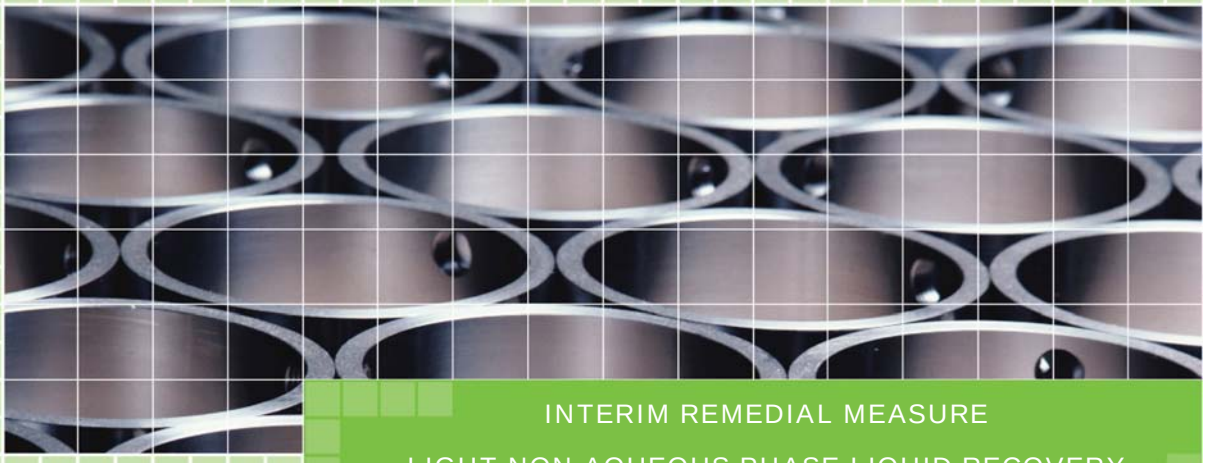

INTERIM REMEDIAL MEASURE
LIGHT NON-AQUEOUS PHASE LIQUID RECOVERY
CONSTRUCTION COMPLETION REPORT
FORMER ROLLWAY BEARING CORPORATION. FACILITY
LIVERPOOL, NEW YORK

Site No. V-1007-96-10

June 26, 2009

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Engineering Certification

ENGINEER'S CERTIFICATION
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I, Todd M. Musterait, P.E., hereby certify, as a Professional Engineer registered in the State of New York, that based on WSP Engineering of New York, P.C.'s observation of the remedial construction activities conducted by the remedial contractor, Remediation Services, Inc., the remedial construction activities were completed in substantial conformance with the requirements presented in the following documents and/or approved field changes detailed in this Construction Completion Report:

- Voluntary Cleanup Agreement (VCA), No. V7-1007-96-10, April 24, 2001.

- NYSDEC and NYSDOH-approved IRM Work Plan (ESC Engineering, 2006).

Todd M. Musterait, P.E.
New York State P.E. No. 076923

6-8-09
Date

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1 Introduction

1.1 GENERAL

On behalf of Emerson Electric Co., WSP Engineering of New York, P.C. (WSP Engineering) has prepared this Construction Completion Report for the Interim Remedial Measure (IRM) installed at the former Rollway Bearing facility in Liverpool, New York (Figure 1). This report is being submitted to the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) to serve as documentation that the IRM activities were completed in substantial conformance with the requirements identified in the following documents and approved field changes detailed in this report:

- The April 24, 2001, Voluntary Cleanup Agreement (No. V7-1007-96-10) between Emerson Electric Company, Rollway Bearing Corporation, and the NYSDEC.
- The NYSDEC and NYSDOH-approved IRM Work Plan (ESC Engineering, 2006); and the NYSDEC's approval letter, dated May 24, 2006.

The IRM consisted of installing a Light Non-Aqueous Phase Liquid (LNAPL) recovery system to facilitate the removal of measurable LNAPL in the subsurface of the former heat treat area of the facility (Figure 2). The LNAPL recovery system was designed to, and will be operated and maintained to, attempt to meet this cleanup goal. The system currently includes four wells that exhibited the greatest volume of recoverable LNAPL during previous pilot testing activities. However, WSP Engineering will continue to monitor and remove measurable LNAPL from surrounding wells in the heat treat area, per the NYSDEC's approval letter. Based on the LNAPL measurements from these wells, WSP Engineering will evaluate whether additional wells should be incorporated into the system to achieve the remedial objective. Emerson considered the possibility that it may be technically impracticable to meet a cleanup objective of no measurable LNAPL when the remedial action work plan for the site was submitted to the NYSDEC in May 2000. The work plan, which was approved by the NYSDEC, stated that Emerson reserved the right to petition the NYSDEC for site closure if the application of available technologies is unable to remove all measurable LNAPL.

All construction and site work associated with the IRM was completed in accordance with applicable federal, state, and local laws and regulations. All monitoring activities discussed herein were conducted in accordance with WSP Engineering's standard operating procedures.

The purpose and organization of this IRM Construction Completion Report is described below, followed by a discussion of general background information relating to the site and the IRM activities.

1.2 PURPOSE AND ORGANIZATION OF REPORT

This Construction Completion Report provides a detailed description of the construction activities and as-built engineering drawings of the LNAPL recovery system installed at the site. The report has been organized into the following sections:

- Section 1 – Introduction
- Section 2 – Description of IRM Activities
- Section 3 – Operation and Maintenance
- Section 4 – References
- Section 5 – Acronyms

In addition to the above, as-built drawings are presented in Appendix A.

1.3 SITE LOCATION AND DESCRIPTION

The former Rollway Bearing facility is located at 7600 Morgan Road in Liverpool, New York, and consists of a plant building with 220,000 square feet of space on an 80-acre site (Figure 2). Approximately 40 acres of the site are undeveloped and include woods, brush, and a wetland area. The developed 40 acres contain the plant building, parking lots, lawn areas, and a former hazardous waste storage shed. The plant was constructed in 1963 for Rollway Bearing. Before 1963, the property was reportedly used for agriculture. The former heat treat department area is located in the southeastern portion of the plant building (Figure 2). Emerson terminated site operations in the fall of 2002 and sold the Rollway Bearing property to Emerald Equipment Systems, Inc., in the summer of 2005.

The former Rollway Bearing property is located in an area characterized primarily by commercial and light industrial properties. North of the property are a residential property, American Granby (distributor of pump, well, irrigation, plumbing and pool products), Family Video (video tape and disc rental), vacant land, Wine Merchants Ltd (wine and distilled alcoholic beverage wholesaler), General Interior Systems (interior design services), Hertz Equipment Rental (commercial and industrial machinery and equipment rental and leasing company), a construction company, and Buckley Road. East of the property are railroad tracks, National Tractor Training School, a beverage distributor, and Macsteel (producer and distributor of stainless, aluminum, and carbon flat rolled metal). South of the property are Drescher Corp. (food redistribution company), Warner Energy (technical consulting services), Paul De Lima Company, Inc. (headquarters for a coffee and tea manufacturing company), and vacant land. West of the property is Morgan Road, and further west are residences, a credit union, an elementary school, dentist offices, a church, Ryco Information Services (a title abstract office), EOS Software (computer programming services), apartments, and a gas station and convenience store.

1.4 PREVIOUS INVESTIGATIONS

1.4.1 Site Geology

The subsurface geology below the heat treat area is complex. Approximately 8 to 12 feet of unconsolidated sediments overlie approximately 4 to 7 feet of weathered shale. The weathered shale transitions to more competent shale bedrock at depths from 8 to 15 feet below ground surface (bgs). The unconsolidated sediments consist primarily of discontinuous layers of silt and silt with gravel. However, a thin layer of organic-rich silt was identified in borings SB-3 and SB-4, which may represent the original grade before the site was developed. Gravelly sand fill material was identified in SB-1 that extends from the base of the concrete slab to a depth of approximately 7 feet bgs. The fill material may be related to the installation of below grade piping in the area. Cross-sections showing the subsurface geology below the heat treat area are presented in Figures 5 and 6. Perched groundwater is present within the weathered shale in the vicinity of the heat treat department at depths from approximately 12 to 14 feet bgs. Wells within the heat treat contain less than 1.5 feet of water. In addition, the depth to groundwater varies over short horizontal distances, which indicates that fractures within the weathered shale are not laterally continuous.

1.4.2 Historical Light Non-Aqueous Phase Liquid Delineation Activities

In April 1999, WSP Engineering observed a thin layer of LNAPL (i.e., less than 2 inches) on the groundwater surface in MW-4 (Figure 3). To evaluate the potential source of the LNAPL, WSP Engineering reviewed architectural drawings for the heat treat department, interviewed facility personnel, and inspected visible portions of the quench oil system. During the interviews, facility personnel reported that a quench oil release occurred from the gravity return line during the first 2 or 3 years that the facility was in operation (i.e., 1963-66). The quench oil return line is located 6 to 8 feet bgs and slopes toward

the sump pits in the southern portion of the former heat treat department (Figure 3). Reportedly, the release was caused by the failure of the seals between sections of the return line. The return line was reportedly excavated and repaired or replaced; however, no remediation was conducted. Currently, two joints in the return line are enclosed in cinderblock vaults, which were recently filled with concrete during renovation of the former heat treat area.

In May and June 1999, WSP Engineering drilled 26 soil borings to delineate the extent of LNAPL in the heat treat area (Figure 3). Small-diameter monitoring wells (i.e., miniwells) were installed in 12 borings that encountered perched water or LNAPL above the competent bedrock. The miniwells consisted of 5 to 10-foot-long threaded sections of 1-inch inside diameter (ID) machine-slotted (0.010-inch) schedule 40 polyvinyl chloride (PVC) screen and blank casing. The wells were completed with flush-mount protective covers. Based on the results of the delineation activities, LNAPL was observed only within the weathered shale at depths from 10.8 feet (SB-3) to 15.5 feet (SB-10) bgs. Typically, the perched water and LNAPL were encountered in two separate 6 to 10-inch-thick zones in the lower portion of the weathered shale, approximately 2 to 3 feet above the competent bedrock. These zones were often highly fractured and separated by dense weathered shale or a clayey silt layer. WSP Engineering measured the apparent LNAPL thickness in the 12 miniwells on three occasions in May and June 1999. The apparent LNAPL thickness ranged from less than 0.01 foot in SB-3 to 1.19 feet in SB-4. The measurements indicated that measurable LNAPL was present under a portion of the heat treat department and in a limited area outside the building in the vicinity of MW-4. The greatest apparent thickness was observed near the quench oil return line.

1.4.3 Initial LNAPL Recovery Pilot Test Activities

In July 2003, WSP Engineering submitted a Pilot Test Summary Report to the NYSDEC that provided a detailed summary of the LNAPL recovery pilot test activities performed at the site from September 2001 through February 2003. The pilot test activities summarized in the July 2003 report included baildown tests to assess LNAPL recovery rates within the LNAPL plume area, installing recovery wells RW-1 and RW-2, installing observation wells OW-1 through OW-3, conducting tests to evaluate the performance of LNAPL recovery systems manufactured by Xitech Instruments, Inc., and QED Environmental Systems, Inc., evaluating vacuum radius of influence in the RW-1 area, and measuring LNAPL thicknesses on numerous occasions. Based on the results of the initial pilot test activities, WSP Engineering developed the following conclusions:

- The subsurface geology below the heat treat area is complex. Approximately 8 to 12 feet of unconsolidated sediments overlie approximately 4 to 7 feet of weathered shale. The weathered shale transitions to more competent shale bedrock at depths from 8 to 15 feet bgs.
- Perched groundwater and LNAPL occur along fractures and partings within the weathered shale interval at depths from approximately 12 to 14 feet bgs. Because the LNAPL occurs in fractures and partings, rather than as a “pool” of LNAPL on the water table, LNAPL is likely present in only a small fraction of the total “plume” area.
- Based on the vacuum test results and the observed difference in groundwater elevations and LNAPL thicknesses over short horizontal distances, fractures within the weathered shale are not laterally continuous. As a result, LNAPL may occur as isolated pockets with limited volumes.
- The vacuum test results indicate that no appreciable radius of influence (i.e., greater than approximately 1.5 feet) can be established in the RW-1 and RW-2 areas. Therefore, it may not be practical to create overlapping areas of influence throughout the entire area containing measurable LNAPL.
- No appreciable vacuum (i.e., less than 2 inches of water) could be applied to OW-2 and OW-3 using a blower with a maximum vacuum of 28.3 feet of water. Therefore, these wells appear to penetrate highly permeable materials that may be short-circuiting to the atmosphere.

- An applied vacuum enhanced the flow of LNAPL into wells RW-1, OW-2, OW-3, and SB-4.
- Only trace LNAPL entered recovery well RW-2 under gravity conditions and no increase in LNAPL thickness was noted as a result of an applied vacuum. Therefore, no further remediation is warranted in the RW-2 area.
- The Xitech pump was not an appropriate recovery technology for the site because the float mechanism could not be accurately adjusted to remove a thin layer of LNAPL.
- The QED Ferret Pump showed initial promise in recovering LNAPL under gravity conditions and under an applied vacuum. However, as discussed below, subsequent pilot tests indicated that the QED system would not reliably recover LNAPL due to fluctuations in the groundwater table and difficulties in positioning the pump intake.

