

Appendix F: Site Investigation and Remediation Summary

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Site Investigation and Remediation Summary – USDOT Volpe Center

Contamination Discovery on Potter Street

In the early to mid-2000's a utility company was performing underground work on Potter Street near the Volpe Center Security Guard Structure. While underground, they discovered coal tar at depths up to 4 feet and notified Volpe Center Security. Christopher Zevitas and Michelle Heimgartner of the former RVT-4E Environmental Engineering Division were called to come and observe the contamination. Due to the contamination being on a utility easement, there was no action that the Volpe Center needed to take regarding this discovery.

TSC Playground Removal

On July 18, 2006 what appeared to be coal tar was discovered by workers excavating post holes for new playground equipment. The MassDEP was notified on July 18, 2006 and RTN 3-26067 was assigned to the site. An Imminent Hazard (IH) evaluation was performed by Lord Associates, Inc. and no IH condition was determined to exist. MassDEP gave verbal authorization for an Immediate Response Action (IRA) and 170.81 tons of PAH impacted soil was subsequently excavated on August 15 and 16, 2006. The soil was transported offsite on August 28, 2006 under Bill of Lading to a thermal processing plant in New Hampshire. The IRA Completion Report indicated that some residual PAH impacted soil remained beyond the horizontal and vertical limits of excavation.

A Phase I investigation was completed by FS Engineers (FSE) in May 2007 as a follow-up to the IRA Completion Report. The Phase I included the advancement of eleven soil borings and three groundwater monitoring wells within, and directly adjacent to, the fenced in playground. The Phase I sampling revealed arsenic and lead, in addition to the coal tar components, in the site soils at levels above the applicable Method 1 soil standards. A Phase I Initial Site Investigation Report and Tier Classification were submitted to the MassDEP on July 18, 2007. Based upon the analytical results, FSE recommended that additional sampling be completed to further delineate the extent of the impacted soil.

On April 30, 2008 a Phase I Supplemental Site Investigation took place. FSE collected thirteen surficial samples from the grass lawn, which is approximately one acre in size and contains the fenced in playground within its northwest corner. Two of the soil samples exhibited concentrations of benzo (a) pyrene at or just above the MCP Method 1 Cleanup Level.

A Remedial Action Measure (RAM) Plan was developed in September 2008 for the removal of soil from within the Toddler Playground. RAM activities were implemented and completed in October 2008 which included the excavation of the top 4 feet of soil from the Toddler Playground and the off-site disposal of approximately 237 tons of soil. A RAM Completion Statement and Response Action Outcome (RAO) Report was filed in January 30, 2009 which included a Method 3 Risk Assessment.

The Method 3 risk characterization was completed and showed that the Site poses No Significant Risk to public health, welfare or the environment for current activities and uses of the property based upon the existing Site conditions. However, because existing Site conditions include residual levels of EPH with target PAH, lead and arsenic in certain soils at depths greater than 6 inches below ground surface, there is a potential for future risk if unrestricted future activities and uses of the property were to result in exposure to the contaminated soils or change in location of those soils to render them more accessible.

Therefore, in order to ensure that the condition of No Significant Risk is maintained for both current and future Site activities and uses, the Activity and Use Limitation (AUL) is necessary to specify the limiting Site conditions and restrictions of the Risk Characterization regarding future Site activities and uses. The stated restrictions and limitations of the Method 3 Risk Characterization have become the obligations and conditions of the AUL. The AUL restricts invasive activities in the areas of soil contamination which are located at depths greater than 6 inches below ground surface so that the soils do not become accessible for direct contact or exposure (FS Engineers, 2011).

In 2010 the MassDEP performed an audit of the site and determined that additional information was necessary in support of the RAO and AUL. They outlined this need for additional information in the Notice of Audit Findings dated October 13, 2010.

Supplemental soil and groundwater sampling was conducted at the site following the Notice of Audit Findings. In March 2011 fourteen soil borings were advanced and six groundwater monitoring wells were installed at the site. Shallow soil samples (from 0 to 3 feet below grade) were collected from each soil boring and submitted for laboratory analysis of volatile organic compounds (VOCs), EPH with PAHs, and metals. Concentrations of the PAHs benzo (a) pyrene and/or benzo (a) anthracene were detected at levels just above the applicable Method 1 soil standards in six of the fourteen shallow soil samples. Two of these shallow soil samples with low level PAH concentrations were collected from the landscaped area of the Preschool Playground. Concentrations of lead were detected at levels above the applicable Method 1 soil standard in five of the shallow soil samples collected outside the limits of the playground. No concentration of arsenic or of any VOC was found at level above the applicable Method 1 Soil standard in any of the shallow soil samples.

Deeper soil samples (from depths 3 to 12 feet below grade), were collected from nine of the fourteen borings and submitted for laboratory analysis of VOCs and EPH with PAHs. Concentrations of several PAHs were detected at levels above the applicable Method 1 soil standards in five of the nine deeper soil samples. Groundwater samples were collected in March 2011 from eight monitoring wells at the site and submitted for laboratory analysis of VOCs and EPH with PAHs. No groundwater sample collected from the site was found to have COCs at a level above the applicable Method 1 groundwater standards.

Both the Preschool Playground and Toddler Playground were closed to children and daycare workers during the RAM activities, which took place from April 25, 2011 through May 9, 2011. The top three feet of soil within the landscaped, northern portion of the Preschool Playground that was not covered by chipped rubber was removed. The sandbox was also removed and replaced and tree roots were covered with geotextile fabric and reburied. Approximately 130 tons of soil was removed from the pre-school playground.

During the excavation, the removal contractor encountered a layer of coal ash, coal slag, and brick at a depth of 2 to 3 feet below grade, extending in a north to south direction in the center of the excavation. Two abandoned concrete footings extending in parallel with an approximate 1-foot space in between were located directly to the east of the ash/slag/brick layer. Minor amounts of coal tar were found adhering to the western abandoned foundation wall, but no significant amount of coal tar was found in any part of the excavation. The locations of the concrete footings were in line with those documented by Lord Associates during the excavation of parts of the Preschool Playground conducted under 2006 IRA activities. The concrete footings were assumed to be related to former historical buildings at the Site or part of the former Broad Canal.

Confirmatory soil samples were collected from the limits of the excavation and were submitted for

laboratory analysis of EPH with target PAHs, and metals. Lead, arsenic, and/or PAHs and nickel were reported at concentrations above the applicable Method 1 soil standards in the confirmatory samples collected from 3 to 3.5 feet below surface grade. This remaining contamination confirmed the need for the AUL discussed in Section 3.1 and above in Section 3.3.

On-Site Sampling in 2013

In the end of April, beginning of May 2013, a contractor installed four monitoring wells in the main Volpe Center parking lot. These wells were used to determine if a plume of contaminants found at 225 Binney Street was migrating to the Volpe Property. The wells showed groundwater contamination levels of 1,2 Dichloroethane above the MassDEP GW-1 and GW-2 standards (Thibault, 2013).

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