Erie Harbor Site

MONROE COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: C828125

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Erie Harbor Site, 225-405 Mt. Hope Avenue, Rochester, New York (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index #B8-0673-04-08S, Site # C828125, which was executed on December 2, 2004.

1.1.1 General

Erie Harbor, LLC entered into a BCA with the NYSDEC to remediate a 6.016 acre property located in the City of Rochester, Monroe County, New York. This BCA required the Remedial Party, Erie Harbor, LLC, to investigate and remediate contaminated media at the site. A figure showing the location and boundaries of this 6.016-acre Site is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement, a draft version of which is included in Appendix B. After completion of the remedial work described in the Remedial Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Day Environmental, Inc., on behalf of Erie Harbor, LLC, in accordance with the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated November 2009, and the guidelines provided by NYSDEC. This SMP addresses: (1 the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site; and 2) the potential for human health exposures to remaining contamination.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Monroe County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of Engineering and Institutional Controls; (2) media monitoring; (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (4) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes two plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; and (2) a Monitoring Plan for implementation of Site Monitoring.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index #B8-0673-04-08S; Site #C828125) for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager and the New York State Department of Health (NYSDOH). In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The site is located in the City of Rochester, County of Monroe, New York and is identified as Section 121.55, Block 01 and Lot 59.001 on the Monroe County Tax Map. The site is an approximately 6.016-acre area bounded by a residential apartment building to the north, City of parkland to the south, Mt. Hope Avenue with mixed residential and commercial properties beyond to the east, and City of Rochester parkland with the Genesee River beyond to the west (see Figure 1). The boundaries of the site are more fully described in the metes and bounds that are attached as part of Draft Environmental Easement that is included in Appendix B.

1.2.2 Site History

Between the mid-1970s and 2009, the Site was developed with five 4-story slab-on-grade apartment buildings totaling approximately 205,000 square feet of building space, and housing 200 units. Prior to the mid-1970s, the Site was historically used as a warehouse, feeder canal for the Erie Canal, rail yards, a workshop, auto repair, car sales, a wagon shop, iron cutting, a brick storage yard, a tannery, and a coal yard. In addition, historical Sanborn Maps suggested gasoline tanks associated with the former gasoline station(s) may be present on the southern end of the Site. In 2009, the five apartment buildings were demolished. The former apartment buildings, and other historical features are shown on Figure 2.

DAY performed previous studies on properties that include the Site. The reports completed include the following:

- *Phase I Environmental Site Assessment Report; 151 to 435 Mt. Hope Avenue and 562 Ford Street; Rochester; New York*; dated October 24, 2000 (DAY File #2307E-00). This report included historical maps, such as Sanborn maps and Plat Books, which depicted historical uses, operations and occupants on the Site.
- *Phase II Environmental Study Data Package; 151-435 Mount Hope Avenue and 562 Ford Street Rochester; New York,* dated October, 2000 (DAY File #2395S-00).
- *Phase II Environmental Study Data Evaluation Report; 151, 171, 173, 175, 177, 191, 425 and 435 Mount Hope Avenue, and 562 Ford Street Rochester; New York;* dated February, 2002 (DAY File #2506S-00). This report does not include the Site, but the findings of the investigation were used to assist in interpreting data for the Site.

URS Corporation (URS) also completed an environmental study on property that included the Site. The report for the URS study is titled "*Phase II Report; Environmental Site Assessment of River Park Commons Apartment Complex; Rochester, New York*", and is dated June 2003.

The Site and surrounding area are serviced by a public sewer system and a public water supply system. A Site Plan showing relevant features on the Site prior to demolition of the five apartment buildings is included as Figure 2. Figure 3 shows the majority of cumulative test locations.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following report:

- Remedial Investigation/Remedial Alternatives Analysis Report (RI/RAA Report); Brownfield Cleanup Program NYSDEC Site ID C828125; 225-405 Mt. Hope Avenue (Low-Rise Property), Rochester, New York, dated February 2009 (DAY File #3801S-06).