Based on the results of the initial pilot test activities, WSP Engineering recommended conducting additional investigation and pilot test activities at the site. These activities included pumping and bailing LNAPL from RW-1, OW-2, OW-3, and SB-4 and monitoring LNAPL recovery to verify that sufficient LNAPL was present near these wells to warrant incorporating them into the full-scale system. In addition, four observation wells were installed to further define the horizontal extent of LNAPL in the vicinity of RW-1. As discussed above, only trace LNAPL entered RW-2 under vacuum conditions or under an applied vacuum. In addition, only a very thin layer of LNAPL (i.e., 0.03 foot) was present in nearby SB-7. Therefore, WSP Engineering concluded that no further remediation is warranted at RW-2. The recommended additional investigation and pilot test activities were conducted from August 2003 through October 2004. A description of the activities and a discussion of the results are presented below.

1.4.4 Additional LNAPL Recovery Pilot Test Activities

On August 26 and 27, 2003, WSP Engineering installed four 2-inch ID PVC observation wells in the heat treat area at the locations designated OW-4 through OW-7 on Figure 3. The monitoring wells were installed to further delineate the horizontal extent of LNAPL in the vicinity of recovery well RW-1. The monitoring wells were installed to depths of 16.5 to 18 feet below grade with 5 feet of 0.040-inch continuous wrap PVC screen and a no. 2 sand filter pack. The screened intervals of the observation wells were consistent with RW-1 and SB-1. Each well was constructed with a 2.5 to 3-foot-long section of blank casing below the screen to serve as a sump so that the pump intake could be positioned at the water table when the water level was near the bottom of the screened interval. The annular space between the PVC sump and surrounding bedrock was sealed with bentonite pellets hydrated with potable water. Each well was completed with a flush-mounted protective manhole cover. Boring logs and as-built diagrams for OW-4, OW-5, OW-6, and OW-7 are included in Appendix B.

On September 4, 2003, WSP Engineering measured the depth-to-LNAPL and depth-to-water in SB-1, SB-3, SB-4, SB-5, SB-7, SB-8, SB-9, SB-10, MW-4, RW-1, RW-2, and OW-1 through OW-7 to determine the distribution and thickness of LNAPL under the heat treat area (Table 1). The LNAPL measurements indicated that no measurable LNAPL was present in SB-3, RW-2, OW-1, OW-2, OW-4, OW-5, OW-6, and OW-7. The apparent LNAPL thickness in the remaining wells ranged from 0.01 foot in SB-7 and SB-9 to 0.92 foot in OW-3. As discussed in the pilot test summary report, LNAPL occurs primarily in the vicinity of SB-4 and RW-1.

On September 11 and 15, 2003, WSP Engineering attempted to apply a vacuum to RW-1, SB-4, OW-2, and OW-3 and initiate manual LNAPL removal from these wells. The purpose of the LNAPL removal activities was to verify that sufficient LNAPL was present in the vicinity of these wells to warrant incorporating them into the full-scale system. These wells were identified during the first phase of testing as the wells containing the greatest volume of recoverable LNAPL. However, the LNAPL removal activities were suspended in September 2003 because the regional groundwater table had dropped to a level below the screened intervals of the wells. On January 9, 2004, WSP Engineering resumed the pilot test activities by applying a vacuum to RW-1 (5 inches of water), SB-4 (1.5 inches of water), OW-2 (2

inches of water), and OW-3 (3 inches of water) using a vacuum blower. WSP Engineering then periodically measured the LNAPL thickness in each well with an electronic oil/water interface probe and measured the vacuum influence in nearby wells OW-1, OW-4 through OW-7, and SB-1. WSP Engineering visited the site on January 15 and 22, February 4, 12, 15, and 25, 2004, to measure the LNAPL thickness and vacuum influence. After measuring the LNAPL thickness during each visit, a bailer or peristaltic pump was used to remove as much LNAPL as possible from the wells and then the vacuum was re-connected to the wells. The LNAPL thickness measurements from each well are presented in Table 1.

As reported in the First Quarter 2004 Progress Report, dated May 17, 2004, WSP Engineering initiated LNAPL recovery at the site on April 19, 2004, by re-installing the QED product-skimming pump in RW-1. All vacuum and LNAPL tubing and LNAPL containment drums were placed above grade in the heat treat department. WSP Engineering periodically visited the site during April, May, and June 2004 to monitor the performance of the LNAPL recovery system. Initially, the pump performed as expected and removed only LNAPL. However, the pump began to recover primarily water and the position of the pump intake could not be accurately adjusted to reliably recover LNAPL. After several discussions with the manufacturer, and the cleaning and replacement of select parts, the pump was shipped back to the manufacturer in late July 2004 for further troubleshooting. The pump was reinstalled in RW-1 in late August 2004 and continued to operate until October 2004 when additional equipment problems occurred and the pilot test activities were terminated. Based on the results of the additional pilot tests, WSP Engineering concluded that the QED pump is not applicable to the Rollway site. Furthermore, WSP Engineering conducted a literature review and determined that no other LNAPL-only pumping systems are commercially available that would reliably recover LNAPL at the site.

2 Description of IRM Activities

2.1 IRM OBJECTIVE AND COMPONENTS

The objective of the IRM at the site, as identified in the IRM Work Plan, consists of removing measurable LNAPL from the subsurface in the former heat treat area of the facility. Presented below are the main components of the IRM activities that were implemented at the former Rollway Bearing facility to achieve this objective:

- installed observation well OW-8 adjacent to SB-4 to allow LNAPL removal in this area using a vacuum truck
- installed a centralized vacuum blower system in an 8-foot by 10-foot enclosure erected inside the former heat treat area
- installed subsurface vacuum conveyance piping from the LNAPL recovery system enclosure to recovery wells OW-2, RW-1, OW-3, and OW-8 (Sheet 2)
- managed and disposed of waste materials generated during implementation of the IRM activities in accordance with applicable rules and regulations
- conducted system start-up and operation and maintenance activities

A detailed description of each of these IRM activities is presented below.

2.2 LNAPL RECOVERY SYSTEM INSTALLATION

This section presents a detailed description of the LNAPL recovery system installation activities. During installation of the LNAPL recovery system, the NYSDEC provided a field representative during the initial day of the IRM activities, and WSP Engineering provided full-time engineering services to observe the work performed by the remedial contractor, Remediation Services, Inc. (RSI), and ensure substantial conformance with the NYSDEC and NYSDOH-approved IRM Work Plan.

WSP Engineering conducted the following activities during the installation of the LNAPL recovery system:

- reviewed contractor submittals for adequacy relative to the requirements presented in the NYSDEC and NYSDOH-approved IRM Work Plan
- coordinated with Emerson, NYSDEC, Emerald, and contractors, as detailed herein, regarding the IRM activities
- maintained detailed written records of the field activities performed by the contractor, including documentation of field conditions encountered
- observed the work performed by the contractor for the duration of the IRM for substantial conformance with the NYSDEC and NYSDOH-approved IRM Work Plan
- conducted air monitoring in accordance with the procedures and requirements set forth in WSP Engineering's Health and Safety Plan
- characterized waste generated during implementation of the IRM for offsite disposal
- signed bills-of-lading on behalf of Emerson

2.2.1 Well Installation

A 4-inch ID PVC observation well, OW-8, was installed to facilitate the recovery of LNAPL in the area of the 1-inch ID well, SB-4 (Sheet 2). The well boring was advanced to a depth of 17.5 feet bgs using

hollow-stem auger and air rotary drilling techniques. The well was constructed with a 3-foot-long section of blank casing below the screen to serve as a sump so that LNAPL can continue to accumulate in the well when the groundwater level is near the bottom of the screened interval. The annular space between the PVC sump and surrounding bedrock was sealed with bentonite pellets hydrated with potable water. The observation well was installed with 5 feet of 0.040-inch continuous wrap PVC screen from 9.5 feet to 14.5 feet bgs to correspond with the construction of SB-4. A no. 2 sand filter pack was placed from 15 feet to 8 feet bgs followed by hydrated bentonite pellets from 8 feet to 1 foot bgs. After the bentonite pellets were allowed to hydrate, a concrete flush-mount protective cover was completed around OW-8. Due to approximately 3.5 feet of oily residue observed on the augers after reaming the borehole, the decision was made to forgo the development of the well. The soil boring log and as-built diagram for OW-8 is presented in Appendix B.

2.2.2 LNAPL Recovery System Piping Installation

The piping layout for the LNAPL recovery system was based on existing concrete-lined floor trenches in close proximity to the recovery wells and the LNAPL recovery system enclosure location designated by Emerald. In addition, sections of concrete-lined trenches previously backfilled and capped with concrete by Emerald were excavated for reuse. Excavation was completed using a mini-excavator and skid-steer. After excavating the trenches, the main vacuum conveyance pipe header was installed between OW-8 and the vacuum blower on the LNAPL recovery system skid. The main conveyance pipe header from the OW-8 lateral to the vacuum blower measured approximately 108-feet in length. Each extraction well was connected to the main header by an approximately 3-foot long lateral. The galvanized steel conveyance piping was underlain by 4-inches of sand, overlain by approximately 4-inches of crusher-run stone, and capped with approximately 4-inches of concrete (Sheet 4). Exhaust piping was routed from the outlet of the LNAPL recovery skid to approximately 1.5-feet above the facility roof-line. All vacuum conveyance and exhaust piping consisted of 1.5-inch nominal diameter galvanized steel. The 1.5-inch nominal diameter steel piping was chosen to maximize in-pipe velocities while minimizing the total dynamic head for the conveyed air from the recovery wells to the vacuum blower. As a result, the design vacuum for each recovery well was met and adequate vacuum is available if an addition recovery well(s) is necessary.

2.2.3 Well-Vault and Wellhead Installation

Due to the current heavy equipment traffic in the former heat treat area, 2-foot by 2-foot, traffic-rated well-vaults were installed at each extraction well. Each well-vault contains a gate valve, ball valve, a flow meter, Teflon® tubing, and a vacuum gauge in line between the header and well (Sheet 4). The gate valve and ball valve are used to control the vacuum and flow. The ball valve, or “dilution valve,” allows ambient air to enter the system to decrease the flow and vacuum from the respective well, if necessary. Similarly, the gate valve restricts the flow and vacuum on the wellhead by reducing the lateral conveyance pipe diameter at the entrance to each well vault. In conjunction, the two valves allow WSP Engineering to precisely adjust the vacuum applied to each extraction well.

Vacuum gauges, 0 to 15-inches of water column (WC), were installed on the well casing to observe the vacuum applied to each extraction well. Flow meters, 2 to 20 standard cubic feet per minute (scfm), were also installed between the wellhead and ball valve. Both the vacuum gauges and flow meters are used to regulate the applied vacuum to each wellhead. The fabricated PVC well-caps are equipped with compression fittings to allow the 0.5-inch ID Teflon® tubing to quickly disconnect from the well-cap prior to product pump-outs. Teflon® tubing was installed because of its semi-rigidity and flexibility which allows for easy use of the quick disconnect. A 1.25-inch ID plug in the center of the well-cap provides access for pump-outs.

2.2.4 LNAPL Recovery System Skid Installation

On completion of the pipe installation activities, an 8-foot by 10-foot LNAPL recovery system enclosure was constructed around the 4-foot by 4-foot LNAPL recovery system skid pre-fabricated by Mid-Atlantic Environmental Equipment, Inc. (Sheet 4). The LNAPL recovery system enclosure was built to limit access to the equipment and act as a sound barrier. The LNAPL recovery system is comprised of a 30-gallon vapor-liquid separator (VLS), a 2 horsepower vacuum blower, a 10-micron air filter, a dilution valve with 10-micron air filter, vacuum indicators, a temperature indicator, and a pressure indicator.

A vacuum blower capable of producing 40 scfm at 37" WC was installed for the LNAPL recovery system application. Expected inlet losses through the system were approximately 15" WC, which left an appreciable 27" WC vacuum to be applied to the recovery wells. Inlet and outlet vacuum gauges allow for observation of inlet losses through the 30-gallon VLS and the 10-micron air filter. The dilution valve is used in conjunction with the wellhead equipment to adjust the vacuum at the inlet of the vacuum blower to ensure the blower is operating within the manufacturer's specified vacuum ranges. The exhaust stack pressure is used to indicate if there is back pressure buildup which normally signifies a blockage in the piping. The exhaust temperature gauge is used to determine whether or not the vacuum blower is running at manufacturer specified operating temperatures.

2.2.5 Waste Material Management

Approximately 40 cubic yards of soil and concrete debris were generated from the trenching activities. The soil and concrete debris were temporarily stockpiled inside the facility on poly-sheeting and were then loaded into a roll-off container with a skid-steer. A composite sample was collected on May, 14, 2008, to characterize the material for offsite disposal or treatment. The sample was submitted to TestAmerica Laboratories, Inc., in Buffalo, New York, for analysis of VOCs by the Toxicity Characteristic Leaching Procedure (TCLP), metals by TCLP, polychlorinated biphenyls (PCBs), and percent moisture. The analytical results demonstrated that the material did not exhibit a hazardous characteristic. A copy of the analytical results is presented in Appendix C. Based on the analytical results, the excavated soil and concrete debris was transported to the High Acres Landfill in Fairport, New York, for disposal as a non-hazardous waste. A copy of the non-hazardous waste bill-of-lading is provided in Appendix D.

