central portion of the building. Groundwater in other wells was not able to be sampled and does not appear to be able to migrate off-site.

REMEDIATION STANDARD REGULATIONS

The RSRs contain numerical, default criteria for contaminated soil associated with a release area that are based on both the potential for direct human health impacts from exposure to contaminants (direct exposure criteria) and on the potential for the soils to have an adverse impact on groundwater (pollutant mobility criteria). Two sets of direct exposure criteria are specified; one derived for residential land use and the other derived for industrial and certain commercial land use. Similarly, two sets of pollutant mobility criteria are specified; one for areas with a groundwater classification of GA/GAA and one for a groundwater classification of GB. Class GA/GAA groundwater is groundwater that is an existing or potential source of potable water and is presumed to be suitable for human consumption without the need for treatment. Class GB groundwater is presumed to have been degraded by past urban or industrial activities and may not be suitable for human consumption without treatment. The site is located in a GB classified groundwater area. Additional information on these criteria is presented in the following sections.

Direct Exposure Criteria

The RSR definition of “residential activity” includes activities related to a residence or dwelling, as well as activities related to schools, hospitals, daycare centers, playgrounds, or outdoor recreation areas. The residential direct exposure criteria (R DEC) apply in areas with residential activities, but are also the default criteria used to evaluate potential human exposure in all areas. Industrial/commercial direct exposure criteria (I/C DEC) may be applied to areas that do not fit the definition of residential activity, but an Environmental Land Use Restriction must be executed to prevent residential uses of the property. These criteria are for comparison to soils data analyzed on a mass of contaminant to mass of soil basis (typically milligram per kilogram, or mg/kg).

Pollutant Mobility Criteria

The RSRs for organic contaminants include a set of numerical pollutant mobility criteria (PMC) for contaminated soils on a mass/mass basis. Alternatively, organic contaminants can be analyzed on a TCLP (toxicity characteristic leachate procedure) or SPLP (synthetic precipitation leachate procedure) basis and the results (on a mass of contaminant to liter of leachate basis, or mg/L) can be compared to the groundwater protection criteria (GPC). For GB aquifer areas, the results are compared to the GPC times a factor of ten.

The RSR pollutant mobility criteria for inorganic contaminants are based on TCLP or SPLP analysis of the soil. For GA areas, the pollutant mobility criteria equals the groundwater protection criteria and for GB areas are specified as ten times the groundwater protection criteria. However, under certain circumstances, the same ten times factor may be applied in GA areas.

Depending on the groundwater classification, the RSRs include various options such as alternate pollutant mobility criteria or the application of dilution factors. If site-specific criteria or dilution factors are proposed, a site-specific demonstration must be made that after dilution with on-site groundwater, the groundwater protection criteria will not be exceeded.

ANALYSIS OF ALTERNATIVES

This draft ABCA documents AECOM's analysis of environmental cleanup alternatives. This memorandum was prepared to meet requirements of the United States Environmental Protection Agency (USEPA) cleanup grant issued to the City of Bridgeport. Specifically, information used to evaluate potential remedial alternatives for the site is summarized. We assume building demolition activities will address mold, ACM and lead based paint issues at the site for all alternatives, with the exception of the No Action alternative. The remedial alternatives considered are:

- No Action;
- Excavation of all R DEC, I/C DEC and GB PMC soils and off-site disposal;
- Excavation and off-site disposal of GB PMC soils and installation of a permanent cap.

These remedies are evaluated and compared in terms of effectiveness, implementability, and cost. This comparison follows, in part, the guidance used for conducting Feasibility Studies under CERCLA [USEPA, 1988]. Summaries of comparison information are presented in Tables 1 through 4 attached. The No Action alternative is included as a baseline for comparison to other alternatives in accordance with USEPA Remedial Investigation/Feasibility Study guidance.

Summary of Alternatives

Alternative 1. No Action

No remedial action occurs under this alternative.

Alternative 2. Excavation of all R DEC, I/C DEC and GB PMC Soils and Active Groundwater Treatment

Based on the results of existing sample data, soil contaminated with petroleum hydrocarbons and ETPH, metals (primarily arsenic, and to a lesser extent, cadmium, chromium, thallium, lead, zinc, nickel, and copper) and cyanide above regulatory levels are present in soil and groundwater contains cadmium, copper, lead, zinc and cyanide. This alternative would provide a permanent remedy for the site but would still require post remediation monitoring. It would include removal of the existing building foundation and floors and the excavation of all soils that exceed the R DEC, I/C DEC and GB PMC. The alternative would also include an active groundwater treatment system. A pilot study would likely be required to determine the most effective treatment scheme.
This alternative would be the most costly to implement. It would also likely increase the cost of site redevelopment as all features of the existing building and pavement on site would require removal. No existing site features would be able to be reused as part of future redevelopment. This alternative would also require the design, construction and operation and maintenance of groundwater treatment units. Due to the potential cost and complexity of the required remedial

approach, the ongoing operation and maintenance requirements and the impact to future site redevelopment, this option is not recommended.

