HALEY ALDRICH

www.haleyaldrich.com

PHASE II SOIL INVESTIGATION REPORT
VOLUNTARY CLEANUP PROGRAM
POTOMAC ELECTRIC POWER COMPANY PARCELS AT BUZZARD POINT, SQUARE 0611, LOTS 0804, 0805, AND SQUARE 0665, LOT 0024 WASHINGTON, D.C.

by Haley & Aldrich, Inc.
McLean, Virginia

for McKissack & McKissack
Washington, D.C.

File No. 40223-002
July 2015

Haley & Aldrich, Inc.
7926 Jones Branch Dr.
Suite 870
McLean, VA 22102
703.336.6200

31 July 2015
File No. 40223-002

McKissack & McKissack
901 K Street, NW 6th Floor
Washington, D.C. 20001

Attention: Mr. Mark Babbitt, P.E.

Subject: Phase II Soil Investigation Report
Voluntary Cleanup Program
Potomac Electric Power Company Parcels at Buzzard Point
Square 0661, Lots 0804, 0805, and Square 0665, Lot 0024
Washington, D.C.

Ladies and Gentlemen:

Haley & Aldrich, Inc., (Haley & Aldrich) prepared this Phase II Soil Investigation Report (Phase II) for the Potomac Electric Power Company (PEPCO) parcels at Buzzard Point located in Washington, D.C. ([Site]; Figure 1). The objective of this Phase II was to obtain additional data associated with the recognized environmental conditions (RECs) identified in previous investigations to further evaluate the potential impact of chemicals in soil. The targeted RECs were identified in the "Report on ASTM Phase I Environmental Site Assessment and Limited Phase II Subsurface Sampling" prepared by Haley & Aldrich (Haley & Aldrich, 2014). The investigation was conducted in a manner consistent with ASTM E1903-11 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. The conclusions and recommendations provided in this Phase II provide information to support the Cleanup Action Plan that will be prepared to supplement the application for Voluntary Cleanup Program prepared for the District of Columbia Department of General Services.

Background

The Site is bound by R Street, SW to the north, T and S Streets, SW to the south, Half Street, SW to the east and 1st Street, SW to the west; excluding the active substation in the SE corner. The Site is comprised of three lots used as follows:

- Square 0661, Lot 0805 is used as a parking lot;
- Square 0661, Lot 0804 is vacant; and
- Square 0665, Lot 0024 is an abandoned portion of the adjacent electrical substation.

The Site is planned for redevelopment as part of the new D.C. United Soccer Stadium, though no design drawings have yet been prepared for its construction. For the purpose of the Voluntary Cleanup Program application, an excavation of up 10 feet below ground surface (bgs) has been assumed for foundation construction of the proposed stadium. The Phase II considered this depth of excavation to assess soil disposition for foundation construction.

PREVIOUS INVESTIGATIONS

PEPCO has been monitoring observation wells associated with leaking underground storage tanks since the early 1970s. In 1993, free phase (liquid) hydrocarbons were discovered in an observation well in the combustion turbine area. The Department of Consumer and Regulatory Affairs issued a written directive to PEPCO and TPH Technology, Incorporated (TPH Technology) completed a comprehensive site assessment for leaking underground storage tank (LUST) case #93-051 (TPH Technology, 1993). The assessment included a shallow soil gas survey, installation of 11 groundwater monitoring wells, and soil and groundwater sample collection and analysis. Soil and groundwater analytical results indicated that total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations were elevated.

In 1996, TPH Technology implemented a corrective action plan (TPH Technology, 1995) and installed a soil vapor extraction system that operated from January 1996 to November 1999 and removed approximately 6,925 gallons of petroleum from groundwater. From May 2001 to April 2002, a portable high vacuum pump and treat system was also used to recover petroleum compounds.

In 2005, Advantage Environmental Consultants, LLC, (AEC), conducted a Phase I environmental site assessment (ESA) at an adjacent property and noted that TPH and BTEX concentrations in groundwater were above applicable regulatory standards except in three downgradient wells based on data collected March 8, 2004 (AEC, 2005). Passive remediation with absorbent booms and monitoring was ongoing.

In 2010, the District Department of the Environment (DDOE) issued a “No Further Action” letter to PEPCO in reference to LUST case #93-051 stating that “the residual contamination left in place at this site does not pose a threat to human health and/or the environment” (DDOE, 2010). The DDOE acknowledged that no further remedial action is necessary unless residually contaminated soil is removed, disturbed, or excavated from the Site.