2.2.6 Site Restoration

The surface of the LNAPL recovery system trenches were restored by pouring 4-inches of concrete level with the surrounding concrete and sealing the seams with polyurethane sealant. The concrete floors in the former heat treat area were thoroughly swept to remove soil and concrete debris. All debris was then transferred to the roll-off container for subsequent offsite disposal with the soil and concrete debris.

3 Operation and Maintenance

After installing the LNAPL recovery system, start-up and testing activities were performed on May 20, 2008, before initiating full-scale (normal) operations. A description of the start-up activities is presented below followed by a discussion of the operation and maintenance activities.

3.1 SYSTEM START-UP

After the vacuum system was installed, each system component, as well as the entire system, was inspected and tested to ensure proper performance. The vacuum blower and appurtenances were tested on May 16, 2008, to ensure proper rotation of the blower. The vacuum was then introduced through the vacuum line. WSP Engineering observed that the vacuum indicators and flow meters were operational and that there were no leaks in the system. Following the systematic check of the system, WSP Engineering shut the system down.

On May 20, 2008, WSP Engineering personnel adjusted the system to minimize groundwater upwelling while maximizing product recovery. Before the system was restarted, WSP Engineering obtained initial water level and LNAPL thickness measurements from the extraction wells and surrounding wells (RW-1, RW-2, OW-1 through OW-7, replacement well OW-8, SB-1, SB-3, SB-7 through SB-10, and MW-4). After completing the measurements, WSP began adjustment of each extraction well. Using the gate and ball valves, each well was set at a vacuum which upwelled the groundwater no more than 6-inches below the top of the screened interval. If the groundwater was significantly below the top of the screen, WSP limited the amount of upwelling to 6-inches above the static groundwater level measured prior to startup. WSP restricted the upwelling in each well to prevent the creation of a steep hydraulic gradient which would inhibit the recovery of LNAPL from the surrounding formation.

Once all four extraction wells were set at the preliminary vacuum, WSP personnel rechecked the vacuum and flow readings at each extraction well and made adjustments as necessary. Final vacuum and flow readings at each extraction well, and system telemetry readings, were then recorded and the system was left operational overnight. On May 21, 2008, WSP obtained post-startup water level and LNAPL thickness measurements from the extraction wells and surrounding wells. The extraction wells were measured after the system had been off for approximately 15 minutes. After measurements were completed, the system was restarted and remained operational until the first product pump-out.

3.2 SYSTEM OPERATION AND PERFORMANCE MONITORING

After completing the start-up activities, the LNAPL recovery system was operated under full-scale conditions until June 27, 2008, when the first vacuum truck pump-out was performed. Weekly water level and LNAPL thickness measurements were collected between startup and the first pump-out.

On a monthly basis, WSP Engineering personnel inspects the system and completes an operation and maintenance log sheet that includes vacuum and flow readings at each wellhead, vacuum, pressure, and temperature readings on the recovery skid, and power consumption from the system (Appendix E). In addition, water level and LNAPL thickness measurements are collected at each of the product recovery wells (i.e., RW-1, OW-2, OW-3, and OW-8) and any surrounding monitoring wells that contained measurable LNAPL during the initial 6-months of operation. WSP Engineering may elect to adjust the site visit frequency based on the performance of the system and the observed LNAPL recovery rates. However, WSP Engineering will conduct site visits no less frequently than once per month without NYSDEC approval.

When sufficient LNAPL is present in the recovery wells, WSP Engineering subcontracts a vacuum truck service to physically remove the LNAPL from the extraction wells and from any surrounding wells that

contain measurable LNAPL. The waste stream will be transported offsite for recycling or disposal in accordance with federal, state, and local requirements.

4 References

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New York State Department of Environmental Conservation. 2006. Letter to ESC Engineering of New York, P.C., providing conditional approval of *Interim Remedial Measure Work Plan*. May 24.

New York State Department of Environmental Conservation. 2001. Voluntary Cleanup Agreement (VCA) Index No. V7-1007-96-10. June 14.

5 Acronyms

bgs	below ground surface
ID	inside-diameter
IRM	Interim Remedial Measure
LNAPL	light non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCB	polychlorinated biphenyls
PVC	polyvinyl chloride
RSI	Remediation Services, Inc.
scfm	standard cubic feet per minute
TCLP	Toxicity Characteristic Leaching Procedure
VCA	Voluntary Cleanup Agreement
VLS	vapor-liquid separator
WC	water column

Figures

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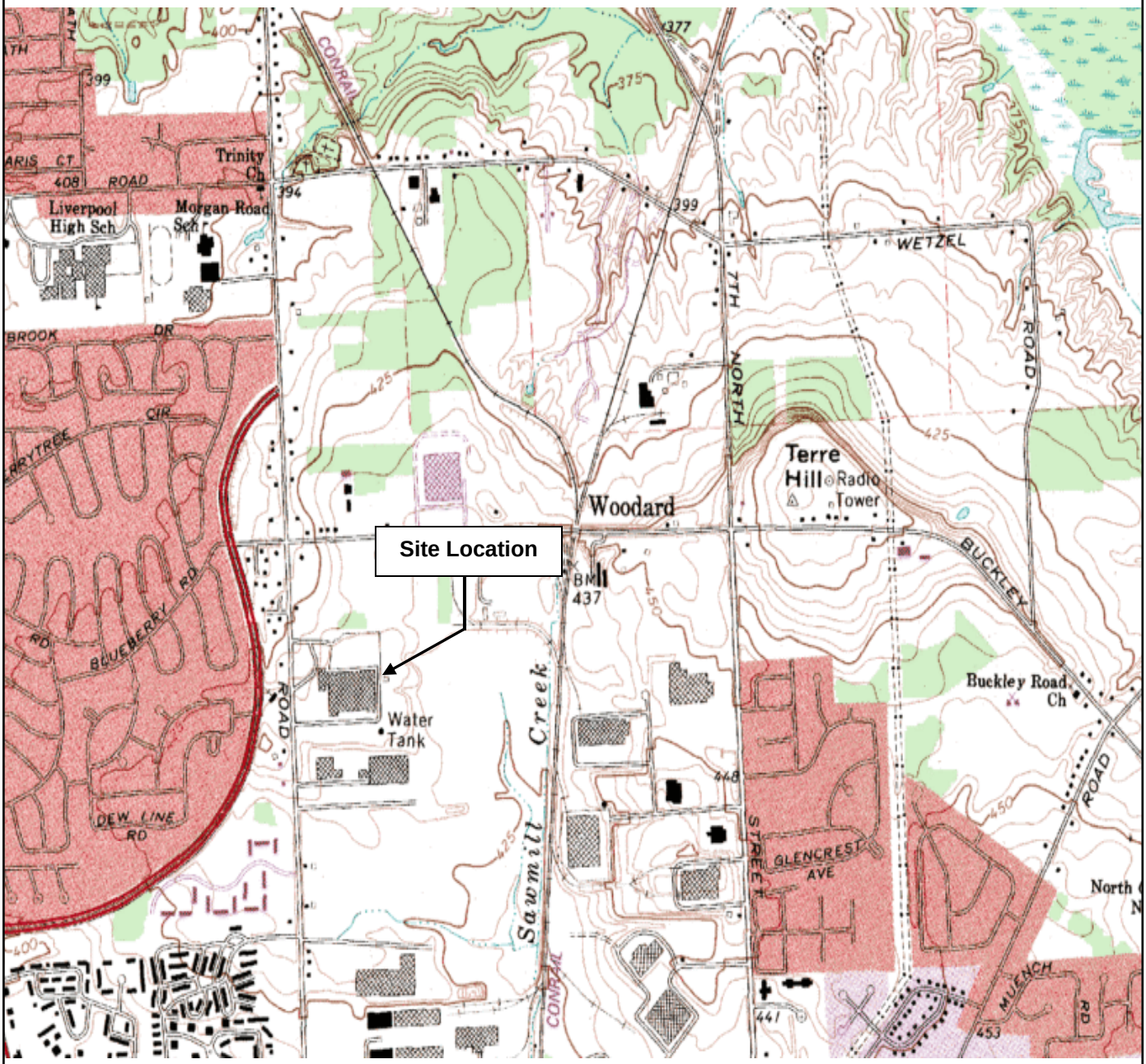


Reference
7.5 Minute Series Topographic Quadrangle
Brewerton, New York
Photorevised 1978 Scale 1:24,000

N

Quadrangle Location

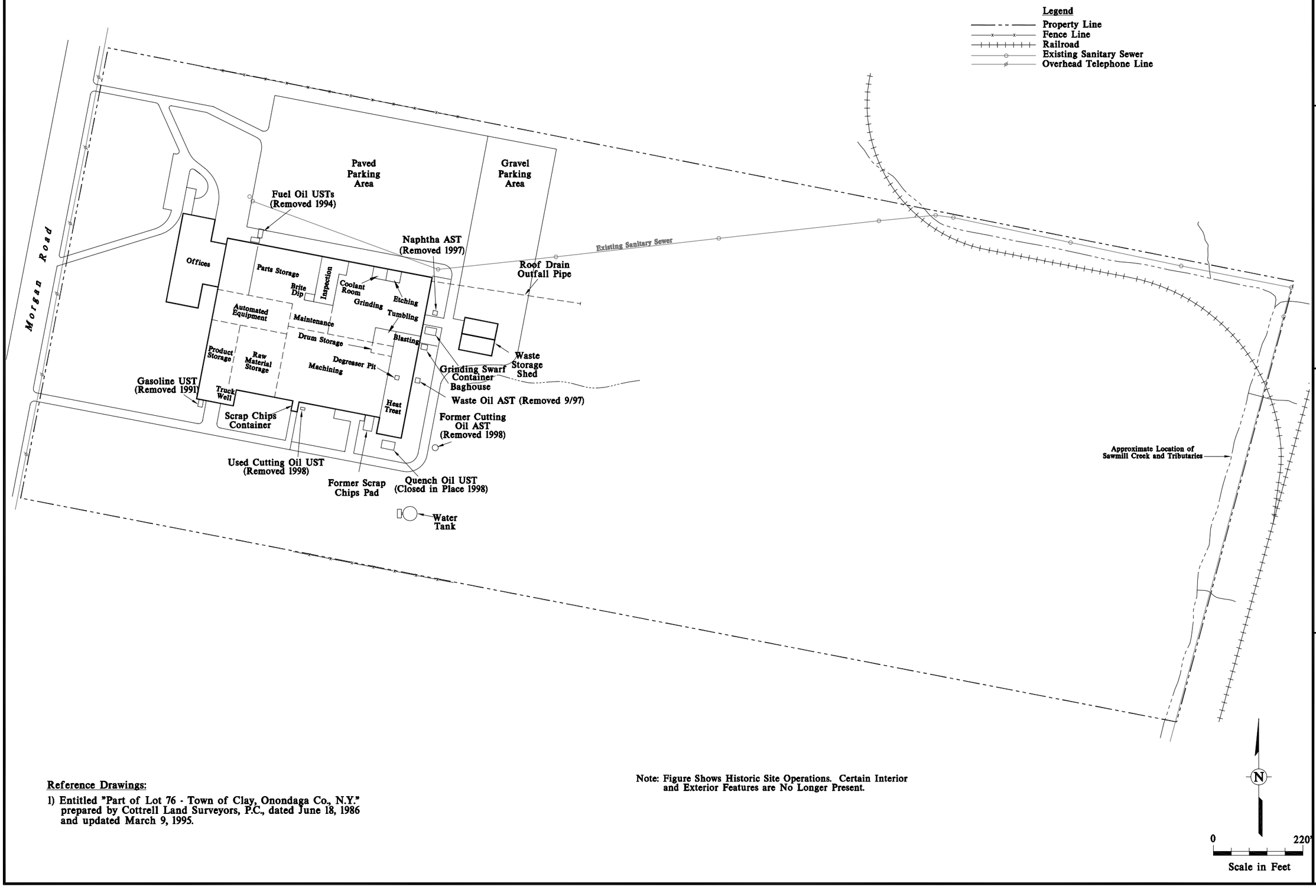
1000 0 2000 4000

Scale in Feet

WSP Engineering of New York, P.C.

WSP ENGINEERING OF NEW YORK P.C.
5 SULLIVAN STREET
CAZENOVIA, NEW YORK
315-655-3900

Figure 1
Site Location
Former Rollway Bearing Facility
Liverpool, New York



Reference Drawings:

1) Entitled "Part of Lot 76 - Town of Clay, Onondaga Co., N.Y." prepared by Cottrell Land Surveyors, P.C., dated June 18, 1986 and updated March 9, 1995.

Note: Figure Shows Historic Site Operations. Certain Interior and Exterior Features are No Longer Present.

