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December 20, 2002

Mr. Robert E. Greaves
Chief, General Operations Branch
United States Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19102

Re: Submission of Soil Investigation Work Plan for the MW-42 Area of Concern & Soil-Gas Survey Work Plan For the MW-9 & MW-25 Areas Of Interest
GE Capital Railcar Repair facility, Elkton, MD
USEPA ID # MDD 078 288 354

Dear Mr. Greaves:

On behalf of GE Railcar Services please find the enclosed three copies of the above referenced work plans prepared by RSA for the GE Railcar Repair Facility in Elkton, Maryland. For ease of review and since these projects will be scheduled concurrently both work plans have been bound in one document. The figure included in this document contains information pertaining to both work plans.

We appreciate EPA's review and comments of the work plan. If you or your staff have any questions, please contact me at (512) 707-1777 or Mike Svac of GE Rail Services at (312) 853-5474.

Sincerely,

Clyde Smith
Vice President/ Senior Hydrogeologist

Enclosures

cc: Art O'Connell, MDE, 1 copy
Mike Svac, 1 copy
Dick Stoll, 1 copy

Approval and Signature Page

MW-42 INVESTIGATION WORK PLAN
&
MW-9/MW-25 SOIL VAPOR SURVEY WORK PLAN
GE RAILCAR REPAIR SERVICES FACILITY
ELKTON, MD

Version 1   December 18, 2002
Revision 0

Approved By: Michael D. Svac ____________   12/19/02
Mike Svac, GE Capital Railcar Services   date

Approved By: ____________   12/19/02
Clyde Smith, RSA Project Manager   date

Approved By: ____________   12/20/02
R. L. Rosengarten, P.E. RSA QA Mgr   date

SOIL INVESTIGATION WORK PLAN
MW-42 AREA OF CONCERN
GENERAL ELECTRIC RAILCAR REPAIR SERVICES FACILITY
TRIUMPH INDUSTRAIL PARK
ELKTON, CECIL COUNTY, MARYLAND

prepared for:

GE Railcar Services Corporation
161 N. Clark Street
Chicago, Illinois 60601

December 2002

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INTRODUCTION & BACKGROUND

This document presents the work plan to conduct a contaminant delineation investigation (CDI) at the General Electric Railcar Repair Services (GERRS) facility located in Elkton, Cecil County, Maryland. The purpose of the CDI is to collect samples to delineate the vertical and lateral extent of contaminants found in shallow, subsurface soils in MW-42 and determine, to the extent possible, the location of the source of the VOCs. Analytical test results from the 2001 Site Investigation (2001 SI) indicated concentrations of certain volatile organic compounds (VOCs) that exceeded the Maryland Department of the Environment Residential Clean-Up Standard in the two soil samples collected from MW-42. Dissolved-phase VOCs were also detected in monitor well MW-42 at concentrations exceeding MDE standards.

FIELD PROCEDURES

Field work and all associated field procedures (i.e., soil boring installation, subsurface soil sampling, equipment decontamination, sample analyses) will be conducted in accordance with the Standard Operating Procedures (SOPs) included in the "Quality Assurance Project Plan" (QAPP), submitted for the 2001 SI project.

Soil Boring Installation

Ten soil borings will be installed as part of this investigation (Figure 1). Eight of the soil borings will be installed approximately 50 feet in distance (i.e., upgradient, downgradient, and cross-gradient) from MW-42. The ninth boring will be installed as part of the In-situ Remediation Pilot Study approximately 15 feet south of MW-42. The location of the tenth boring will be determined in the field based on the results of the previous borings. The soil borings will be advanced using a truck mounted, hollow-stem auger-rig to an approximate depth of 20 feet or until the top of the saturated water bearing unit (WBU) is encounter within the Potomac Group sediments. Upon completion, each soil boring will back filled with medium bentonite chips and hydrated with distilled water.

Subsurface Soil Sampling

During soil boring installation activities, soil samples will be collected using a core barrel that is inserted through the interior of the hollow-stem augers and advanced into the Potomac Group sediments below the bottom of the lead auger. Continuous sampling of the soil boring will be employed until the boring termination depth is encountered.

