MAIROLL, INC.

OLD RECHARGE BASIN
EAST FARMINGDALE, NEW YORK

OLD RECHARGE BASIN BOTTOM SEDIMENT INVESTIGATION WORK PLAN

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1.0 INTRODUCTION

MAC CONSULTANTS, INC. (MAC) has prepared this scope-of-work on behalf of Mairoll Inc. to delineate the Old Recharge Basin (ORB) bottom sediment confined and re-buried during closure, buried chromium soil, and perform a soil gas survey. This delineation was discussed as one of two items the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) are seeking to support the institutional controls requirement of the closure. The other item is the deed notice NYSDEC has been working on internally with Department legal staff. The purpose of this investigation is to provide NYSDEC with the information that the Department has specifically requested and it is not intended as a pre-construction document. In the event that construction activities are undertaken by any party, it may be necessary for those parties to conduct an independent investigation where construction is to occur, in order to insure compliance with site-specific and general environmental regulations by Federal, State or local agencies.

Briefly, the bottom sediment rose to the surface as the higher density sand and gravel fill was placed in the area shown on Figure 1, prepared by Savik & Murray. The sediment was confined by surrounding it with an earthen berm to prevent spreading the sediment over a wider area. The sediment was placed in trenches shown on Figure 1 and were allowed to dry as much as possible before being buried beneath clean sand and gravel fill. Savik & Murray estimates that the sediment is approximately 5 feet below the present site grade. The limits of the buried sediment, including the trenches, were staked and surveyed by Savik & Murray, as shown on Figure 1.

When the sediment first rose to the surface of the ORB, **MAC** collected two soil samples and one water sample on August 25, 1997. These samples were sent to EcoTest labs for chemical analyses. The laboratory data sheets for the chemical analyses are provided in Appendix A. The analytical results indicated elevated concentrations of metals, PCBs and semi-volatile organic compounds (SVOCs). NYSDEC reviewed these results and concurred with the decision to bury the sediments

onsite. Since the site may be developed in the future, it is recommended that the area and depth of these sediments below grade be delineated so that if these soils are encountered, they can be properly managed.

2.0 SAMPLING PROCEDURES

2.1 Soil Sampling Procedures

A Geoprobe direct-push device will be used to bore through the soil and buried bottom sediment and will collect discrete soil samples for inspection and laboratory analyses. No composite samples will be collected. A four foot long by 2-inch outside diameter soil sampler ("macro core") will be driven from grade to the 12 feet below grade. Soil samples will be collected continuously at the 0 to 4 foot, 4 to 8 foot, and 8 to 12 foot intervals at each of the proposed locations. The proposed boring locations are shown on Figure 1 and described in detail below.

2.1.1 Buried Chromium Soil

Soils containing elevated levels of chromium are buried beneath a berm along the western boundary of the site. Twenty-eight borings will be drilled in the vicinity of the buried chromium soil to delineate the presence and depth of total chromium in the soil. The number and spacing of the borings is based upon proposed utilities in the vicinity of the buried chromium soil. The buried chromium soil and proposed boring locations are shown of Figure 1. Three soil samples per boring will be collected for laboratory analysis at the 0 to 4 foot, 4 to 8 foot, and 8 to 12 foot intervals.

2.1.2 Buried Bottom Sediment

Seventeen borings will be drilled to delineate the presence and depth of bottom sediment. The location of the buried bottom sediment and proposed boring locations are shown on Figure 1. These boring locations are based on 1997 surveyed boundaries of bottom sediment at grade. The locations may be shifted in the field, depending upon results of initial borings. Soil samples will be collected from the macro core which contains obvious bottom sediment material that is easily identified by its dark gray to black color and silty characteristics. If bottom sediment is readily identified, a boring

may be stopped at the depth the bottom sediment is found, and a sample will be collected for laboratory analysis. If no clearly identifiable bottom sediment is found, a soil sample will be collected from each cored interval to confirm absence of bottom sediment.

2.1.3 Additional Soil Sampling

The ORB has been sectioned into 13 grids. One boring will be drilled in each grid (with the exception of grids 1, 4, 5, 6, 7, and 8 that will be sampled for buried chromium soil and buried bottom sediment) to determine if the bottom sediment material is present. The grid locations and proposed boring locations are shown on Figure 1. If bottom sediment is reality identified, a boring may be stopped at the depth the bottom sediment is found, and a sample will be collected for laboratory analysis. If no clearly identifiable bottom sediment is found, a soil sample will be collected from each cored interval to confirm absence of bottom sediment.

2.1.4 Soil Disposal

Unused soil sample from the cores will be placed back in the boring from which it was recovered. If it is not possible to place the unused cores in their respective borings due to hole collapse, they will be containerized for off-site disposal.

2.1.5 Decontamination

The Geoprobe drill rods and other equipment coming in contact with the soil will be cleaned with Alconox and double rinsed between each use.

2.2 Soil Gas Survey

A soil gas survey will be performed to address the potential presence of volatile organic compounds

(VOCs) in the soil gas. One soil gas sample will be collected from each grid as shown on Figure 1. A vehicle-mounted Geoprobe unit will be used to perform the soil gas survey at the respective locations.