Drawn By: EGC
Checked: TMM
Approved:
DWG Name: 133928217

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
PREPARED FOR
EMERSON

Figure 2
SITE LAYOUT

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Cazenovia, New York 13035
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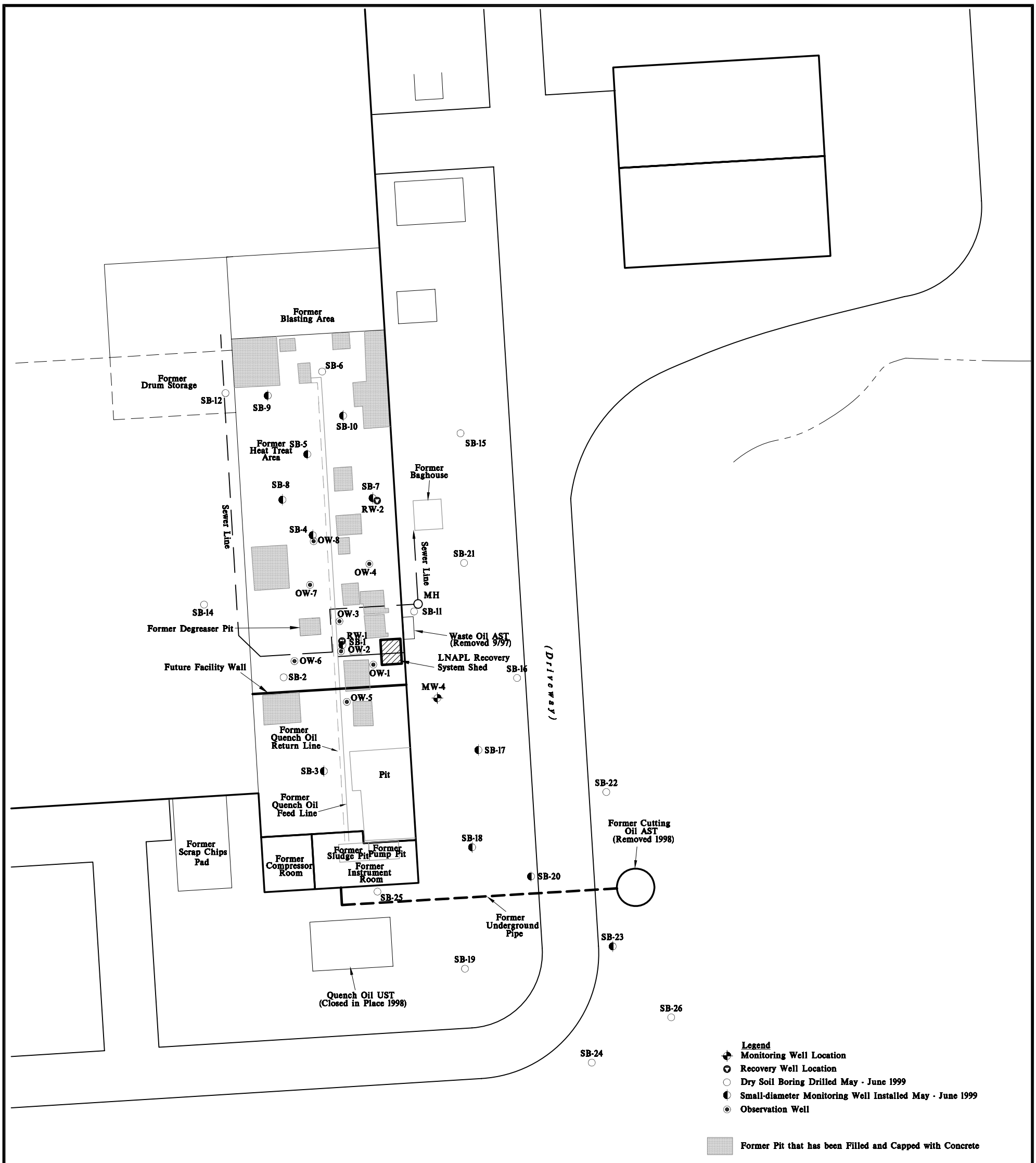

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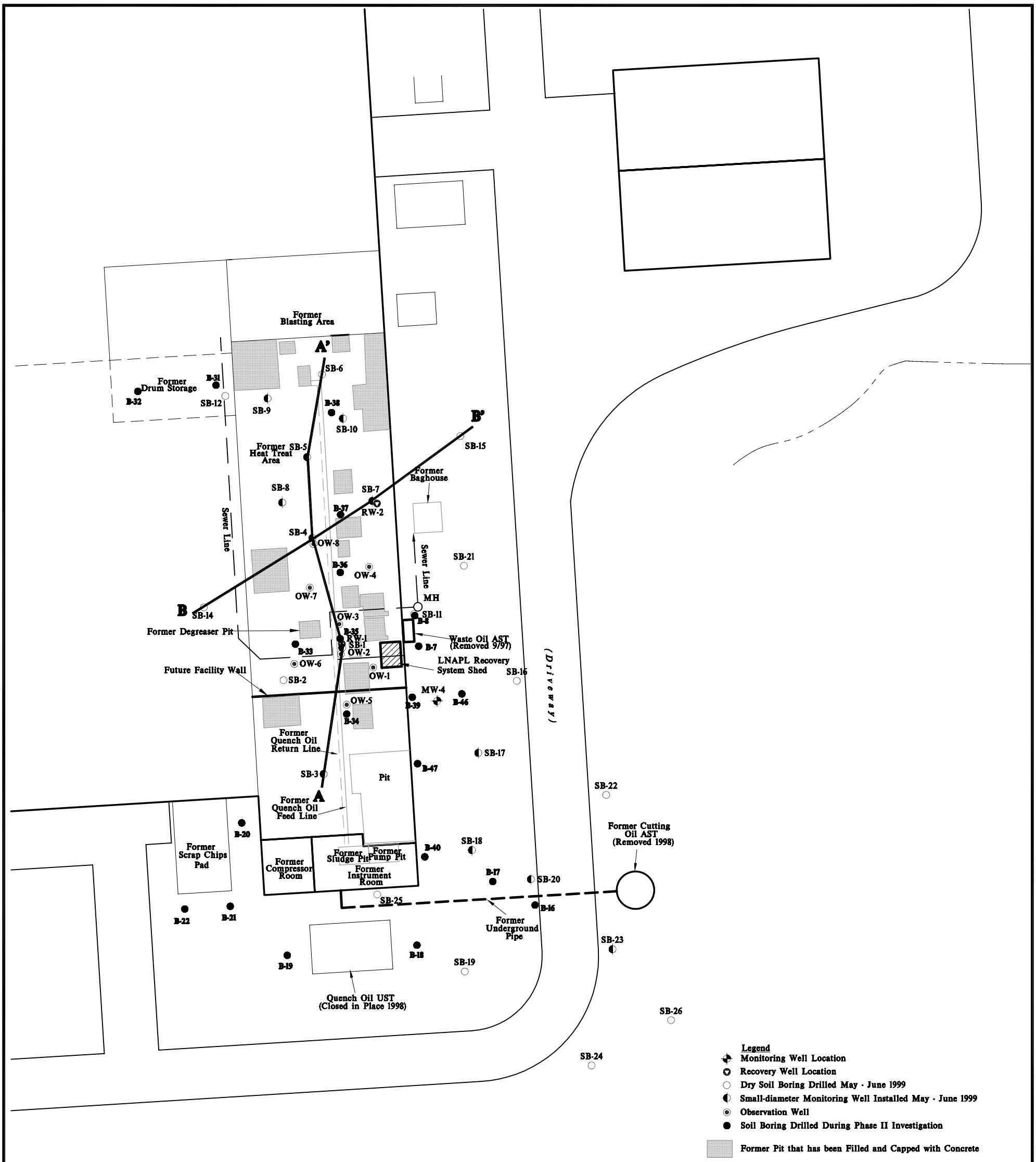
(315) 655-3900

Figure 3

FORMER HEAT TREAT AREA

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
PREPARED FOR
EMERSON

Drawn By: JME
Checked: SP
Approved: TMM
DWG Name: 133928220



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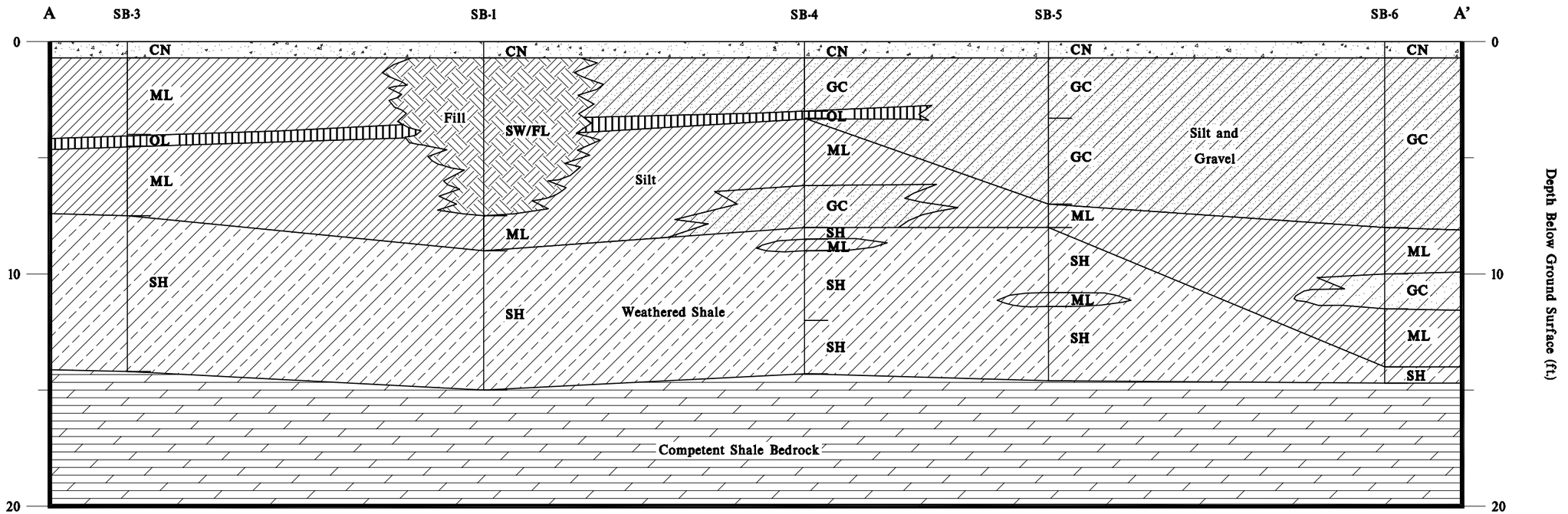
(315) 655-3900

Figure 4

CROSS SECTION LOCATION PLAN

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
PREPARED FOR
EMERSON

Drawn By: JME
Checked: SP
Approved: TMM
DWG Name: 133928220



Legend

- Concrete (CN)
- Fill (SW/FL)
- Silt (ML)
- Silt and Gravel (GC)
- Weathered Shale (SH)
- Organic Silt (OL)
- Competent Shale Bedrock

0 5'
Vertical Scale in Feet

0 15'
Horizontal Scale in Feet

Drawn By: EGC
Checked: TMM
Approved:
DWG Name: 133928215

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
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Figure 5

GEOLOGIC CROSS SECTION A–A'

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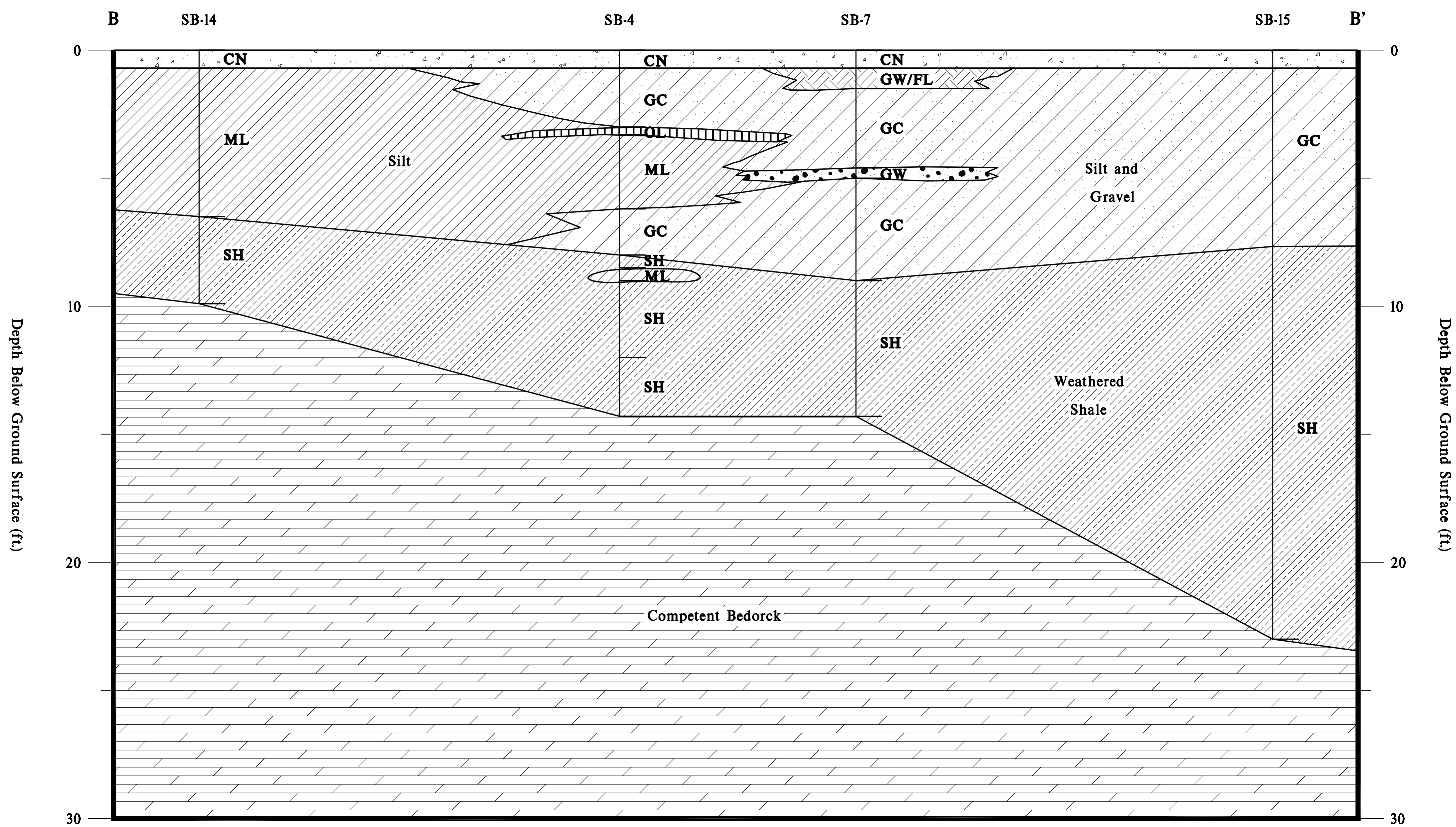
Reston, Virginia 20191 (703) 709-6500



