



**Rebound Study Soil Investigation Work Plan
Gasoline Fueling Station – Royal Farms #96
500 Mechanics Valley Road
North East, Maryland**

**MDE Case No. 2011-0729-CE
MDE Facility No. 13326**

AEC Project Number: 05-056 RF96

Prepared for:

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February 7, 2017

INTRODUCTION

This Soil Investigation Rebound Evaluation Work Plan has been developed for the Royal Farms Gasoline Fueling Station No. 96 located at 7950 Pulaski Highway in Baltimore, Maryland (i.e., the Site). Site Vicinity and Site Maps are included as Figures 1 and 2 in Attachment A. This work plan is intended to satisfy certain requirements set forth in the AEC's Corrective Action Plan (CAP) Addendum dated March 28, 2013. The purpose of the subsurface investigation will be to characterize post-remediation subsurface conditions at the Site with respect to pre-remediation soil conditions and established remedial goals for soil.

Upon discovery of the release at this Site, an emergency subsurface investigation was performed by AEC between June 16 and June 21, 2011 using direct-push technology. The effort described herein will focus on soil conditions in four locations where samples from the Emergency Investigation showed concentrations of fuel constituents above MDE Soil Standards (Non-Residential Soil Standards from MDE's Generic Numeric Cleanup Standards for Groundwater and Soil - Interim Final Guidance Update No. 2.1 - June 2008). The following is a description of the scope of work to be conducted:

DESCRIPTION OF INVESTIGATIVE METHODS

Soil Boring Advancement

AEC and a drilling subcontractor will mobilize to the Site for the installation of four soil borings in locations where samples from AEC's June 2011 Emergency Investigation showed concentrations of fuel constituents above MDE Soil Standards. Figure 1 of Attachment A shows the locations of the 24 borings advanced as part of the June 2011 Emergency Investigation as well as concentrations of total benzene, ethylbenzene, toluene, and xylenes, total petroleum hydrocarbons (TPH) diesel range organics (DRO) and TPH gasoline range organics (GRO) from each boring. In Figure 1, the locations in which fuel constituents were reported above MDE Soil Standards are featured in red. These locations shown in red also represent the locations of the borings to be performed for this investigation. A table summarizing the soil sampling results of the 2011 investigation is included as Table 1 in Attachment B.

The borings will be advanced using a truck-mounted hydraulic direct-push drilling rig and will be completed to a depth of approximately 20-feet below ground surface (bgs). Prior to arriving at the Site and between each soil boring, all hand augers, core barrels, cutting shoes, probe rods, tips, sleeves, pushrods, samplers, tools, and other down hole equipment will be washed using a water rinse. Fuel, lubricants, and other similar substances will be handled in a manner consistent with accepted safety procedures and standard operating practices. Public utility clearances will be obtained prior to the initiation of the sampling program. This will entail contacting Miss Utility at least 72 hours prior to drilling activities.

An AEC Field Geologist will log the geologic conditions of the borings and field screen soil cores for volatile organic compounds (VOCs) using a photoionization detector (PID).

Soil samples will be collected from each boring. A composite sample from the smear zone in each well will be obtained and retained for laboratory analysis. The smear zone in the vicinity of the proposed borings is between approximately 11-15 feet bgs based on well gauging results obtained from recovery wells RW-1, RW-2, RW-4, RW-5, RW-6, RW-7, and RW-13. Locations of the recovery wells are shown in Figure 2 of Attachment B. A summary of groundwater gauging results is presented at Table 2 of Attachment B.

The analytical laboratory will provide pre-preserved sample containers where appropriate. The sample labels will be firmly attached to the container side, and the following information will be legibly and indelibly written on the labels: facility name; sample identification; sampling date and time; preservatives added; and, sample collector's initials. After the samples are sealed and labeled, they will be packaged for transport to a qualified environmental laboratory. The following packaging procedures will be followed: samples will be packaged to prevent spillage or vaporization from the containers; samples will be cushioned to avoid breakage; and, ice will be added to the cooler to keep the samples cool. In addition, a clean pair of new, disposable nitrile gloves will be worn each time a soil sample is collected.

The soil samples will be analyzed for TPH DRO and GRO using Environmental Protection Agency (EPA) Analytical Method 8015B, and VOCs plus oxygenates via EPA Analytical Method 8260.

Investigation Derived Waste Management

Upon completion of each boring, soil generated from within five feet of the ground surface and not exhibiting any PID response will be land spread in fenced enclosure for the remediation system. Remaining soils will be placed down the boring from which it was obtained. Each boring borehole will be sealed with 6-inches of hydrated bentonite overlain by several inches of coarse material and several inches of cold-patch asphalt to reach the surface. All four proposed boring locations are in asphalt paved areas.

Reporting and Scheduling

Information developed from the investigation will be assembled into a report including the following information: report summary; physical site description; site vicinity map; sample location map; description of the sampling program; soil-boring logs; and, analytical laboratory results. Results will be compared to soil remediation goals established in the March 2013 CAP Addendum and are as follows:

**Soil Cleanup Standards
Gasoline Fueling Station – Royal Farms # 96
500 Mechanics Valley Road
North East, Cecil County, Maryland**

Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Naphthalene
5.20E+04	8.20E+07	1.20E+08	2.00E+08	7.20E+06	2.00E+07

BTEX, MTBE, and Naphthalene values in micrograms per kilogram ug/kg
Non-Residential Soil Standards from MDE's Generic Numeric Cleanup Standards for
Groundwater and Soil - Interim Final Guidance Update No. 2.1 - June 2008

Once, the field activities are scheduled, MDE will be notified. Notification will be made at least 5 days in advance of fieldwork activities.

AEC anticipates submission of a results of this investigation within one month of authorization to proceed. Two hard copies and an electronic copy of the report will be submitted to the MDE.

Attachment A

Attachment B