ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC

Subsurface Investigation Work Plan
Gasoline Fueling Station – Royal Farms #96
500 Mechanics Valley Road
North East, Cecil County, Maryland 21901

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

AEC Project Number: 05-056 RF096

Prepared for:
Maryland Department of the Environment
Oil Control Program
Montgomery Park
1800 Washington Boulevard
Baltimore, Maryland 21230-1719

And

Royal Farms / Two Farms, Inc.
3611 Roland Avenue
Baltimore, Maryland 21211

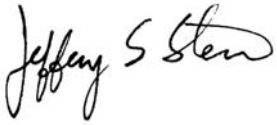
Prepared by:
Advantage Environmental Consultants, LLC (AEC)
8610 Washington Boulevard, Suite 217
Jessup, MD 20794
Phone – (301)-776-0500
Fax – (301)-776-1123

June 15, 2011

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC

Subsurface Investigation Work Plan

Prepared by: Thomas E. Ruszin III
Title: Staff Scientist
Date: June 15, 2011



Reviewed by: Jeffery S. Stein, P.G.
Title: Principal
Date: June 15, 2011

INTRODUCTION

This Subsurface Investigation Work Plan has been developed for Royal Farms Gasoline Fueling Station No. 96 located at 500 Mechanics Valley Road, North East, Cecil County, Maryland (hereinafter referred to as the "Site"). A Site Vicinity and Site Map are included in Attachment A as Figures 1 and 2, respectively. This work plan is intended to satisfy certain requirements outlined in a Maryland Department of the Environment (MDE) Report of Observations, dated June 14, 2011.

On June 8, 2011, AEC was performing an annual groundwater sampling event in accordance with Code of Maryland Regulations (COMAR) 26.10.02.03-04, when approximately two inches of liquid-phase hydrocarbon (LPH) was encountered in groundwater monitoring well MW-3. The LPH was observed to be golden in color, indicating 'fresh' gasoline. AEC inspected the submersible turbine pump (STP) containment sumps, which were observed to be free of LPH. Royal Farms was informed of the field observations made by AEC and Mr. Thomas E. Ruszin, of AEC reported a suspected release of petroleum to the MDE at approximately 3:40 p.m.

The purpose of the subsurface investigation will be to delineate LPH impact on the northeastern portion of the Site. Specifically, the area in the vicinity of MW-3, located east of the tank pit and north of the dispenser islands, will be initially investigated using direct-push technology with the installation of temporary piezometers. Based on the data collected during the course of AEC's initial work, permanent groundwater monitoring wells and/or recovery wells may also be installed in this area. The following is a description of the scope of work to be conducted:

DESCRIPTION OF INVESTIGATIVE METHODS

Temporary Piezometer Installation Procedures

AEC and a drilling subcontractor will mobilize to the Site for the installation of approximately 8 soil borings with associated temporary piezometer installation. These borings will be advanced in the vicinity of MW-3, located east of the tank pit and north of the dispenser islands. If the horizontal extent of LPH is not fully delineated within the proposed boring locations, additional borings may be performed, as necessary, based on field observations and MDE consultation. Proposed temporary piezometer locations are depicted on Figure 3 of Attachment A. Actual temporary piezometer locations will depend on Site conditions and utility clearances, where necessary.

The borings will be advanced using a truck- or track-mounted hydraulic direct-push drilling rig. Based on historic depth to groundwater in MW-3 (approximately 13 feet below ground surface (bgs)), the borings will be advanced to a depth of approximately 20-feet bgs. The temporary piezometers will be constructed of 1-inch diameter polyvinyl chloride (PVC) well screen and casing. The screened section of each temporary piezometer will be installed to at least 2-feet above the static water level. A sand filter pack will be placed to 1-foot above the top of the screen. A 1-foot thick bentonite seal

will be placed above the sand by dropping bentonite pellets into the annular space and hydrating in place. The remainder of the annular space above the bentonite seal will be grouted to the surface. Each temporary piezometer will be secured with a PVC cap.