In 2014, Haley & Aldrich conducted a Phase I and limited Phase II ESA. The Phase I identified known RECs (i.e., soil and groundwater petroleum impacts from historical operations) and suspect RECs (i.e., substation-related chemicals, former aboveground storage tanks (ASTs) and associated piping, and adjacent property impacts). Phase II activities collected soil and groundwater samples from the five targeted REC locations shown in Figure 2 (GTW-661-805-1, GTW-661-804-1, GTW-661-804-2, GTW-661-804-3, and GTW-661-24-1). Soil analytical results indicated that gasoline range total petroleum hydrocarbons (TPH-GRO) and diesel range total petroleum hydrocarbons (TPH-DRO) concentrations were above the applicable screening levels (Haley & Aldrich, 2014). Groundwater analytical results indicated that TPH-GRO, TPH-DRO, and benzene concentrations were also above the applicable screening levels (Haley & Aldrich, 2014).

SOIL SCREENING LEVELS

Soil sample analytical results were compared to the following screening levels:

- DC Tier 0 Soil Standards from the Tier 0 Standards Final Rulemaking published at 40 DCR 7835, 7892 (12 November 1993), as amended by Final Rulemaking published at 46 DCR 7699 (1 October 1999); and
- Environmental Protection Agency (EPA) Regional Screening Level for Industrial Soil from the EPA Regional Screening Level Tables (May 2014).

As used in this Phase II, "soil screening levels" are the lower of the above screening levels. Soil screening levels were selected for the protection of human health and groundwater quality based on the understanding that the Site will be redeveloped into a professional soccer stadium.

Subsurface Investigation

Soil investigation activities were conducted at the Site between 10 and 16 July 2015 to further evaluate the nature and extent of subsurface soil conditions. These activities were based on previously reported chemical concentrations that exceeded the soil screening levels and identified RECs at the following areas of potential concern (AOPCs) shown in Figure 2:

- Historical boring location GTW-661-805-1;
- Western Site Coverage of Square 0661, Lot 0805;
- Historical boring location GTW-661-804-1;
- Historical boring location GTW-661-804-2 (former AST area);
- Historical boring location GTW-661-804-3 (former AST area);
- LUST case #93-051 approximate area in Square 0061, Lot 0804; and
- Historical boring location GTW-661-24-1.

The sample analyses at each location were selected based on the chemicals that exceeded the soil screening levels and/or the chemicals of potential concern (COPCs) associated with the RECs identified during the Phase I ESA activities. Soil sample locations are shown in Figure 2.

Groundwater sampling at temporary well locations GTW-661-805-1, GTW-661-804-1, GTW-661-804-2, GTW-661-804-3, and GTW-661-24-1 will be conducted and the results evaluated and submitted under separate cover.

SOIL SAMPLING

Soil samples were collected at depths ranging from 10 to 15 feet bgs using a track-mounted direct-push drill rig. Each boring was continuously logged in accordance with the Unified Soil Classification System; boring logs are provided as Appendix A. Continuous soil cores were collected by driving a hydraulic-percussive stainless steel sampling probe equipped with dedicated acetate tube liners. Soil cores were observed and documented visually for discoloration and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Soil samples were collected from approximately 1, 5, and 10 feet bgs; select depth intervals were adjusted to target indications of chemicals (e.g., visual or olfactory observations, elevated PID measurements). Samples were collected in laboratory-supplied jars, placed in a cooler with ice, and submitted to Alpha Analytical for analysis under standard chain of custody procedures.

Sampling equipment was decontaminated prior to sampling and between sample locations by washing with non-phosphate detergent (e.g., Alconox) solution, followed by rinsing with potable water, and then distilled water. Sampling personnel used disposable nitrile gloves during sampling and changed gloves between each sample location. Decontamination fluids were captured and placed in 55-gallon drums and disposed of off-Site as discussed below.

One field duplicate soil sample was collected for every 10 soil samples to evaluate sample homogeneity and laboratory accuracy. The field duplicates were collected, numbered, packaged, and sealed in the same manner as the primary samples. One equipment rinsate sample was collected at the end of each day of sampling and used to evaluate the effectiveness of the decontamination process. Trip blank samples accompanied each sample shipment submitted for VOC analysis to check for potential cross-contamination during shipment.

WASTE PROFILING AND DISPOSAL

Once the drilling was completed, investigation-derived waste soil, decontamination wash water, and purge water were contained on-Site in 55-gallon drums and profiled for off-Site disposal by an appropriately-licensed subcontractor.