Upon recovering the core barrel from the boring, a portion of the sample will be placed immediately into a clean, resealable, plastic bag. A clean, stainless steel implement will be used to place the soil in the bag. After allowing the bag to sit for a minimum of ten minutes, the headspace in the bag will be measured with a Flame Ionization Detector (FID) and the concentration recorded on a boring log. The remainder of the soil sample will be divided with the clean implement to inspect for sedimentological content and evidence of contamination. This information will be recorded on a field boring log.

Selected soil samples from each soil boring will be collected for submission to a laboratory for testing. Sample depth intervals of the collected soil will be approximately every five feet, which will yield 4 to 5 samples per soil boring. Methods for collection of the subsurface soil samples are presented in the SOPs included in the QAPP prepared for the 2001 Site Investigation. In addition, drilling, logging and sampling of each boring will be completed under the on-site supervision of a qualified RSA geologist.

The sampling personnel will wear OSHA Level D personal protective equipment (PPE), including clean, disposable nitrile® gloves when conducting any sampling activities. The sampling team will have access to Level C PPE should work conditions warrant the upgrade as outlined in the site Health and Safety Plan (HASP) that was completed and submitted in 2001 prior to commencing the SI.

Spoils Management

Cuttings and spoils generated during the soil boring and sampling activities will be placed in clean, 55-gallon steel drums. Each drum will be labeled as to content and start/end dates of accumulation. The drums will be stage near the utility building.

Sample Testing, Handling, and Documentation

After the soil samples are collected, containerized, and labeled, they will be stored in a chilled, ice chest. The sample labels will include time and date of collection and sample location. This information will be transferred onto a chain-of-custody and request-for-analysis form. The cooler(s) will then be transported to the selected analytical laboratory.

The soil samples submitted to the selected laboratory for testing will be analyzed by using approved test methods as outlined in the U.S. EPA, Office of Solid Waste and Emergency Response document tiled "SW-846, Test Methods for Evaluating Solid Wastes." The soil samples will be analyzed for the suite of VOCs as identified in the 2001 SI.

As part of each sampling event for QA/QC purposes, one duplicate soil sample on a minimum 5% basis will be analyzed for VOCs. Blanks will be also analyzed for VOCs.

Decontamination Procedures

Subsurface drilling and sampling equipment will be decontaminated by use of a high-pressure steam-cleaner to thoroughly clean the sampling tools, drill rods, and augers after completing each soil boring. Soil inspection tools will be decontaminated with a solution of Liquinox® or Alconox® and distilled water and then rinsed with clean, distilled water after each soil boring is completed. A temporary decontamination area will be constructed for equipment washing activities. The rinsate will be transferred to 55-gallong steel drums for disposition.

Waste Management

Soil and fluids generated during this investigation will be staged in DOT-approved, 55-gallon, steel drums. Labels will be affixed to each drum describing the content (i.e., cuttings, decontamination rinsate, etc.). The disposal facility type, i.e., hazardous vs. non-hazardous, and location will be determined after evaluating analytical test results.

REPORT

After all data has been received from the laboratory and QA/QC data has been reviewed, a report presenting the results (CD) will be prepared. Analytical data will be presented in tabular format with the MDE Clean-Up Standards and USEPA Region 3 soil screening levels included for comparison. The report will also include discussions of the results with respect to source identification or location.

SCHEDULE

Field work will commence upon authorization to proceed from GE Railcar. All field activities described within this work plan should be completed within one week of arrival on site. Approximately six weeks will be required for sample analyses and data review, and another four weeks will be required to complete the draft report. Therefore, it is anticipated that the report should be submitted to EPA and MDE within 16 weeks of commencement of site activities.

SOIL-GAS SURVEY WORK PLAN
MW-9 & MW-25 AREAS OF INTEREST
GENERAL ELECTRIC RAILCAR REPAIR SERVICES FACILITY
TRIUMPH INDUSTRAIL PARK
ELKTON, CECIL COUNTY, MARYLAND

prepared for:

GE Railcar Services Corporation
161 N. Clark Street
Chicago, Illinois 60601

December 2002

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INTRODUCTION & BACKGROUND

This document presents the work plan to conduct a soil-gas survey (SGS) using active soil-gas technologies at the General Electric Railcar Repair Services (GERRS) facility located in Elkton, Cecil County, Maryland (Figure 1). The purpose of SGS is to assess portions of the facility for sources of volatile organic compounds (VOCs) identified in the head-space of MW-9 and VOCs identified in groundwater samples south of MW-25.