Legend

- Concrete (CN)
- Fill (SW/FL)
- Silt (ML)
- Silt and Gravel (GC)
- Weathered Shale (SH)
- Organic Silt (OL)
- Competent Shale Bedrock

0 5'
Vertical Scale in Feet

0 15'
Horizontal Scale in Feet

Drawn By: EGC
Checked: TMM
Approved:
DWG Name: 133928215

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
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Figure 6

GEOLOGIC CROSS SECTION B–B'

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Engineering of
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Reston, Virginia 20191 (703) 709-6500

Tables

Table 1

LNAPL Thickness Measurements
Former Rollway Bearing Corporation Facility
Liverpool, New York (a)

	September 4, 2003			January 9, 2004			January 15, 2004		
Well	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)
SB-1	13.64	13.69	0.05	NA	NA	NA	12.79	12.86	0.07
SB-3	ND	10.55	NA	NA	NA	NA	NA	NA	NA
SB-4	12.26	13.15	0.89	12.26	13.50	1.24	12.2	13.42	1.22
SB-5	13.13	13.43	0.30	NA	NA	NA	NA	NA	NA
SB-7	12.95	12.96	0.01	NA	NA	NA	NA	NA	NA
SB-8	12.05	12.24	0.19	NA	NA	NA	NA	NA	NA
SB-9	12.95	12.96	0.01	NA	NA	NA	NA	NA	NA
SB-10	17.29	17.48	0.19	NA	NA	NA	NA	NA	NA
SB-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	19.13	19.25	0.12	NA	NA	NA	NA	NA	NA
RW-1	15.64	15.69	0.05	12.8	13.45	0.65	12.85	13.45	0.60
RW-2	ND	14.07	NA	NA	NA	NA	NA	NA	NA
OW-1	ND	18.62	NA	NA	NA	NA	ND	18.63	NA
OW-2	ND	16.29	NA	15.71	15.8	0.09	15.71	15.83	0.12
OW-3	15.61	16.53	0.92	12.58	13.5	0.92	12.68	12.96	0.28
OW-4	ND	14.57	NA	ND	14.31	NA	ND	16.42	NA
OW-5	ND	13.21	NA	ND	13.15	NA	ND	13.28	NA
OW-6	ND	13.76	NA	ND	16.91	NA	ND	DRY	NA
OW-7	ND	14.6	NA	ND	17.69	NA	ND	DRY	NA

Table 1

LNAPL Thickness Measurements
Former Rollway Bearing Corporation Facility
Liverpool, New York (a)

	January 22, 2004			February 4, 2004			February 12, 2004		
Well	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)
SB-1	12.29	13.14	0.85	13	13.18	0.18	12.61	12.91	0.30
SB-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-4	12.15	13.7	1.55	12.21	13.67	1.46	12.22	13.7	1.48
SB-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-10	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA
RW-1	13	13.64	0.64	13.07	13.68	0.61	12.9	13.41	0.51
RW-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
OW-1	ND	18.64	NA	ND	18.65	NA	ND	18.62	NA
OW-2	15.72	15.93	0.21	15.7	15.95	0.25	15.84	16	0.16
OW-3	12.81	13.42	0.61	12.88	13.32	0.44	12.69	13.31	0.62
OW-4	ND	16.34	NA	ND	16.46	NA	ND	16.53	NA
OW-5	ND	13.27	NA	ND	13.36	NA	ND	13.35	NA
OW-6	ND	DRY	NA	ND	DRY	NA	ND	DRY	NA
OW-7	ND	DRY	NA	ND	DRY	NA	ND	DRY	NA

Table 1

LNAPL Thickness Measurements
Former Rollway Bearing Corporation Facility
Liverpool, New York (a)

	February 25, 2004		
Well	Depth to Product (ft)	Depth to Groundwater (ft)	Product Thickness (ft)
SB-1	12.43	12.86	0.43
SB-3	NA	NA	NA
SB-4	12.31	13.7	1.39
SB-5	NA	NA	NA
SB-7	NA	NA	NA
SB-8	NA	NA	NA
SB-9	NA	NA	NA
SB-10	NA	NA	NA
SB-17	NA	NA	NA
MW-4	NA	NA	NA
RW-1	12.82	13.3	0.48
RW-2	NA	NA	NA
OW-1	ND	18.66	NA
OW-2	13.83	14.5	0.67
OW-3	12.61	12.98	0.37
OW-4	ND	16.57	NA
OW-5	ND	13.28	NA
OW-6	ND	DRY	NA
OW-7	ND	DRY	NA

a/ ND = no measurable product detected in the well; NA = not applicable

Appendix A – As-Built Engineering Drawings

INDEX OF DRAWINGS

DRAWING NUMBER	SHEET NUMBER	DESCRIPTION
133928216	1	TITLE SHEET
133928216	2	SITE PLAN
133928216	3	PROCESS & INSTRUMENTATION DIAGRAM
133928216	4	EQUIPMENT ENCLOSURE, PIPING, AND WELL VAULT DETAILS

INTERIM REMEDIAL MEASURE
LNAPL RECOVERY SYSTEM
AS-BUILT

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK

PREPARED FOR

EMERSON

REVISIONS

REV	DESCRIPTION	DRAWN	APPR.
1	Revised		
2	Revised		
3	Revised		

SEAL

DATE

DRAWN BY	EGC
CHECKED	SBP
APPROVED	TMM

TITLE SHEET
AS-BUILT
FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
PREPARED FOR
EMERSON

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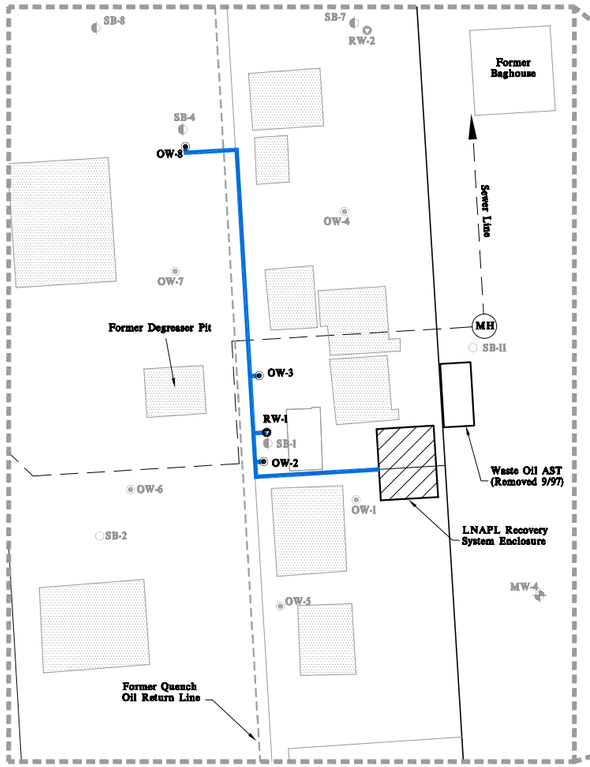
Cazenovia, New York 13035
(315) 655-3900

SHEET 1

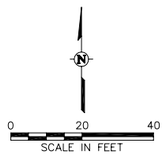
Drawing Number
133928216



Detailed Area
Scale 1"=10'

Legend

- Monitoring Well Location
- Dry Soil Boring Drilled May - June 1999
- Small Diameter Monitoring Well Installed May - June 1999
- Recovery Well
- Observation Well
- Observation Well Connected to LNAPL Recovery System
- Recovery Well Connected to LNAPL Recovery System
- Former Pit that has been Filled and Capped with Concrete
- Air Conveyance Piping



LOCATION MAP
SCALE: 1"=200'

REVISIONS

REV	DESCRIPTION			
1	Revised	Date	Appr.	
2	Revised	Date	Appr.	
3	Revised	Date	Appr.	

SEAL

DATE

DRAWN BY	EGC
CHECKED	SBP
APPROVED	TMM

SITE PLAN
AS-BUILT

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK

PREPARED FOR
EMERSON

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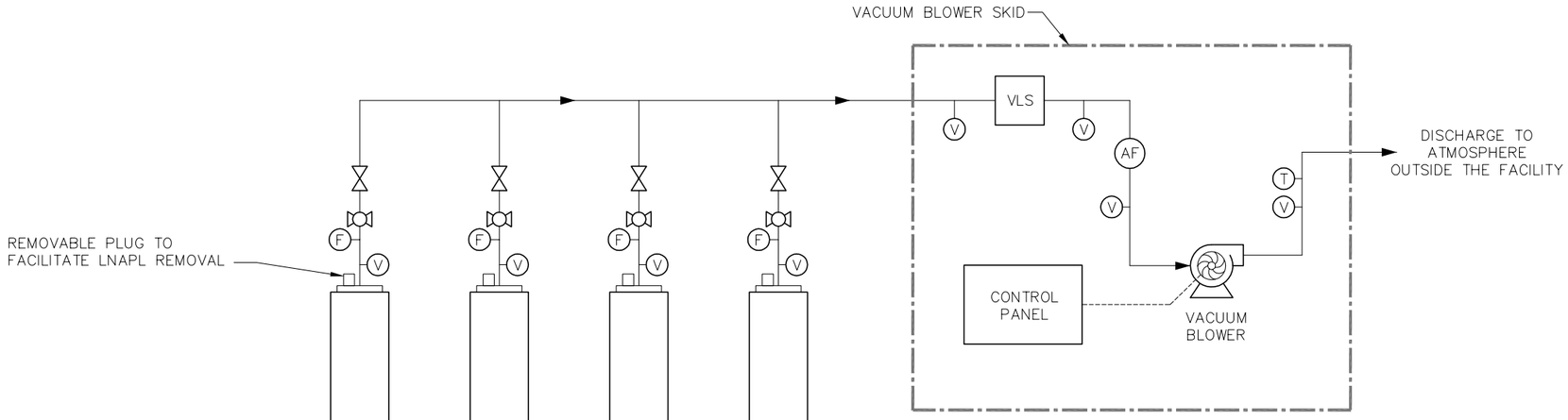
SHEET 2

Drawing Number
133928216

LEGEND

- AIR LINE
- (V) VACUUM GAUGE
- (F) FLOW METER
- (T) TEMPERATURE GAUGE
- GATE VALVE
- INSTRUMENTATION WIRING
- VLS — VAPOR–LIQUID SEPARATOR
- (AF) AIR FILTER
- BALL VALVE



LNAPL RECOVERY WELLS

REVISIONS

REV	DESCRIPTION			
1	Revised	Dfld	Appr.	
2	Revised	Dfld	Appr.	
3	Revised	Dfld	Appr.	