RESULTS

The following summarizes the sampling results in the previously described AOPCs.

Historical Boring Location GTW-661-805-1

The samples collected at approximately 0 to 2 feet bgs from historical boring location GTW-661-801-1 did not have reported chemical concentrations that exceeded the soil screening levels; however at the request of the DDOE, additional samples were obtained in this area to help them further evaluate the Cleanup Action Plan that will be submitted as part of the Voluntary Cleanup Program. Five borings were therefore advanced and 11 samples collected in this area to provide additional information regarding the extent of TPH concentrations in soil.

A review of the analytical results of these samples indicated that two samples had reported TPH-DRO concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Table 1. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Western Site Coverage of Square 0661, Lot 0805

Three borings were advanced and nine samples collected in this area to investigate TPH, PAH, and metals concentration in soil based on the COPCs associated with the Site.

A review of the analytical results of these samples indicated that four samples had reported TPH-DRO concentrations that exceeded the soil screening level, one samples had reported a benzo(a)pyrene concentration that exceeded the soil screening level, and nine samples had reported arsenic concentrations that exceeded the soil screen level. Analytical results and chemicals that exceeded the soil screening levels are identified in Table 1. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Historical Boring Location GTW-661-804-1

The samples collected at approximately 20 to 25 feet bgs from historical boring location GTW-661-804-1 did not have reported chemical concentrations that exceeded the soil screening levels; however the sample depth interval was not within the proposed redevelopment depth (i.e., the top 10 feet). Five borings were therefore advanced and 10 samples collected in this area to provide additional information regarding the extent of TPH concentrations in soil within the depth of the proposed stadium development.

A review of the analytical results of these samples indicated that no samples had reported TPH-DRO concentrations that exceeded the soil screening levels. Analytical results are summarized in Table 1. Boring and sample locations are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Historical Boring Location GTW-661-804-2

The samples collected at approximately 10 to 15 feet bgs from historical boring location GTW-661-804-2 had reported TPH-DRO concentrations that exceeded the soil screening levels.

Based on the historical results, nine borings were advanced and 27 samples collected in this area to provide additional information regarding the extent of TPH, metals, and PAH concentrations in soil. Samples DP-057-SO-050-01, DP-092-SO-010-01, DP-092-SO-050-01, DP-092-SO-100-01 were also analyzed for VOCs based on the TPH-GRO results of 110 mg/kg, 240 mg/kg, 150 mg/kg, and 320 mg/kg, respectively.

A review of the analytical results of these samples indicated that five samples had reported TPH-DRO concentrations that exceeded the soil screening levels, four samples had reported TPH-GRO concentrations that exceeded the soil screening levels, three samples had reported ethylbenzene and xylene concentrations that exceeded the soil screening levels, and no samples had reported PAH concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Tables 1 and 2. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Historical Boring Location GTW-661-804-3

The samples collected at approximately 20 to 25 feet bgs from historical boring location GTW-661-804-3 had reported TPH-GRO and TPH-DRO concentrations that exceeded the soil screening levels; however, the sample depth interval was not within the proposed redevelopment depth (i.e., the top 10 feet). Nine borings were therefore advanced and 27 samples collected in this area to provide additional information regarding the extent of TPH, metals, and PAH concentrations in soil within the depth of the proposed stadium development. Samples DP-061-SO-050-01 and DP-066-SO-050-01 were also analyzed for VOCs based on the TPH-GRO results of 60 mg/kg and 66 mg/kg, respectively.

A review of the analytical results of these samples indicated that six samples had reported TPH-DRO concentrations that exceeded the soil screening levels and one sample had reported PAH concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Tables 1 and 2. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

LUST case #93-051 approximate area in Square 0061, Lot 0804

Five borings were advanced and ten samples collected in this area to investigate PAH and metals concentrations in soil based on the COPCs associated with the Site.

A review of the analytical data results for these samples indicated that no chemicals exceeded the soil screening levels. Analytical results are summarized in Table 1. Boring and sample locations are shown in Figure 2. Laboratory analytical reports are provided in Appendix B.

Historical Boring Location GTW-661-24-1

The samples collected at approximately 20 to 23 feet bgs from historical boring location GTW-661-24-1 did not have reported chemical concentrations that exceeded the soil screening levels; however the sample depth interval was not within the proposed redevelopment depth (i.e., the top 10 feet). Eleven borings were therefore advanced and 21 samples collected in this area to provide additional information regarding the extent of polychlorinated biphenyl (PCB) concentrations in soil within the depth of the proposed stadium development.