Based on the results of the Site Investigation (SI) conducted in 2001, these two areas of interest (AOIs) have been selected for the SGS assessment for the following reasons. First, during the SI groundwater sampling event, monitor well MW-9 had a head-space reading of 7,820 part per million by volume (ppmv). The flame ionization detector (FID) head-space reading in monitor well MW-9 may be related to the Still Bottom Disposal Area due to its close proximity (about 100 feet west), or the head-space concentration may be the result of an undiscovered source. Secondly, historical aerial photographs (September 21, 1949) indicate a building existed along the northern property boundary in the vicinity of MW-25. An SGS will provide information as to the potential for the processes associated with the building to be a source of the VOCs found in wells down-gradient of MW-25. Finally, both areas are along the northern property boundary, which coincides with the highest groundwater elevations (i.e., hydraulically upgradient portion of the property). This hydrogeological setting makes them possible receptors for migration from offsite sources to the north.

Active Soil-Gas Technology

The SGS will utilize active soil-gas technology to aid in the completion of the assessment. This technology varies widely in application and in methodology. Conceptually, small diameter boreholes are located based on a grid system and soil-gas samples from selected depth intervals are collected (i.e., pumped, purged) for analyses. A discussion of the field procedures, sample intervals, and analytical parameters is presented later in this document.

Active soil-gas technology was selected because multiple factors prove to be advantageous within both areas to be investigated. First, analytical test results of the SI have indicated that VOCs are the primary contaminants of concern (COCs) at the facility. Active soil-gas technologies are the most time efficient and cost effective when assessing VOCs. Second, sample analyses can be completed in the field. This provides real time information that can be utilized to properly direct the assessment. Finally, the geologic setting is conducive for active soil-gas technologies, as the two AOIs are underlain by sediments composed primarily of silt, sand, and gravel, with varying amounts of clay. These sedimentological features typically promote increased permeability, which increases the probability that an SGS can accurately determine VOC distribution in the vadose zone.

FIELD PROCEDURES

The following sections discuss the procedures that will be employed using the active soil-gas technology during each phase of the SGS.

Borehole Installation Procedures

The immediate vicinity around the two AOIs (i.e., MW-9 and MW-25) will be cleared of underbrush to provide access for completion of the SGS. A grid system detailing borehole installation locations will be employed to properly assess the two AOIs (Figure 1). In the vicinity of MW-9 a 5x5 grid (25 sample locations) will be used and a 3x11 grid (33 sample locations) will be used in the MW-25 vicinity. Spatially the sample locations will be approximately 20 feet square on center from one another. Variances of borehole locations may occur if obstructions such as large trees, roots, or rocks prevent installation. In such instances, the borehole location will be relocated and installed a minimum distance from the original location.

Borehole installation will be completed using a handheld Roto-hammer. A clean, dry, small diameter, hollow drive rod fitted with a detachable end point is hammered into the ground to the selected depth interval. When the selected depth interval is reached, the drive rod is pulled back approximately one inch thus detaching it from the end point. The selected depth interval is exposed and then a bentonite seal is placed at the ground surface/drive rod interface to prevent the downward migration and mixing of atmospheric gases with the selected sampling depth interval. After completion of sampling activities the drive rod is extracted from the ground to be decontaminated and the borehole is filled with bentonite to the ground surface.

Soil-Gas Sampling Interval

The U.S. Environmental Protection Agency (EPA) recommends a minimum soil-gas sampling depth of three feet below ground surface. Any sample depth intervals less can cause inaccurate soil-gas field readings and/or analytical results because of possible mixing of atmospheric gases and soil-gas. Additionally, preferential pathways (e.g., unconsolidated backfill, utilities, tree roots) and vapor impervious layers (e.g., concrete, buried pavement, perched groundwater, clay layers) can produce inaccurate results. Furthermore, vapor impervious layers can produce stacking and/or cause lateral migration of soil-gas, which could identify a false positive sample location as a source area.

For this SGS the sampling depth intervals will be three feet below ground surface to minimize the impact of technical difficulties known to produce inaccurate data. Depths will not exceed three feet below ground surface because the textural composition of the sediments in the two AOIs inherently produces an acceptable vertical permeability for active soil-gas technology.