SEAL

DATE

DRAWN BY EGC
CHECKED SBP
APPROVED TMM

PROCESS & INSTRUMENTATION DIAGRAM AS–BUILT

FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK

PREPARED FOR
EMERSON

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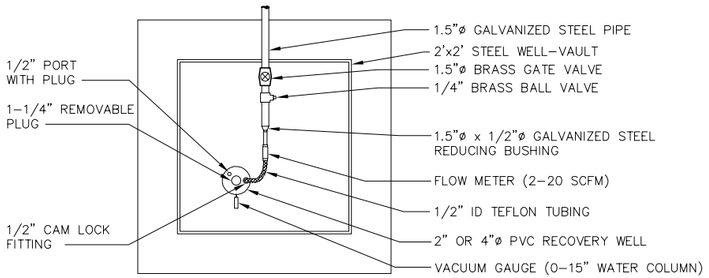
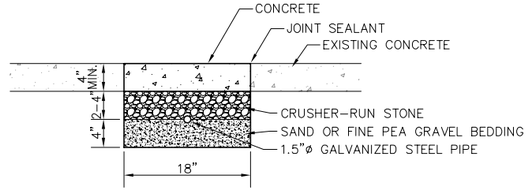
SHEET 3

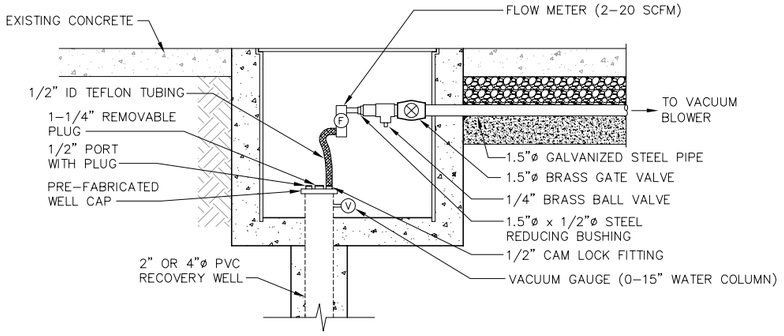
Drawing Number
133928216



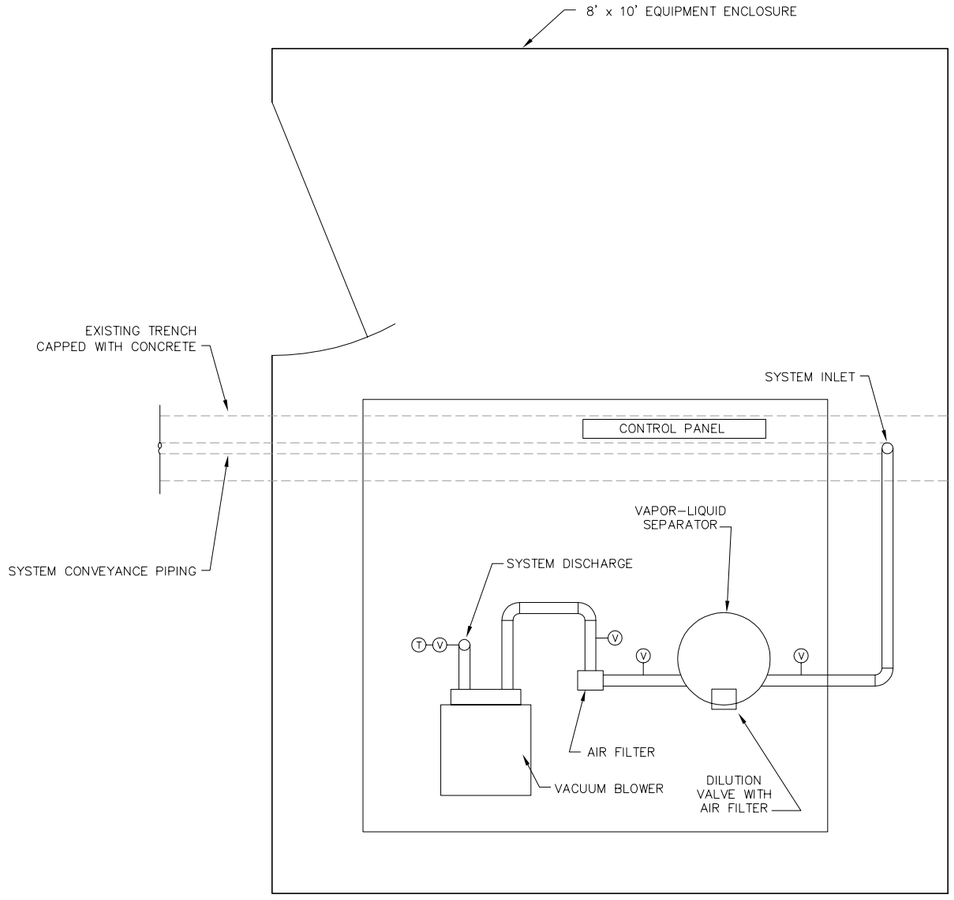
WELL-VAULT COMPLETION - PLAN VIEW
NOT TO SCALE



HEADER/LATERAL TRENCH DETAIL
SCALE: 1"=1'-0"



WELL-VAULT COMPLETION - SECTION VIEW
NOT TO SCALE



LNAPL RECOVERY SYSTEM ENCLOSURE LAYOUT
NOT TO SCALE

LEGEND
(V) VACUUM GAUGE
(T) TEMPERATURE GAUGE

REVISIONS

REV.	DESCRIPTION	
1	Revised	Appr.
2	Revised	Appr.
3	Revised	Appr.

SEAL

DATE

DRAWN BY EGC
CHECKED SBP
APPROVED TMM

EQUIPMENT ENCLOSURE, PIPING, AND WELL-VAULT DETAILS - AS-BUILT
FORMER ROLLWAY BEARING FACILITY
LIVERPOOL, NEW YORK
PREPARED FOR
EMERSON

WSP Engineering of New York, P.C.
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Cazenovia, New York 13035
(315) 655-3900

SHEET 4

Drawing Number
133928216

Appendix B – Boring Logs and Monitoring Well Construction Logs

Boring Log: OW-1

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 19.8

Completion Date: Nov. 22, 2002 **Borehole Diameter (inches):** 8.25/4.0

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
0						Ground Surface	
						Concrete	
						Not Sampled	
8	1	52.5	NA	50		***Silt (ML)*** Brown (7.5YR4/3) silt, little to some clay, trace gravel; dense; dry.	
10	2	71.8	NA	25		***Weathered Bedrock*** Olive (5Y5/3) weathered shale, little clay, friable, some partings visible; dense to very dense; dry becoming moist between 13.1 and 13.2 feet bgs and wet between 14.0 and 14.8 feet bgs; faint oil odor.	
12	3	NR	NA	75		**Convert from 4.25-inch ID HSA to 4.0-inch OD Downhole Air Hammer.**	
14	4	54.2	NA	100			
						Not Sampled	
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☑

Driller/ Operator: Ian Grassy

** AMSL = Above mean sea level*

Boring Log: OW-2

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 19.5

Completion Date: Nov. 22, 2002 **Borehole Diameter (inches):** 8.25/4.0

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
0						Ground Surface	
						Concrete	
						Not Sampled	
8							
	1	425	NA	75		***Sand (SP)*** Strong brown (7.5YR4/6) fine-grained sand, little gravel; loose to medium dense; dry.	
10						***Silt (ML)*** Pale yellow(2.5Y7/3) silt, little to some clay, trace gravel; dense; dry.	
	2	8.1	NA	75		***Weathered Bedrock*** Olive (5Y5/3) shale, little clay, friable, some partings visible; medium denseto very dense; dry; faint oil and solvent-type odor.	
12							
	3	1.6	NA	75		**Convert from 4.25-inch ID HSA to 4.0-inch OD Downhole Air Hammer.**	
14							
	4	527	NA	100			
16						***Not Sampled***	
18							
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☑

Driller/ Operator: Ian Grassy

** AMSL = Above mean sea level*

Boring Log: OW-3

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 19.0

Completion Date: Nov. 21, 2002 **Borehole Diameter (inches):** 8.25/4.0

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
0						Ground Surface	
						Concrete	
						Not Sampled	
8	1	0.0	NA	25			
10						***Silt (ML)*** Dark yellowish-brown silt, little to some clay, trace gravel; dense to very dense; dry.	
	2	1.9	NA	75		***Weathered Bedrock*** Olive (5Y5/3) weathered shale, friable, some partings visible; medium dense to dense; dry becoming moist between 11.5 and 12.0 and 12.5 and 12.6 feet bgs; moderate oil odor.	
12	3	0.0	NA	100		**Convert from 4.25-inch ID HSA to 4.0-inch OD Downhole Air Hammer.**	
14						***Not Sampled***	
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☑

Driller/ Operator: Ian Grassy

** AMSL = Above mean sea level*

Boring Log: OW-4

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 18

Completion Date: Aug. 27, 2003 **Borehole Diameter (inches):** 8.25

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
0						Ground Surface	
	1	0.5	NA	100		***Concrete***	
2	2	0.1	NA	100		***Silt with Gravel (ML)*** Red (10YR 4/6) silt, some clay, trace to little gravel; very dense; dry.	
4	3	0.2	NA	50		***Silt (ML)*** Olive yellow (2.5Y 6/6) silt, some clay; dense; dry.	
6	4	0.1	NA	50		***Silt with Gravel (ML)*** Red (10R 4/6) silt, some clay; trace to little gravel; very dense; dry.	
8	5	0.2	NA	50		***Silt (ML)*** Pale yellow (5Y 7/3) silt, some clay, some residual shale partings; dense; dry.	
10	6	0.9	NA	50		***Weathered Bedrock and Silt (ML)*** Greenish-gray (10Y 6/1) weathered shale; dense, friable; dry, moist between 11.0 and 11.2 feet and also between 13.0 and 13.4 feet; faint oil odor between 11.0 and 11.2 feet and also between 13.0 and 13.4 feet; interbedded with thin (0.25 to 0.5-inch thick) layers of silt, some clay; very dense; dry.	
12	7	0.8	NA	50			
14	8	0.3	NA	25		***Weathered bedrock*** Gray (10YR 6/1) weathered shale; very dense, friable; dry. **Spoon refusal at 14.5 feet.**	
16	9	NA	NA	50		***Silt (ML)*** Greenish-gray (10BG 5/1) silt, some clay, laminated/mottled appearance; very dense; dry.	
18							
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☐

Driller/ Operator: Doug Toma

** AMSL = Above mean sea level*

Boring Log: OW-5

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 16.5

Completion Date: Aug. 26, 2003 **Borehole Diameter (inches):** 8.25

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
						Ground Surface	
0						***Concrete***	
	1	0.0	NA	100		***Sand (SP)*** Brown (10YR 4/3) to dark brown (10YR 3/3) fine to medium-grained sand, little silt, trace to little gravel; loose; dry; faint oil odor between 6.5 feet and 7.4 feet.	
2	2	0.1	NA	25			
4	3	0.6	NA	25			
6	4	1.6	NA	75			
8	5	14.2	NA	100		***Silt (ML)*** Olive (5Y 5/4) silt, some clay, trace remnant shale partings; medium dense to dense, no cohesiveness, non-plastic when wetted; dry, moist to wet between 8.0 and 9.1 feet; faint to moderate oil odor.	
10	6	12.2	NA	100		***Weathered Bedrock*** Greenish-gray (5GY 5/1) weathered shale; dense, friable; dry; moderate oil odor. Alternates with thin (0.5 to 0.75-inch thick) bands of greenish-gray clay with residual shale partings; moist.	
12						***Not Sampled*** **Convert from 4.25-inch ID HSA to 3.75-inch OD Downhole Air Hammer.** **Advanced 4.25 inch ID HSA to 16.5 feet to clear bridged bentonite at interface between Downhole Air Hammer and HSA.**	
14							
16							
18							
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☑

Driller/ Operator: Doug Toma

** AMSL = Above mean sea level*

Boring Log: OW-6

Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 18

Completion Date: Aug. 26, 2003 **Borehole Diameter (inches):** 8.25

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
						Ground Surface	
0	1	NA	NA	NA		***Concrete***	
2	2	1.5	NA	25		***Silty Sand (SM)*** Brown (10YR 4/3) fine to medium-grained sand, trace to little silt and gravel; loose; dry.	
4	3	1.4	NA	50			
6	4	1.5	NA	50		***Silt (ML)*** Very dark grayish-brown (10YR 3/2) silt, little clay, trace organic material; medium dense; dry.	
8	5	-	NA	35		***Silt (ML)*** Olive (5Y 5/3) silt, some clay, some shale fragments and distinct partings; medium dense to very dense; dry. **Spoon refusal at 7.0 feet.**	
10	6	1.2	NA	100		***Weathered Bedrock*** Greenish-gray (5GY 6/1) weathered shale; very hard, friable; dry; faint oil odor. **Spoon refusal at 8.7 feet.**	
12	7	1.0	NA	25		***Silt (ML)*** Olive (5Y 4/3) silt, some clay; moist; medium dense.	
14	8	-	NA	100		***Weathered Bedrock*** Greenish-gray (5GY 6/1) weathered shale with distinct partings, some weak red (10 R 4/4) 0.5 to 1.0-inch diameter clay nodules (sapprolites?) between 11.5 and 12.0 feet; dense to very dense, friable; dry; faint oil odor.	
16	9	-	NA	100			
18							
20							

Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☐

Driller/ Operator: Doug Toma

** AMSL = Above mean sea level*

Boring Log: OW-7

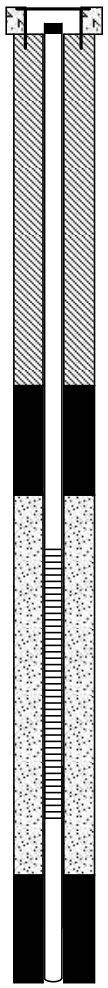
Project: Rollway Bearing Corp. **Surface Elevation (feet AMSL*):** Not determined

Project No.: 133928 **TOC Elevation (feet AMSL*):** Not determined

Location: Liverpool, NY **Total Depth (feet):** 18

Completion Date: Aug. 27, 2003 **Borehole Diameter (inches):** 8.25

Sample Data					Subsurface Profile		
Depth	Sample Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Construction
0						Ground Surface	
	1	0.2	NA	100		***Concrete***	
2	2	0.4	NA	100		***Silt (ML)*** Light olive brown (2.5Y 5/3) silt, some clay, trace to little shale fragments between 6.5 and 7.0 feet, massive to laminated; dense to very dense, friable between 6.5 and 7.0 feet; dry.	
4	3	0.4	NA	50			
6	4	0.3	NA	50			
8	5	0.7	NA	75		***Weathed Bedrock*** Gray (5Y 6/1) weathered shale; dense, friable; dry; occasional 0.25 to 0.5-inch thick clay layers; dense to very hard, friable; dry, moist between 11.2 and 11.4 feet; faint to moderate oil odor, trace free product (?) visible in some partings between 11.2 and 11.4 feet.	
10	6	3.2	NA	50			
12	7	3.6	NA	75			
14	8	2.0	NA	100			
16	9	NA	NA	50			
18						***Weathered Bedrock*** Reddish-gray (5YR 5/2) to light yellowish-brown (2.5 Y 6/4) weathered shale; dense, friable; dry.	
20							