A review of the analytical results of these samples indicated that one sample had a reported PCB concentration that exceeded the soil screening levels. Analytical results and the chemical that exceeded the soil screening levels are identified in Table 1. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Summary and Recommendations

In summary, soil samples were collected to evaluate and delineate the presence of chemicals at the five identified RECs associated with the Site. The following is recommended:

- Prepare a Site-specific background metals evaluation;
- Prepare a soil management plan to guide the foundation excavation environmental monitoring process; and
- Implement the soil management plan and provide environmental oversight during the preparatory foundation construction activities and ensure that the soil is properly segregated and disposed of off-Site.

Based on the available analytical results, soil remediation may be required for the protection of human health for the on-Site construction worker and future stadium occupant and to reduce the threat to groundwater quality. The potential order of magnitude for excavating soil at areas that exceed the soil screening levels identified at the seven on-Site AOPCs range from $380,000 to $4,570,000. These costs and their associated assumptions are summarized in Table 3 (since chemical concentrations did not exceed soil screening levels, costs for the AOPCs associated with LUST case #93-051 and historical boring location GTW-661-804-1 were not included in Table 3). The soil screening levels used to evaluate impacts at the Site do not account for cumulative health risks. These costs also exclude groundwater mitigation and/or vapor intrusion mitigation that may be required to reduce the threat to human health when constructing the stadium.

The potential order of magnitude costs for soil remediation are based on the available data (i.e., sample locations with chemicals in soil that exceed the soil screening levels), and an understanding that there is no time in the redevelopment schedule for additional delineation sampling, a background metals evaluation, or a human health risk assessment, which may affect the soil remediation feasibility and cost.

Limitations

All recommendations are based solely on existing Site conditions at the time of performance of services. Haley & Aldrich is unable to report on, or accurately predict events that may impact the Site following preparation of this document, whether naturally occurring or caused by external forces. The recommendations provided by Haley & Aldrich are based solely on the scope of work conducted and the sources of information referenced in this document. Services hereunder were performed in accordance with our agreement and understanding with, and solely for the use of McKissack & McKissack. Any additional information that becomes available concerning this Site should be provided to Haley &

Aldrich so that any further recommendations may be reviewed and modified as necessary. Haley & Aldrich is not responsible for the subsequent separation, detachment, or partial use of this document. No warranty or guarantee, whether expressed or implied, is made with respect to the recommendations expressed in this report. Any reliance on this report by a third party shall be at such party's sole risk.

We appreciate the opportunity to provide consulting services on this project. Please do not hesitate to call if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH, INC.

Dana L. Kennard
Assistant Project Manager

David A. Schoenwolf, P.E.
Principal Consultant | Senior Vice President

Attachments:

Table 1 – Summary of Soil Sample Analytical Results – Metals, PCBs, PAHs, and TPH
Table 2 – Summary of Groundwater Sample Analytical Results – VOCs
Table 3 – Order of Magnitude Soil Remediation Costs
Figure 1 – Site Locus
Figure 2 – Sample Locations and Exceedances
Appendix A – Boring Logs
Appendix B – Laboratory Analytical Reports

\\was\Common\Projects\40223 - M&M Potomac Ave SW\002\Deliverables\PEPCO Phase II\2015_0731_HAI_PEPCOPhaseII_F.docx

References

1. Advantage Environmental Consultants, LLC, 2005a. Phase I Environmental Site Assessment, Buzzard Point, 2nd Street and V Street, SW, Washington, DC 20024. 10 June.

2. District Department of the Environment, 2010. No Further Action Letter addressed to Ms. Fariba Mahvi, Pepco Holdings, Inc. 1 April.

3. Haley & Aldrich, Inc., 2014. Report on ASTM Phase I Environmental Site Assessment and Limited Phase II Subsurface Sampling, Potomac Electric Power Company Parcels at Buzzard Point, Square 0661, Lot 0805, Square 0661, Lot 0804, and Square 0665 Lot 0024, Potomac Avenue and 1st Street, SW Washington, D.C. 09 September.

4. TPH Technology, Incorporated, 1993. Comprehensive Site Assessment, Potomac Electric Power Company, Buzzard Point Station, 1st and V Streets, S.W., Washington, D.C. 11 August.

5. TPH Technology, Incorporated, 1995. Corrective Action Plan, Remedial Specifications and Implementation Details, Buzzard Point Generating Station, Half & S Streets, SW, Washington, DC. DC Lust Case# 93-051. 10 March.