Alternative 3. Excavation of GB PMC and Installation of Permanent Cap
This alternative includes the excavation of GB PMC soils and disposal at an approved off-site facility as Connecticut regulated soils. The remaining R DEC and/or I/C DEC soils would be rendered inacessible beneath a cap, in accordance with the RSRs. In addition to the cap, post-remediation groundwater monitoring would be required and an Environmental Land Use Restriction (ELUR) would be recorded. An operations and maintenance program would also be implemented for the cap.

The capital cost for implementing this remedial action, not including redevelopment, was estimated at approximately $975,000. Based on the benefits of lower cost, less worker and public safety concerns, and less remedial uncertainty, this alternative is recommended. The Conceptual Remedial Action Plan (RAP) provides details associated with the proposed remedial action at the site. It includes excavation and off-site disposal of the GB PMC.

Evaluation of Engineered Control

In order to implement Alternative 3, which includes excavation of GB PMC soils and placement of earthen cap to render remaining contaminated soils inaccessible, using USEPA grant funds, several steps have been taken and/or are in progress. These include the following:

- This draft analysis is being made available for USEPA, CTDEEP and public comment;
- A Conceptual Remedial Action Plan (RAP), has been completed and is available for comment at the Bridgeport City Hall, 999 Broad Street; Bridgeport and
- Technical specifications will be prepared for completing the interim phase of the remedy once USEPA, CTDEEP and public comments are addressed.

Additional information related to the proposed implementation of Alternative 3 is provided in the Conceptual RAP (AECOM, 2009).

References

Metcalf & Eddy (AECOM). 2009. Conecptual Remedial Action Plan 80 Hastings Street, Bridgeport, Connecticut.

United States Environmental Protection Agency (USEPA). 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. EPA Office of Solid Waste and Emergency Response, Washington, D.C. Interim Final, October 1988.

Table 1
Screening of Remedial Alternatives
Alternative 1: No Action

Description: Under this alternative, no remedial action would occur.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• None	• No action makes this the easiest alternative to implement.	• No capital cost. • No O&M cost.
Disadvantage	**Disadvantage**	**Disadvantage**
• Does not mitigate on-site risk due to direct exposure. • Does not reduce mobility of contaminants to groundwater.	• Additional remedial actions may be required in the future.	• Additional remedial actions may be required in the future at unknown cost.

Conclusion: The No Action alternative is not protective of human health or the environment. It does not reduce on-site risk or contaminant mobility and is not recommended for implementation.

Table 2
Screening of Remedial Alternatives
Alternative 2: *Excavation of all R DEC, I/C DEC and GB PMC Soils and Active Groundwater Treatment*

Description: Under this alternative, all R DEC, I/C DEC and GB PM Soils would excavated and removed and active groundwater treatment would be conducted.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• If effective, likely to address all direct exposure and pollutant mobility criteria.	• Site has adequate space to stage and operate equipment.	• It may be possible to re-use groundwater treatment equipment components.
Disadvantage	**Disadvantage**	**Disadvantage**
• Difficult to determine effectiveness prior to performing groundwater treatment pilot studies.	• May require complex, multiple unit treatment systems that need to be adjusted during operation to meet changing soil conditions. • Large volume of soil complicates operation.	• High capital cost. • High O&M cost.

Conclusion: This approach has been effective at some sites. However, due to the existing concrete floor cap (and the high costs associated with its removal) and apparent lack of groundwater migration, this alternative is not recommended for implementation.