Geologist(s): David P. Bouchard **Method:** **HSA** ☑ **ID(inches):** 4.25

Subcontractor: Parratt Wolff, Inc. **Downhole Air Hammer** ☐

Driller/ Operator: Doug Toma

** AMSL = Above mean sea level*

Boring Log: OW-08

Project: Former Rollway Bearing
Project No.: 133928
Location: Liverpool, New York
Completion Date: June 22, 2006

Surface Elevation (feet AMSL*): 446.43
TOC Elevation (feet AMSL*): 446.01
Total Depth (feet): 17.5
Borehole Diameter (inches): 10.25

**AMSL = Above mean sea level*

Depth	Sample/Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Details
						Ground Surface	
						Concrete	
2	1	0.0	- - -	100		***Silt (ML)*** Reddish-brown (2.5YR 4/3) silt, some clay, trace to little gravel; very dense; dry.	
4	2	0.0	- - - -	75			
6	3	0.0	- - - -	75		***Silt (ML)*** Light yellowish-brown (2.5Y 6/3) laminated silt, some clay; very dense; dry.	
8	4	0.0	- - - -	100		***Lean Clay (CL)*** Dark yellowish-brown (10YR 3/4) clay; non-plastic, hard; dry.	
10	5	0.0	- - - -	10		***Silt (ML)*** Light yellowish-brown (2.5Y 6/3) laminated silt, some clay; dense to very dense; dry.	
12	6	0.0	- - - -	100		***Weathered Shale*** Olive (5Y 5/3) weathered shale; medium dense, friable; dry.	
14	7	1.8	- - - -	50		***Lean Clay (CL)*** Olive (5Y 5/3) clay, some silt; non-plastic, stiff; dry.	
16	8	0.8	- - - -	100		***Weathered Shale*** Olive (5Y 5/3) weathered shale; residual partings visible, friable; dry; weak petroleum-like odor between 10 and 12 feet; trace oil-like substance in shale partings between 11.4 and 11.6 feet.	
18						***Weathered Shale*** Olive (5Y 5/3) weathered shale; moderately competent, highly fractured between 14 and 14.5 feet; wet; some greenish-brown staining between 13.0 and 13.2 feet, trace brown staining between 14.0 and 14.5 feet; trace oil-like substance in shale partings between 12.0 and 13.3 feet, between 13.6 and 13.7 feet, and between 14.0 and 14.5 feet; moderate petroleum-like odor.	
20						***Weathered Shale and Lean Clay*** Grayish-brown (10YR 5/2) interbedded clay and weathered shale; hard; moist; moderate petroleum-like odor.	

Geologist(s): David P. Bouchard
Subcontractor: Parratt Wolff, Inc.
Driller/Operator: Jim Lansing
Method: Hollow Stem Auger

WSP Environment & Energy
5 Sullivan Street
Cazenovia, New York 13035
315-655-3900

Boring Log: OW-08

Project: Former Rollway Bearing
Project No.: 133928
Location: Liverpool, New York
Completion Date: June 22, 2006

Surface Elevation (feet AMSL*): 446.43
TOC Elevation (feet AMSL*): 446.01
Total Depth (feet): 17.5
Borehole Diameter (inches): 10.25

**AMSL = Above mean sea level*

Sample Data					Subsurface Profile		
Depth	Sample/Interval	PID/OVM (ppm)	Blow Count	% Recovery	Lithology	Description	Well Details
						Shale Greenish-gray (10Y 5/1) shale; friable; dry.	
22						Bottom of Boring at 17.5 feet	
24							
26							
28							
30							
32							
34							
36							
38							
40							

Geologist(s): David P. Bouchard
Subcontractor: Parratt Wolff, Inc.
Driller/Operator: Jim Lansing
Method: Hollow Stem Auger

WSP Environment & Energy
5 Sullivan Street
Cazenovia, New York 13035
315-655-3900

Appendix C – Waste Characterization Laboratory Analytical Data

ANALYTICAL REPORT

Job#: A08-5477

Project#: NY4A9171
Site Name: Environmental Strategies Corporation
Task: Emerald Screening

Mr. Brian Silfer
Environmental Strategies Corp.
5 Sullivan Street
Cazenovia, NY 13035

TestAmerica Laboratories Inc.

Candace L. Fox
Project Manager

05/20/2008

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TestAmerica Buffalo
Current Certifications

As of 6/15/2007

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	88-0686
California*	NELAP CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida*	NELAP CWA, RCRA	E87672
Georgia*	SDWA,NELAP CWA, RCRA	956
Illinois*	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas*	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana*	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY0044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA,CWA, RCRA	036-999-337
New Hampshire*	NELAP SDWA, CWA	233701
New Jersey*	NELAP,SDWA, CWA, RCRA,	NY455
New York*	NELAP, AIR, SDWA, CWA, RCRA,CLP	10026
Oklahoma	CWA, RCRA	9421
Pennsylvania*	Registration, NELAP CWA,RCRA	68-00281
Tennessee	SDWA	02970
USDA	FOREIGN SOIL PERMIT	S-41579
USDOE	Department of Energy	DOECAP-STB
Virginia	SDWA	278
Washington	CWA,RCRA	C1677
West Virginia	CWA,RCRA	252
Wisconsin	CWA, RCRA	998310390

*As required under the indicated accreditation, the test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	SAMPLED DATE	SAMPLED TIME	RECEIVED DATE	RECEIVED TIME
A8547701	ROLLWAY-051408A	SOIL	05/14/2008	13:42	05/15/2008	09:30

METHODS SUMMARY

Job#: A08-5477

Project#: NY4A9171
Site Name: Environmental Strategies Corporation

PARAMETER	ANALYTICAL METHOD
METHOD 8260 - TCLP VOLATILES	SW8463 8260
METHOD 8082 - POLYCHLORINATED BIPHENYLS	SW8463 8082
Arsenic - Total	SW8463 6010
Barium - Total	SW8463 6010
Cadmium - Total	SW8463 6010
Chromium - Total	SW8463 6010
Lead - Total	SW8463 6010
Mercury - Total	SW8463 7470
Selenium - Total	SW8463 6010
Silver - Total	SW8463 6010
Total Moisture Content	ASTM D2216-90
Toxicity Characteristic Leaching Procedure	SW8463 1311

References:

ASTM "Annual Book of ASTM Standards", American Society for Testing and Materials, Philadelphia, PA.

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

SDG NARRATIVE

Job#: A08-5477

Project#: NY4A9171
Site Name: Environmental Strategies Corporation

General Comments

The enclosed data may or may not have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A08-5477
Sample Cooler(s) were received at the following temperature(s); 4.0 °C
All samples were received in good condition.

GC/MS Volatile Data

No deviations from protocol were encountered during the analytical procedures.

GC Extractable Data

No deviations from protocol were encountered during the analytical procedures.

Metals Data

The analyte Barium was detected in the TCLP Extractor Blank (A8B1534901) at a level above the project established reporting limit. However, the sample had a level of Barium greater than ten times that of the TCLP Extractor Blank value, therefore, no corrective action was necessary.

The analyte Lead was detected in the TCLP Extractor Blank (A8B1534901) at a level above the project established reporting limit. The sample was non-detect for this analyte, therefore, no corrective action was necessary.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
ROLLWAY-051408A	A8547701	8260	10.00	007

Dilution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

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DATA QUALIFIER PAGE

These definitions are provided in the event the data in this report requires the use of one or more of the qualifiers. Not all qualifiers defined below are necessarily used in the accompanying data package.

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for CLP methodology only. For Pesticide/Aroclor target analytes, when a difference for detected concentrations between the two GC columns is greater than 25%, the lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
[1]	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected. Report with the detection limit value.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
G	Indicates a value greater than or equal to the project reporting limit but less than the laboratory quantitation limit
*	Indicates the spike or duplicate analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Environmental Strategies Corporation
Emerald Screening
METHOD 8260 - TCLP VOLATILES

Client ID		ROLLWAY-051408A							
Job No	Lab ID	A08-5477	A8547701						
Sample Date		05/14/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.050	NA		NA		NA	
2-Butanone	MG/L	ND	0.25	NA		NA		NA	
Carbon Tetrachloride	MG/L	ND	0.050	NA		NA		NA	
Chlorobenzene	MG/L	ND	0.050	NA		NA		NA	
Chloroform	MG/L	ND	0.050	NA		NA		NA	
1,2-Dichloroethane	MG/L	ND	0.050	NA		NA		NA	
1,1-Dichloroethene	MG/L	ND	0.050	NA		NA		NA	
Tetrachloroethene	MG/L	ND	0.050	NA		NA		NA	
Trichloroethene	MG/L	ND	0.050	NA		NA		NA	
Vinyl chloride	MG/L	ND	0.050	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	92	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	101	50-200	NA		NA		NA	
1,4-Dichlorobenzene-D4	%	94	50-200	NA		NA		NA	
Toluene-D8	%	97	71-126	NA		NA		NA	
p-Bromofluorobenzene	%	94	73-120	NA		NA		NA	
1,2-Dichloroethane-D4	%	100	66-137	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Environmental Strategies Corporation
Emerald Screening
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client ID		ROLLWAY-051408A							
Job No	Lab ID	A08-5477	A8547701						
Sample Date		05/14/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	18	NA		NA		NA	
Aroclor 1221	UG/KG	ND	18	NA		NA		NA	
Aroclor 1232	UG/KG	ND	18	NA		NA		NA	
Aroclor 1242	UG/KG	ND	18	NA		NA		NA	
Aroclor 1248	UG/KG	38	18	NA		NA		NA	
Aroclor 1254	UG/KG	46	18	NA		NA		NA	
Aroclor 1260	UG/KG	22	18	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	67	35-134	NA		NA		NA	
Decachlorobiphenyl	%	121	34-148	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		ROLLWAY-051408A							
Job No	Lab ID	A08-5477	A8547701						
Sample Date		05/14/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	NA		NA		NA	
Barium - Total	MG/L	0.43	0.0020	NA		NA		NA	
Cadmium - Total	MG/L	0.0046	0.0010	NA		NA		NA	
Chromium - Total	MG/L	0.018	0.0040	NA		NA		NA	
Lead - Total	MG/L	ND	0.0050	NA		NA		NA	
Mercury - Total	MG/L	ND	0.00020	NA		NA		NA	
Selenium - Total	MG/L	ND	0.015	NA		NA		NA	
Silver - Total	MG/L	ND	0.0030	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Environmental Strategies Corporation
Emerald Screening
WET CHEMISTRY ANALYSIS

Client ID		ROLLWAY-051408A							
Job No	Lab ID	A08-5477	A8547701						
Sample Date		05/14/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Total Moisture Content	%	6.4	0	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Chronology and QC Summary Package