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. All drilling work will be performed by a State of Maryland-licensed well driller and appropriate well permits will be obtained from Cecil County.

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).

The temporary piezometers will be developed two to three days after the date of installation. At least five well volumes of water will be removed from each temporary piezometer as part of the development process. If a temporary piezometer is bailed dry, the piezometer will be emptied of water five times over a period not to exceed one hour. All development water will be containerized and disposed of off-Site via a vacuum truck.

Soil and Groundwater Sampling

Soil samples will be collected from each boring. The criteria for selecting the soil samples will be based on elevated PID readings or evidence of impact in soil. All samples will be collected above the water table. Groundwater sampling will be performed five days after development of the temporary piezometers. Samples will be collected using dedicated high-density polyethylene (HDPE) tubing and a peristaltic pump or a disposable HDPE bailer. Prior to the collection of groundwater samples, AEC will purge at least three well volumes from each temporary piezometer. Purge water will be handled in the same manner as the development water, as discussed above. In the event that LPH are identified within a temporary piezometer, the thickness of the LPH will be measured to the nearest 0.01-foot. No groundwater sample will be collected from temporary piezometers where LPH is identified. After the groundwater samples have been obtained, the temporary piezometers will be left in place for a minimum of one week after which they will be checked for the presence of LPH and then abandoned by a State of Maryland-licensed well drill.

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 leakage 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. New sections of nylon rope will be used for the pre-cleaned disposal bailers at each sample location. In addition, a clean pair of new, disposable nitrile gloves will be worn each time a soil and/or groundwater sample is collected.

The soil and groundwater samples will be analyzed for Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DRO) and Gasoline Range Organics (GRO) using Environmental Protection Agency (EPA) Analytical Method 8015B, and VOCs, including fuel oxygenates, via EPA Analytical Method 8260.

Monitoring/Recovery Well Installation and Development Procedures

The need for the installation of additional monitoring wells and/or recovery wells on the site will be determined based on the findings of this investigation, and will be in consultation with the MDE.