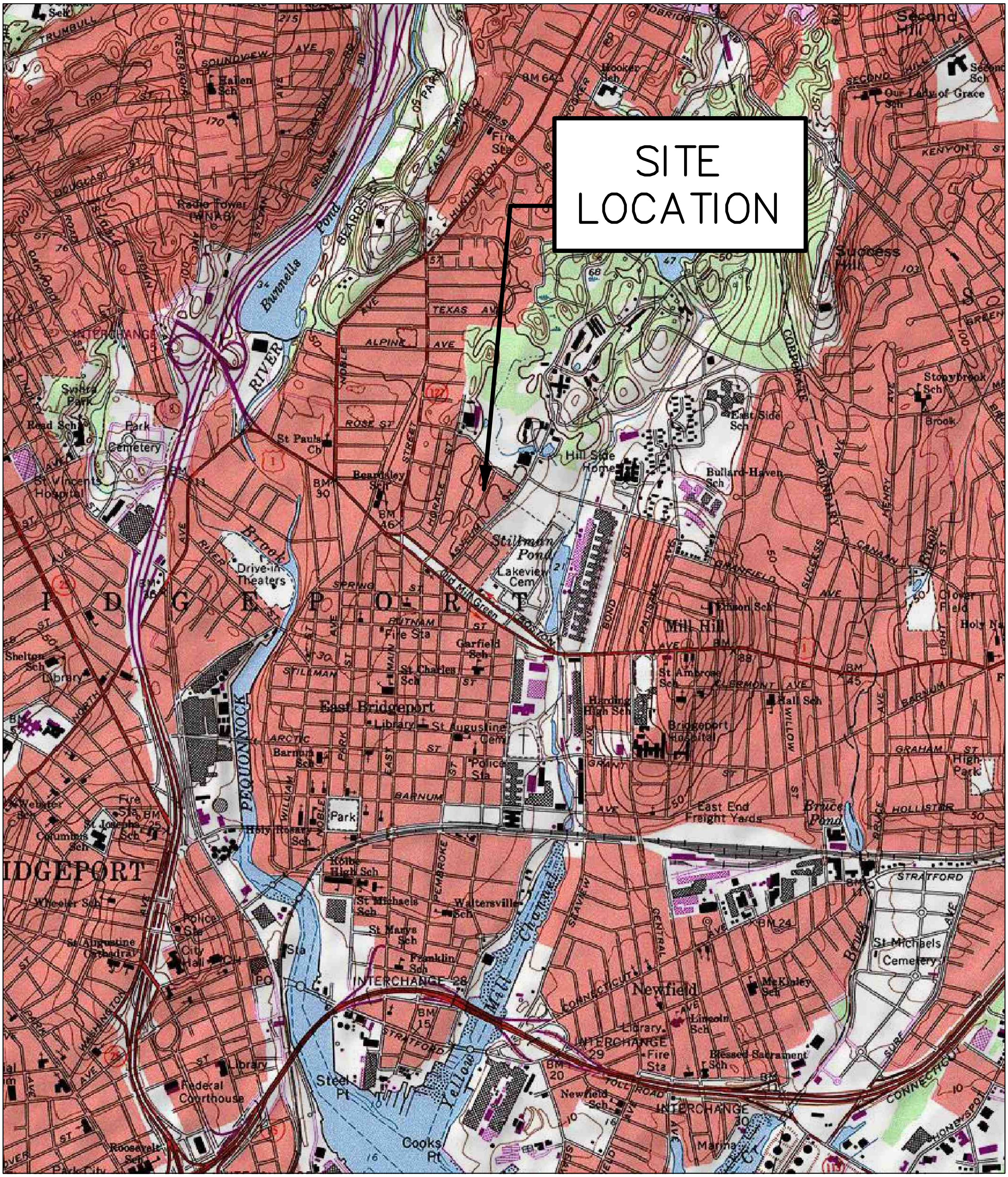
Table 3
Screening of Remedial Alternatives
Alternative 4: Excavation and Disposal of GB PMC Soils, Installation of Permanent Cap and Groudwater Monitoring

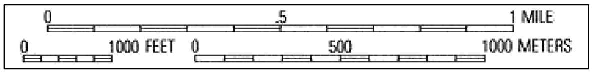
Description: This alternative includes the excavation and off-site disposal of GB PMC, the installation of a permanent cap (including reuse of existing concrete flooring where appropriate) and groundwater monitoring.

EFFECTIVENESS	IMPLEMENTABILITY	COST
Advantages	**Advantages**	**Advantages**
• Eliminates direct contact with contaminated soils. • Controls upward migration of soil contamination.	• Implementation of this remedy has been successful at similar sites. • Testing and monitoring can be easily implemented to demonstrate the effectiveness of this remedy. • Site can be redeveloped to improve aesthetic and functional value of site.	• Smaller capital cost than removing and disposing or treating all contaminated soil and/or groundwater.
Disadvantage	**Disadvantage**	**Disadvantage**
• Does not reduce the toxicity or volume of the contaminants in subsurface soil.	• None.	• Requires periodic O&M costs to ensure integrity of the engineered control.

Conclusion: This action would significantly reduce risk to human receptors as well as reduce infiltration through contaminated soil, addressing pollutant mobility criteria. The cost, safety risks, and remedial uncertainty associated with this alternative are lower than others considered. This is the preferred alternative.

LAST UPDATE: Tuesday, January 27, 2009 4:23:09 PM
PLOT DATE: Friday, March 13, 2009 4:42:20 PM





SOURCE:
U.S.G.S. TOPOGRAPHIC MAPS
BRIDGEPORT, CT QUADRANGLE,
MAP VERSION: 1984, CURRENT AS OF 1982

PATH/FILENAME: P:\60045450-BRI\C\CBBIR003.DWG
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FIGURE 1
SITE LOCATION MAP
80 HASTINGS STREET
BRIDGEPORT, CONNECTICUT

DATE: JAN. 2009