Soil-Gas Sampling Procedures

After the drive rod installation, exposure of the sample depth interval, and sealing the drive rod/ground surface contact with bentonite, personnel will proceed to setup the sampling equipment. A length of polyethylene tubing will be attached to the top opening of the drive rod and secured with a hose clamp to prevent vapor leakage. The opposing end of the polyethylene tubing will be connected to a pump, which will provide the vacuum to draw the soil-gas from the exposed sample interval. A second length of polyethylene will be attached to the vapor effluent connection of the pump. These sampling components and sample vessels are commonly referred to as the "sample train".

Prior to initiating the vacuum pump, a five-foot radius vapor survey of ambient air, will be completed with a Flame Ionization Detector (FID). This preventative measure is an attempt to ensure VOCs detected from sampling are exclusively from the exposed sample depth interval. Once the pump is initiated, the effluent line from the pump will be placed over the intake of the FID. The FID readings will be closely observed and recorded. A small volume of the initially purged vapor passing through the FID will be ambient air. An increase in FID readings will likely indicate the ambient air has been purged through the sample train and soil-gas is being withdrawn from the exposed sample depth interval.

When purged soil-gas exhibits FID concentration readings that are elevated and/or elevated relative to surrounding sample locations, a Tedlar® bag sample will be collected and labeled. The sample will be analyzed with a field portable gas chromatograph (FPGC) for COCs. Supplementary sample locations will be added to the grid if any sample locations exhibit FID concentrations substantially greater than background concentrations. The new sample locations will be incorporated into the grid in the direction of the neighboring sample locations at half the distance (i.e., 10 feet). This will not apply if a neighboring sampling location has not been previously evaluated and/or if it has an elevated FID concentration. Upon evaluation, if a neighboring sample location exhibits background FID concentrations then the midpoint between it and the sample location with elevated FID concentrations will be sampled for delineation. Additionally, if an elevated FID concentration is detected at a sample location along the grid border then a new sample location will be placed approximately 20 feet perpendicular to that location and the grid line. This process of stepping out will continue until lateral delineation is completed.

The sampling personnel will wear OSHA Level D personal protective equipment (PPE), including clean, disposable nitrile® gloves when conducting any sampling activities. The sampling team will have access to Level C PPE should work conditions warrant the upgrade as outlined in the site Health and Safety Plan (HASP) that was completed and submitted in 2001 prior to commencing the SI.

Analytical Parameters

As reported in the 2001 SI, VOCs were identified at the subject property. During the SGS, soil-gas grab samples will be collected in Tedlar® bags if an elevated concentration is detected with the FID. The samples will be analyzed for COCs with a FPGC. A quantitative analysis will be performed with the FPGC to reaffirm if elevated concentrations detected by the FID were positive or false positive. If positive results are returned further delineation activities will be initiated as described in the previous section. Additionally, the quantitative analyses data will be used to construct a total VOCs isopleth map to provide a visual aid in determining the extent of lateral migration and source areas.

Additionally, up to 10 samples will be collected in Tedlar® bags for laboratory analyses of VOCs. These analyses will be used to confirm FPGC data and to identify. If present, GC peaks other than those present I the FPGC software database.

Decontamination Procedures

The borehole installation drive rods will be decontaminated by use of a high-pressure steam-cleaner to thoroughly clean them after each use. The drive rods will be set on a rack to air dry prior to their next use. A temporary decontamination area will be constructed for equipment washing activities. The rinsate will be transferred to 55-gallong steel drums for disposition.