Investigation Derived Waste Management Procedures

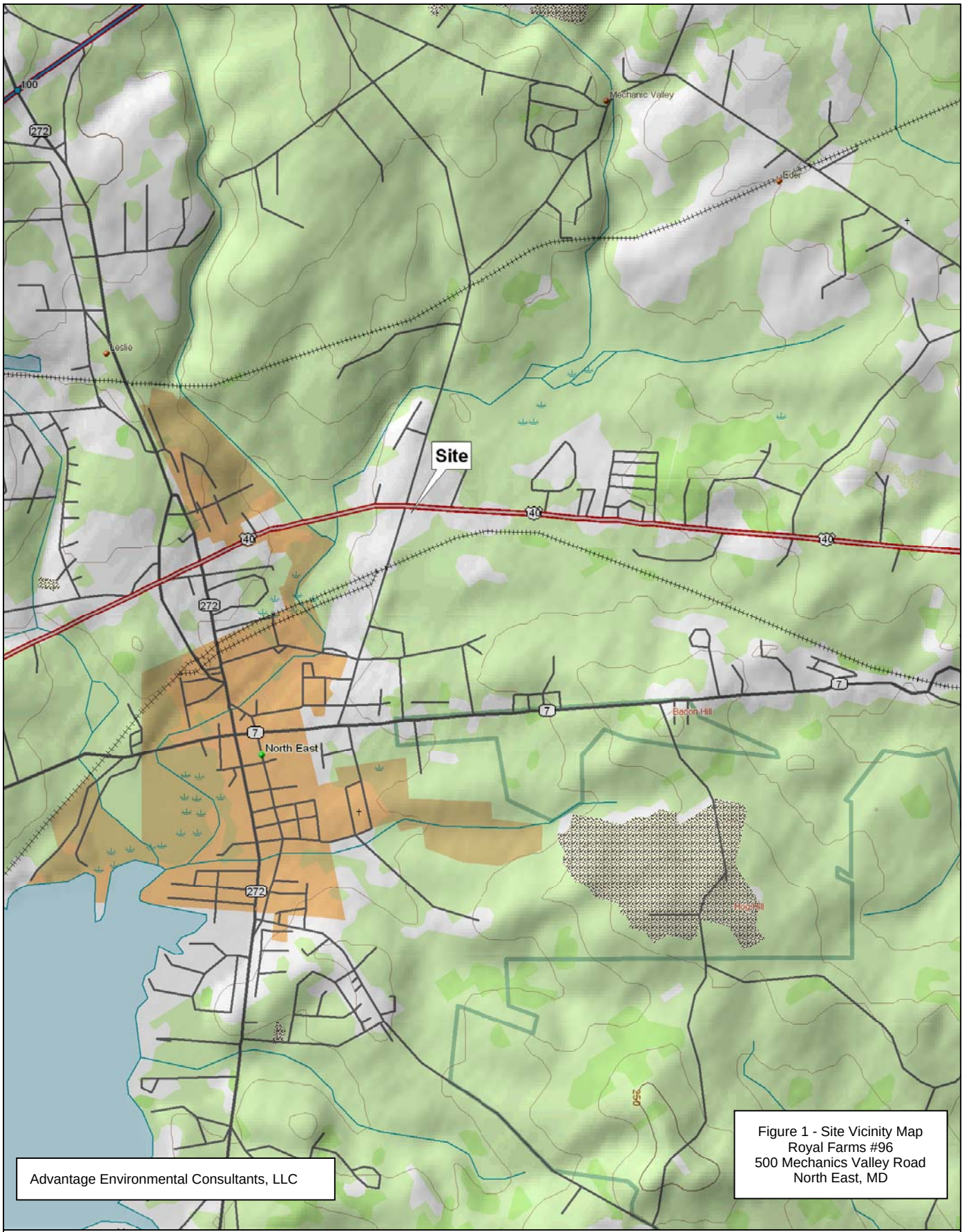
Investigation-derived soil will be containerized in 55-gallon drums, labeled (date of generation, site name/address, source, and contents), and, staged on the Site. The soil drum(s) will be composite sampled and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) via EPA Analytical Method 8021, and TPH DRO and GRO via EPA Analytical Method 8015. These materials will be staged no longer than 90 days before they are characterized, transported and disposed according to applicable United States Department of Transportation (USDOT), EPA, and MDE regulations.

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; groundwater gradient map; dissolved, liquid and absorbed phase hydrocarbon delineation maps; description of the sampling program; soil-boring and well construction logs; and, analytical laboratory results. Two hard copies and an electronic copy of the Report will be submitted to the MDE.

The field testing effort is scheduled to take approximately six days of field time. AEC is scheduled to begin field work one Thursday, June 16, 2011. It is anticipated that a final report can be prepared within three weeks of MDE Work Plan approval.

Attachment A



Advantage Environmental Consultants, LLC

Figure 1 - Site Vicinity Map
Royal Farms #96
500 Mechanics Valley Road
North East, MD