Client ID		VBLK85		Z-1906					
Job No	Lab ID	A08-5477	A8B1546004	A08-5477	A8B1535001				
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.0050	ND	0.050	NA		NA	
2-Butanone	MG/L	ND	0.025	ND	0.25	NA		NA	
Carbon Tetrachloride	MG/L	ND	0.0050	ND	0.050	NA		NA	
Chlorobenzene	MG/L	ND	0.0050	ND	0.050	NA		NA	
Chloroform	MG/L	ND	0.0050	ND	0.050	NA		NA	
1,2-Dichloroethane	MG/L	ND	0.0050	ND	0.050	NA		NA	
1,1-Dichloroethene	MG/L	ND	0.0050	ND	0.050	NA		NA	
Tetrachloroethene	MG/L	ND	0.0050	ND	0.050	NA		NA	
Trichloroethene	MG/L	ND	0.0050	ND	0.050	NA		NA	
Vinyl chloride	MG/L	ND	0.0050	ND	0.050	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	92	50-200	95	50-200	NA		NA	
1,4-Difluorobenzene	%	102	50-200	103	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	94	50-200	93	50-200	NA		NA	
Toluene-D8	%	97	71-126	96	71-126	NA		NA	
p-Bromofluorobenzene	%	99	73-120	94	73-120	NA		NA	
1,2-Dichloroethane-D4	%	103	66-137	100	66-137	NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		MSB85							
Job No	Lab ID	A08-5477	A8B1546003						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	0.026	0.0050	NA		NA		NA	
2-Butanone	MG/L	0.12	0.025	NA		NA		NA	
Carbon Tetrachloride	MG/L	0.028	0.0050	NA		NA		NA	
Chlorobenzene	MG/L	0.025	0.0050	NA		NA		NA	
Chloroform	MG/L	0.025	0.0050	NA		NA		NA	
1,2-Dichloroethane	MG/L	0.025	0.0050	NA		NA		NA	
1,1-Dichloroethene	MG/L	0.028	0.0050	NA		NA		NA	
Tetrachloroethene	MG/L	0.026	0.0050	NA		NA		NA	
Trichloroethene	MG/L	0.027	0.0050	NA		NA		NA	
Vinyl chloride	MG/L	0.023	0.0050	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	101	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	101	50-200	NA		NA		NA	
1,4-Dichlorobenzene-D4	%	102	50-200	NA		NA		NA	
Toluene-D8	%	96	71-126	NA		NA		NA	
p-Bromofluorobenzene	%	92	73-120	NA		NA		NA	
1,2-Dichloroethane-D4	%	95	66-137	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		Method Blank							
Job No	Lab ID	A08-5477	A8B1530902						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	16	NA		NA		NA	
Aroclor 1221	UG/KG	ND	16	NA		NA		NA	
Aroclor 1232	UG/KG	ND	16	NA		NA		NA	
Aroclor 1242	UG/KG	ND	16	NA		NA		NA	
Aroclor 1248	UG/KG	ND	16	NA		NA		NA	
Aroclor 1254	UG/KG	ND	16	NA		NA		NA	
Aroclor 1260	UG/KG	ND	16	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	72	35-134	NA		NA		NA	
Decachlorobiphenyl	%	90	34-148	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		Matrix Spike Blank							
Job No	Lab ID	A08-5477	A8B1530901						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	160	16	NA		NA		NA	
Aroclor 1221	UG/KG	ND	16	NA		NA		NA	
Aroclor 1232	UG/KG	ND	16	NA		NA		NA	
Aroclor 1242	UG/KG	ND	16	NA		NA		NA	
Aroclor 1248	UG/KG	ND	16	NA		NA		NA	
Aroclor 1254	UG/KG	ND	16	NA		NA		NA	
Aroclor 1260	UG/KG	180	16	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	76	35-134	NA		NA		NA	
Decachlorobiphenyl	%	92	34-148	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		J-2358		Method Blank		Method Blank			
Job No	Lab ID	A08-5477	A8B1534901	A08-5477	A8B1541102	A08-5477	A8B1541202		
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	ND	0.010	NA		NA	
Mercury - Total	MG/L	ND	0.00020	NA		ND	0.00020	NA	
Barium - Total	MG/L	0.027	0.0020	ND	0.0020	NA		NA	
Cadmium - Total	MG/L	ND	0.0010	ND	0.0010	NA		NA	
Chromium - Total	MG/L	ND	0.0040	ND	0.0040	NA		NA	
Lead - Total	MG/L	0.012	0.0050	ND	0.0050	NA		NA	
Selenium - Total	MG/L	ND	0.015	ND	0.015	NA		NA	
Silver - Total	MG/L	ND	0.0030	ND	0.0030	NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		LCS		LCS					
Job No	Lab ID	A08-5477	A8B1541101	A08-5477	A8B1541201				
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	1.0	0.010	NA		NA		NA	
Cadmium - Total	MG/L	1.0	0.0010	NA		NA		NA	
Mercury - Total	MG/L	NA		0.0066	0.00020	NA		NA	
Barium - Total	MG/L	1.0	0.0020	NA		NA		NA	
Chromium - Total	MG/L	0.98	0.0040	NA		NA		NA	
Lead - Total	MG/L	1.0	0.0050	NA		NA		NA	
Selenium - Total	MG/L	1.0	0.015	NA		NA		NA	
Silver - Total	MG/L	1.0	0.0030	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client Sample ID: VBLK85 MSB85
Lab Sample ID: A8B1546004 A8B1546003

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCLP VOLATILES					
Benzene	MG/L	0.0260	0.0250	104	77-123
2-Butanone	MG/L	0.121	0.125	97	67-131
Carbon Tetrachloride	MG/L	0.0275	0.0250	110	75-128
Chlorobenzene	MG/L	0.0250	0.0250	100	77-121
Chloroform	MG/L	0.0249	0.0250	100	78-120
1,2-Dichloroethane	MG/L	0.0254	0.0250	102	74-126
Tetrachloroethene	MG/L	0.0265	0.0250	106	77-120
Trichloroethene	MG/L	0.0268	0.0250	107	77-123
Vinyl chloride	MG/L	0.0232	0.0250	93	67-127

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank Matrix Spike Blank
Lab Sample ID: A8B1530902 A8B1530901

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8082 - POLYCHLORINATED BIPHENYLS					
Aroclor 1260	UG/KG	176	162	109	52-140
Aroclor 1016	UG/KG	156	162	96	59-154

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: J-2358 LCS
Lab Sample ID: A8B1534901 A8B1541101

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
TCLP METALS TESTING					
TCLP TOTAL ARSENIC	MG/L	1.03	1.00	103	80-120
TCLP TOTAL BARIUM	MG/L	1.00	1.00	98	80-120
TCLP TOTAL CADMIUM	MG/L	1.00	1.00	101	80-120
TCLP TOTAL CHROMIUM	MG/L	0.985	1.00	98	80-120
TCLP TOTAL LEAD	MG/L	1.02	1.00	101	80-120
TCLP TOTAL SELENIUM	MG/L	1.03	1.00	103	80-120
TCLP TOTAL SILVER	MG/L	1.02	1.00	102	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: J-2358 LCS
Lab Sample ID: A8B1534901 A8B1541201

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
TCLP METALS TESTING					
TCLP TOTAL MERCURY	MG/L	0.00657	0.00666	98	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

METHOD 8260 - TCLP VOLATILES

Client Sample ID Job No & Lab Sample ID	ROLLWAY-051408A A08-5477 A8547701				
Sample Date	05/14/2008 13:42				
Received Date	05/15/2008 09:30				
TCLP Date/Time	05/16/2008 10:45				
Extraction Date					
Analysis Date	05/17/2008 00:46				
TCLP Extraction HT Met?	YES				
Extraction HT Met?	-				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	10.0				
Sample wt/vol	0.005 LITERS				
% Dry					

NA = Not Applicable

METHOD 8260 - TCLP VOLATILES

Client Sample ID	MSB85				
Job No & Lab Sample ID	A08-5477 A8B1546003				
Sample Date					
Received Date					
TCLP Date/Time	-				
Extraction Date					
Analysis Date	05/16/2008 21:57				
TCLP Extraction HT Met?	-				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	0.005 LITERS				
% Dry					

NA = Not Applicable

METHOD 8260 - TCLP VOLATILES

Client Sample ID Job No & Lab Sample ID	VBLK85 A08-5477 A8B1546004	Z-1906 A08-5477 A8B1535001			
Sample Date					
Received Date					
TCLP Date/Time	-	05/16/2008 10:45			
Extraction Date					
Analysis Date	05/16/2008 23:21	05/17/2008 00:23			
TCLP Extraction HT Met?	-	YES			
Extraction HT Met?	-	-			
Analytical HT Met?	-	-			
Sample Matrix	SOIL LOW	SOIL LOW			
Dilution Factor	1.0	10.0			
Sample wt/vol	0.005 LITERS	0.005 LITERS			
% Dry					

NA = Not Applicable

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID Job No & Lab Sample ID	ROLLWAY-051408A A08-5477 A8547701				
Sample Date	05/14/2008 13:42				
Received Date	05/15/2008 09:30				
Extraction Date	05/15/2008 15:00				
Analysis Date	05/16/2008 08:43				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.57 GRAMS				
% Dry	91.32				

NA = Not Applicable

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID Job No & Lab Sample ID	Matrix Spike Blank A08-5477 A8B1530901				
Sample Date					
Received Date					
Extraction Date	05/15/2008 15:00				
Analysis Date	05/16/2008 08:14				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.86 GRAMS				
% Dry	100.00				

NA = Not Applicable

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID Job No & Lab Sample ID	Method Blank A08-5477 A8B1530902				
Sample Date					
Received Date					
Extraction Date	05/15/2008 15:00				
Analysis Date	05/16/2008 08:29				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.76 GRAMS				
% Dry	100.00				

NA = Not Applicable

ENVIRONMENTAL STRATEGIES CORPORATION
SAMPLE CHRONOLOGY

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A8547701	ROLLWAY-051408A	MG/L	Arsenic - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Barium - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Cadmium - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Chromium - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Lead - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Mercury - Total	7470	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/16 18:14	Yes	SOIL
		MG/L	Selenium - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL
		MG/L	Silver - Total	6010	1.00	05/14/2008 13:42	05/15 09:30	05/16 10:45	Yes	05/19 14:25	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A8B1541102	Method Blank	MG/L	Arsenic - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Barium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Cadmium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Chromium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Lead - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Selenium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
		MG/L	Silver - Total	6010	1.00	-	- 09:30	NA	NA	05/19 12:59	Yes	WATER
A8B1541202	Method Blank	MG/L	Mercury - Total	7470	1.00	-	- 09:30	NA	NA	05/16 18:20	Yes	WATER
A8B1534901	J-2358	MG/L	Arsenic - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Barium - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Cadmium - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Chromium - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Lead - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Mercury - Total	7470	1.00	-	- 09:30	05/16 10:45	Yes	05/16 18:17	Yes	SOIL
		MG/L	Selenium - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
		MG/L	Silver - Total	6010	1.00	-	- 09:30	05/16 10:45	Yes	05/19 13:10	Yes	SOIL
A8B1541101	LCS	MG/L	Arsenic - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Barium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Cadmium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Chromium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Lead - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Selenium - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
		MG/L	Silver - Total	6010	1.00	-	- 09:30	NA	NA	05/19 13:04	Yes	WATER
A8B1541201	LCS	MG/L	Mercury - Total	7470	1.00	-	- 09:30	NA	NA	05/16 18:18	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A8547701	ROLLWAY-051408A	%	Total Moisture Content	D2216-90	1.00	05/14/2008 13:42	05/15 09:30	NA	NA	05/16 09:55	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

CHAIN OF CUSTODY RECORD

Project Number:	Site and Location:
133928.15	Rollway, Liverpool, NY
Contact Name:	**Contact Email:** (Notice Spelling)
Scott Petersen	Scott-petersen@wsp-usa.com
Sampler's Name:	**Sampler's Signature:**
Scott Petersen	Scott Petersen

Matrices: S = Soil; Aq = Water; A = Air; Bu = Bulk; W = Wipe; Bi = Biota; OW = Oily Waste; O = Other

№ 002122

Requested Analyses

Sample Identification:	Date	Time	Matrix	Number of Containers	TCLP VOA's	TCLP Metals	PCBs	% Moisture	Remarks
Rollway - LNAPL System Spoils - 051408A	5/14/08	1342	S	1 16oz		X	X	X	
Rollway - LNAPL System Spoils - 051408B	5/14/08	1342	S	1 40z	X				

Relinquished by (Signature): Scott Petersen	5/14/08 1514 Date | Time	Received by (Signature):	Laboratory Name: Test America
Relinquished by (Signature):	5/15/08 0930 Date | Time	Received by (Signature):	Laboratory Location: Buffalo, NY
			Custody Seal Numbers: 19499
Turn-Around Time: 48-hr		Tracking Number:	Method of Shipment:

WSP ENVIRONMENTAL STRATEGIES

☐ Reston Office: 11911 Freedom Dr, # 900, Reston, VA 20190
Tel: (703) 709-6500, Fax: (703) 709-8505

☐ Pittsburgh Office: 750 Holiday Dr., #410, Pittsburgh, PA 15220
Tel: (412) 604-1040, Fax: (412) 604-1055

☐ Denver Office: 4600 South Ulster, # 930, Denver, CO 80237
Tel: (303) 850-9200, Fax: (303) 850-9214

☐ Minneapolis Office: 123 North 3rd St, #706, Minneapolis, MN 55401
Tel: (612) 343-0510, Fax: (612) 343-0506

☒ Cazenovia (315)655-3900

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33/33

Appendix D – Waste Disposal Documentation

SCPPW6/2/2008

SY1910213-003

WORK ORDER NO. _____

DOCUMENT NO. 208033 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services VEHICLE ID # T310078 IL

EPA ID # _____ TRANS. 1 PHONE _____

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY	SHIPPER
WM I High Acres Landfill	Rollway Bearing Corp
FACILITY EPA ID # NYSDEC80870765	SHIPPER EPA ID # NYD002228419
ADDRESS 425 Perinton Parkway	ADDRESS ~~5 Sullivan Street~~ 7600 Morgan Rd.
CITY Fairport STATE NY ZIP 14450	CITY ~~Geneseo~~ Liverpool STATE NY ZIP ~~13095~~ 13090

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
001/25y	CM		A. NONE, NON-REGULATED MATERIAL, (SOIL, DEBRIS), N/A	EST -12-	T
			B.		
			C.		
			D.		
			E. CAN # CHRT 25670		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS A. T02255NY EMERGENCY PHONE #: (800) 483-3718

PO# WO8CU52809

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	[illegible]	[signature]	[illegible]
TRANSPORTER 1	LARRY SALISBURY	[signature]	6/6/08
TRANSPORTER 2	PRINT	SIGN	DATE
RECEIVED BY	PRINT	SIGN	DATE

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CHI 107

Appendix E – Operation and Maintenance Log Sheet

Checklist
LNAPL Recovery System
Former Rollway Bearing Facility
Liverpool, NY

Date: _____ Inspector (print): _____
Arrival Time: _____ Inspector (sign): _____
Departure Time: _____ Weather Conditions: _____

Reason for Visit: _____

LNAPL Recovery System Skid

Gauge	Reading	Units
Inlet Vacuum: Before Vapor-Liquid Separator		Inches of H_2O
Vacuum Before Air Filter		Inches of H_2O
Vacuum After Air Filter/Before Blower Inlet		Inches of H_2O
Discharge Stack Pressure		Inches of H_2O
Discharge Stack Temperature		°F
Kilowatt Hour Meter		kWh

LNAPL Recovery Wells

Well ID	Vacuum (Inches of H_2O)	Flow (scfm)
OW-2		
RW-1		
OW-3		
OW-8		

Notable Observations:

_____

_____

_____

System Maintenance:

Description of Maintenance Needed:

_____

_____

Date of Maintenance Completion:

_____