Waste Management

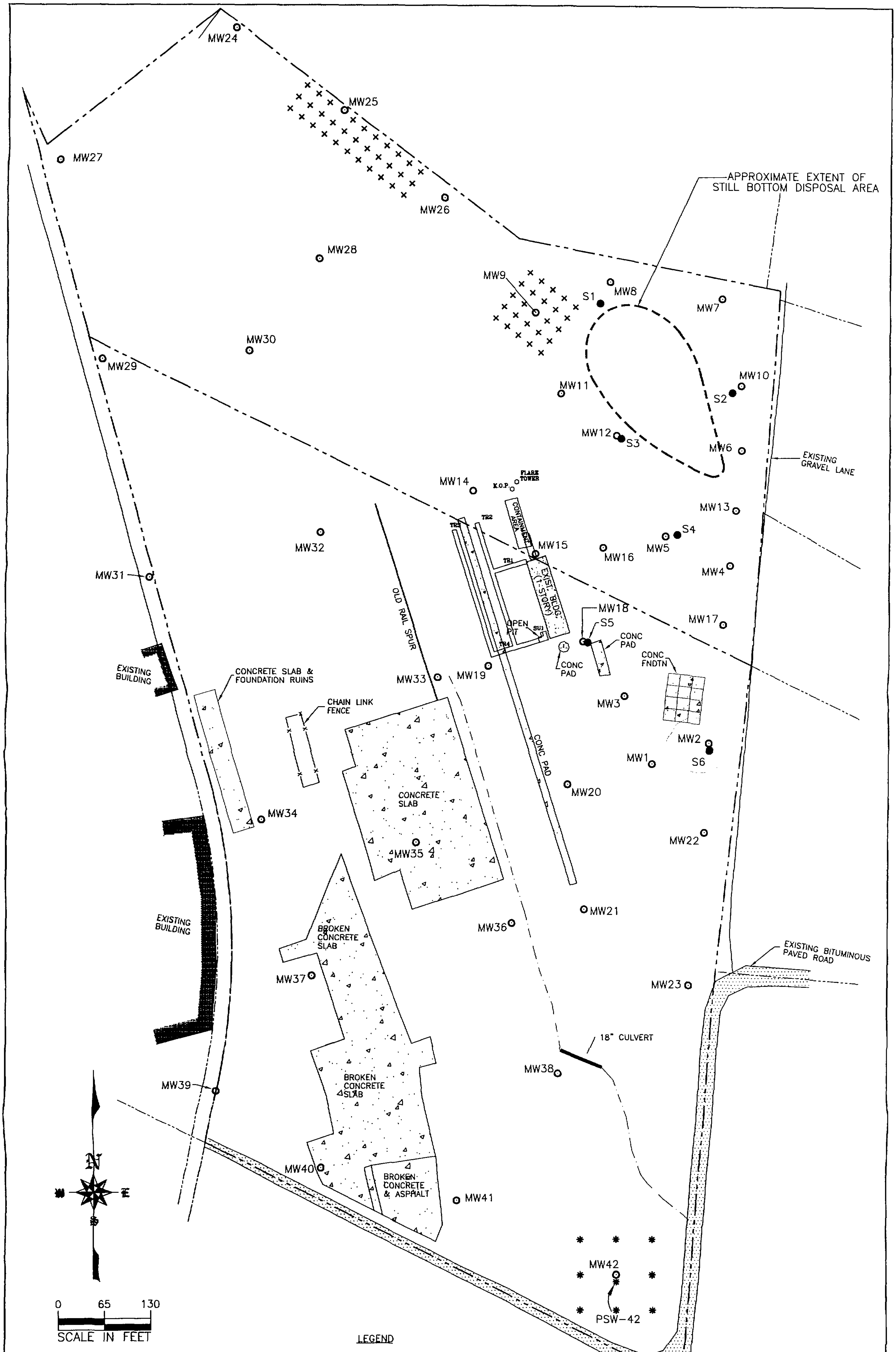
Fluids generated during this assessment from decontamination will be staged in DOT-approved, 55-gallon, steel drums. Labels will be affixed to each drum describing the content (i.e., decontamination rinsate). Drums will be staged near the utility building for later disposal.

REPORT

At the conclusion of field activities a report will be prepared that will summarize the results of the investigation.

SCHEDULE

Field work will commence upon authorization to proceed by GE Railcar. Setup and sampling should take 3 to 4 working days. Approximately six weeks will be required to receive laboratory sample results. Therefore, it is anticipated that the report will be submitted to EPA and MDE approximately 12 weeks after commencement.



LEGEND

- ⊙ MW1–MW42 POTOMAC GROUP MONITOR WELLS
- ● S1–S6 SAPROLITE MONITOR WELLS
- × SOIL-GAS SAMPLE LOCATIONS
- ✱ 9 SOIL BORING SAMPLE LOCATIONS (1 DISCRETIONARY LOCATION)
- — · — CENTRAL DRAINAGE DITCH
- —— PROPERTY LINES

DRAWN BY: TTO	C:/DWG/GE-ELKTON/2017/PS/FIG-1.DWG
DESIGNED BY: CAM	DATE: 08/30/02

NO.	DATE	REVISIONS
1	08/30/02	

RSA Rosengarten, Smith & Associates, Inc.

FIGURE 1
SOIL-GAS SURVEY
SAMPLE AND SOIL BORING LOCATION MAP
GE RAILCAR
ELKTON, MARYLAND