DeLORME

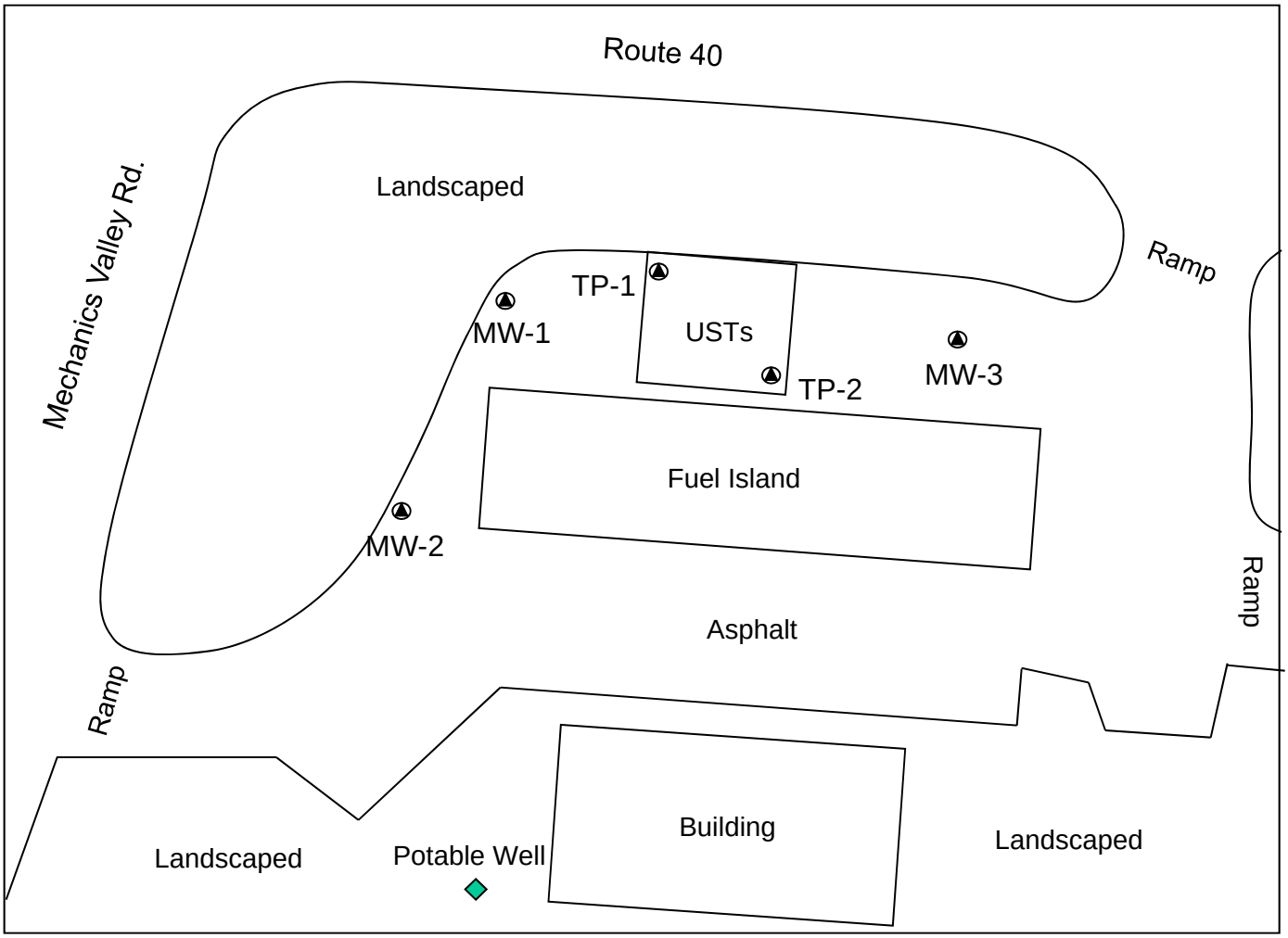
Zoom Level: 12-7 Datum: WGS84

Scale 1 : 28,125

1" = 2,343.75 ft

0 ¼ ½ ¾ 1 mi
0 ½ 1 1½ 2 km

TN
MN
11.7°W



North

Approximate Scale

0 50

Feet

Monitoring/Tank Pit Well Location

Potable Well Location

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC.