The probe rods and an expendable drive point will be driven to 4 feet below grade. Once the drive point is set at the 4 foot depth, the probe rods will be retracted approximately 3 to 4 inches to create a void which will allow the migration of the soil vapor sample into the bottom of the borehole. A clean, ¼" polyethylene tube will then be attached to the bottom of the lead probe rod. The line will be purged by drawing soil gas / vapor through the tubing using a vacuum pump.

The tubing will then disconnected from the vacuum pump and attached to a Photoionization Detector (PID) to detect the presence of VOC vapors. A sample will also be extracted by vacuum into a Tedlar bag.

The probe rods and sample equipment will be cleaned with Alconox and double rinsed between each use.

2.3 Health and Safety

A Health and Safety Plan (HASP) for the soil sampling was developed to address the protection of **MAC** workers and public health and safety; and respond to contingencies that could impact public health, safety and the environment during the investigation. The HASP shall satisfy the requirements of the "Occupational Safety and Health Guidance for Hazardous Waste Site Activities", (October 1985, DHH 5 NIOSH Publication No. 85-115), and the Occupational Safety and Health Administration, U.S. Department of Labor ("OSHA") requirements cited below.

Site activities such as inspection and investigation activities shall be performed to ensure the safety and health of personnel and shall be conducted in accordance with the pertinent general industry (29

CFR 1910) and construction (29 CFR 1926) OSHA standards, as well as any other applicable State and municipal codes or ordinances. All site activities shall comply with those requirements set forth in OSHA's March 6, 1989 Final Rule entitled "Hazardous Waste Operations and Emergency Response", 29 CFR 1910.120, Subpart H.

The HASP is included in Appendix B.

3.0 LABORATORY ANALYSIS

Chemtech Laboratories of Mountainside, New Jersey will analyze the samples collected from all Geoprobe borings and soil gas survey locations. A Data Usability Summary Report (DUSR) will be prepared under the requirement for the NYSDEC ASP Catagory B deliverables. Chemtech is a ELAP and CLP New York State certified laboratory.

3.1 Buried Chromium Soil

Soil samples collected as part of the buried chromium soil investigation will be analyzed for total chromium. Additional sample will be collected so that the ten highest total chromium samples can be analyzed for TCLP total chromium.

3.2 Buried Bottom Sediment

Soil samples collected as part of the buried bottom sediment investigation will be analyzed for VOCs using USEPA Method 8260, SVOCs using USEPA Method 8270, PCBs using Method 8082, and Target Analyte List metals using Method 6010.

3.3 Additional Soil Sampling

Soil samples collected as part of the additional soil sampling investigation will be analyzed for PCBs using Method 8082.

3.4 Soil Gas

Air samples collected during the soil gas survey will be analyzed for VOCs using Method 8260.

4.0 QUALITY ASSURANCE PROJECT PLAN

The quality assurance (QA) objective is to develop and implement procedures for sampling, laboratory analyses, field measurements, and reporting that will provide quality data consistent with it's intended use. This section defines the goals for levels of quality control (QC) effort.

4.1 Quality Control

Duplicate samples, field blanks, and trip blanks will be collected and submitted to the analytical laboratory to provide a means to assess the quality of the data resulting from the field sampling program. A field duplicate sample will be analyzed for sampling and analytical reproducibility. Trip blank samples will be analyzed to assess cross-contamination caused by VOC migration during shipment and storage. QC effort will consist of one duplicate sample for every 20 samples and a trip blank with each shipment of soil samples to the laboratory. Deionized water used for trip blanks will be demonstrated analyte-free for parameters of interest by laboratory analysis.

4.2 Quality Control Requirements

Field quality control will be maintained during all field activities. All field quality control procedures will be carried out according to this Quality Assurance Project Plan and will be documented in bound ledgers.

4.2.1 Field Duplicates

A Matrix Spike (MS) sample will be collected for every 20 samples collected.

4.2.2 Trip Blanks

Each sample shipment containing aqueous samples for VOC analysis will contain one trip blank for VOC analysis. The trip blank will consist of two 40 ml VOA vials with laboratory grade distilled water, prepared by the laboratory, transported to the field, and shipped with the other samples to the laboratory without being opened.

5.0 SCHEDULE

The Geoprobe soil borings and soil gas survey will take six to seven days to complete, depending on underground obstacles encountered during drilling. Laboratory turnaround of five days will be ordered for all parameters. The report will be completed within two weeks of receipt of all laboratory data and receipt of the surveyed soil boring and soil gas survey locations.

6.0 DATA REVIEW AND REPORT

MAC will prepare a concise narrative of the Geoprobe soil borings, the soil sampling, soil gas survey, field description of soil samples, and other observations. Soil boring logs with sampling depth notations will be appended to the report.

The laboratory results will be reviewed and tabulated, referencing the New York State TAGM guidance for soils. The laboratory results table will indicate the depths at which the individual samples were collected.

The field and laboratory data will be used to prepare a map showing the area of and depth to bottom sediment. It may not be possible to penetrate the full thickness of bottom sediment because the ORB fill contains demolished concrete fill. The main objective of this investigation is to determine the depth to the bottom sediment rather than the thickness, because it is the depth that should be known as a precaution in the face of future construction.

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