8610 Baltimore Washington Boulevard, Suite 217
Jessup, MD 20794
Phone: 301-776-0500 Fax 301-776-1123

Figure 2 - Site Map
Royal Farms Store #96
500 Mechanics Valley Road
North East, Maryland 21901

Work Order No.:	Report Date:	Drawn By:
05-056 RF096	June 2011	TER

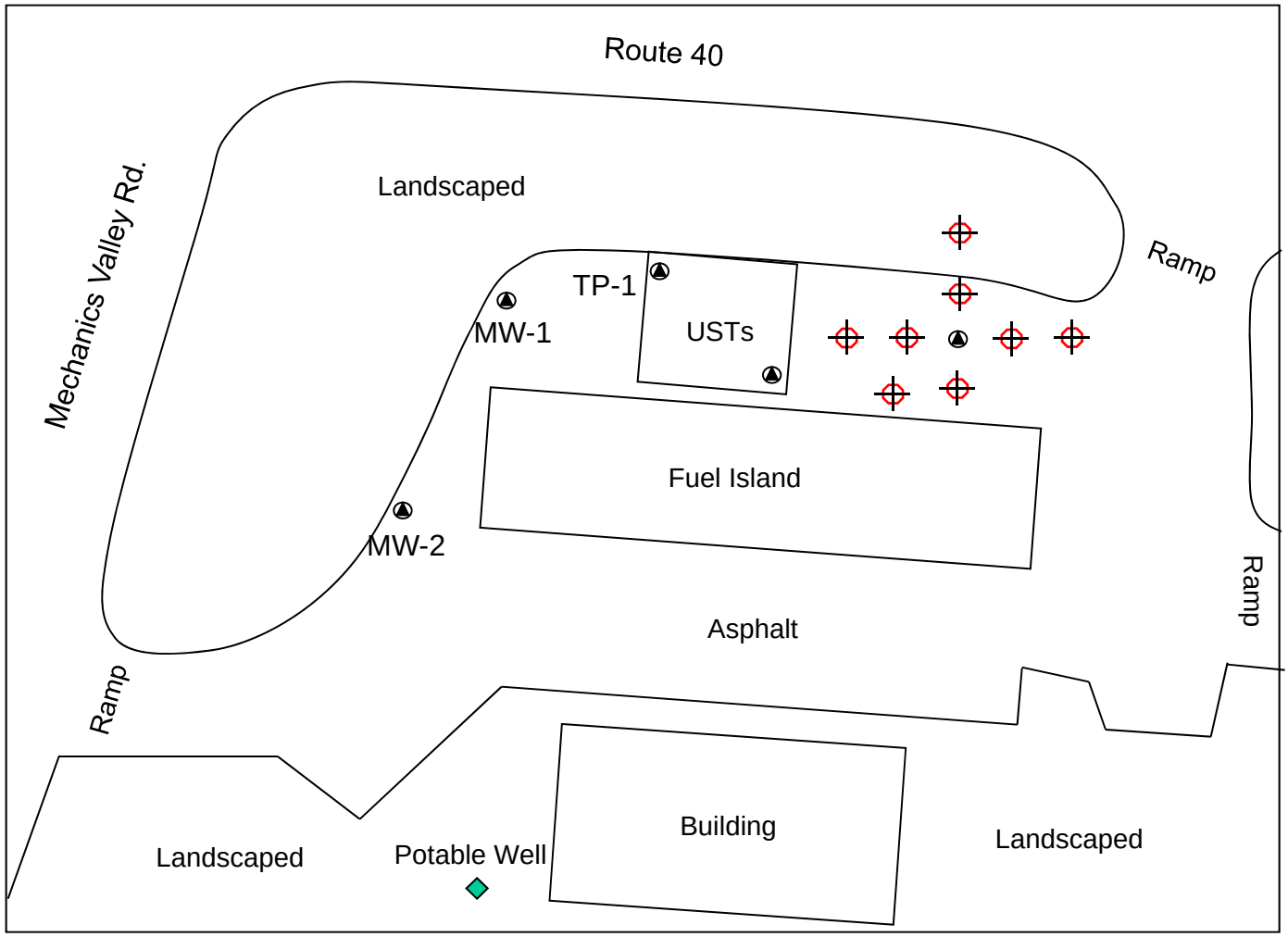


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Figure 3 – Boring Location Map
Royal Farms Store #96
500 Mechanics Valley Road
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