Generally, the RI determined that different areas of impact are present at the Site that are attributable to past uses/operations at the Site, including on-site and off-site historic fill material, past filling station and/or auto repair facilities, possibly railroad and coal storage use, wet-type transformers on apartment buildings, etc. Impacted media identified at the Site includes areas of topsoil, subsurface fill material, subsurface soil and groundwater. Table 1 includes a summary of the samples analyzed during the RI. Table 2 provides a summary of the number of samples tested for solid and liquid media during the RI, and the type and concentrations of constituents detected in samples from the Site during the RI, and the number of samples that exceeded standards, criteria and guidance (SCG) values in one or more sample. Based on the findings of the RI, the types of impact at the Site that were identified to require remediation included:

- Polychlorinated biphenyls (PCB) at some transformer locations;

- Polyaromatic hydrocarbon (PAH) semi-volatile organic compounds (SVOCs) in topsoil across the Site;

- PAH SVOCs in an area of subsurface fill material on the central portion of the Site;

- Petroleum-related volatile organic compounds (VOCs) and SVOCs in subsurface soil and groundwater on the southeastern portion of the Site; and

- VOCs trichloroethene (TCE) and dichlorodifluoromethane in groundwater and soil gas on the central portion of the Site. TCE was also detected off-site in a soil gas sample in the right of way on the east side of Mt. Hope Avenue that is inferred downgradient from the central portion of the Site. The source of these VOCs on-site and off-site is unknown.

Below is a summary of site conditions when the RI was performed between 2006 and 2008:

Geologic Conditions

Based on the work performed to date at the Site during this project, heterogeneous fill material generally consisting of reworked soil (e.g., silt, sand, and gravel) intermixed with lesser amounts of brick, cinders, coal, slag, organics, wood, rock, concrete, asphalt, rebar, and ash is present over most of the Site to depths ranging between approximately 1.0 foot and 15.0 feet. The uppermost layer of indigenous soil predominantly consists of varying mixtures of sands, silts, gravels and lesser amounts of clay. Reference materials indicate that the bedrock underlying the overburden deposits in proximity to the Site consists of Lockport Dolomite. Four geologic cross-sections (A-A', B-B', C-C' and D-D') were developed for the Site during the Remedial Investigation (refer to Figure 3 for plan view), and are included as Figure 4, Figure 5, Figure 6 and Figure 7, respectively.

A review of a "Generalized Groundwater Contour Map" for the Rochester East quadrangle dated 1980 by Dr. Richard A. Young indicates groundwater in proximity to the Site flows toward the north and/or northeast. As per the United States Department of the Interior Geological Survey, Water-Resources Investigations Report #84-4259 Potentiometric Surface and Groundwater Movement Map, groundwater in proximity to the Site is shown to flow toward the northeast.

Figure 8 and Figure 9 illustrate groundwater flow conditions during the remedial investigation at the Site on September 5, 2006 and April 2, 2007, respectively. As shown, groundwater over the majority of the Site generally flows toward the east away from the Genesee River. However, groundwater on the southern portion of the Site generally flows in a southerly direction, which is cross-gradient and reverse flow in relation to the Genesee River. These flow directions may be modified locally due to buried utilities, seasonal conditions, or other factors. The top of the groundwater table is typically between 6 and 12 feet below the ground surface

Surface Soil and Shallow Subsurface Soil

The detected concentrations of some PAH SVOCs detected in 7 of 8 surface soil samples (i.e., designated as RI surface soil samples DAYSS-01 through DAYSS-08 that were collected from a 0-2 inch depth interval) exceeded NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objective (SCOs). The concentration of mercury detected in one surface soil sample exceeded its NYSDEC Part 375 Restricted Residential Use SCO. Table 3 and Table 4 show the SVOC and metals results of the eight surface soil samples, respectively. Figure 3 and Figure 10 include the locations of surface soil sample locations DAYSS-01 through DAYSS-08. Surface soil and shallow subsurface soil consisting of topsoil was identified as requiring remediation.

Subsurface Fill

Results of RI subsurface fill samples are included on Tables 5 (VOCs), Table 6 (SVOCs), Table 7 (metals and cyanide), and Table 8 (PCBs and pesticides). As shown on Table 6, Restricted Residential Use SCOs were only exceeded for some PAH SVOCs at one subsurface fill sample collected at location DAYMW-03 shown on Figure 3. No RI subsurface fill samples contained VOCs, metals, cyanide, PCBs or pesticides at concentrations exceeding Restricted Residential Use SCOs. An area of subsurface fill at the DAYMW-03 test location was identified as requiring remediation.

Subsurface Soil

Results of RI subsurface soil samples are included on Tables 5 (VOCs), Table 6 (SVOCs), Table 7 (metals and cyanide), and Table 8 (PCBs and pesticides).

Petroleum contamination was detected in subsurface soil on the southeast portion of the Site. It was unknown at the time of the RI if the petroleum contaminated soil extended into the 30-foot wide drainage easement of the Site or the adjoining right-of-way of Mt. Hope Avenue to the east (refer to Figure 3). Test locations in this area include TB-18, MWURS-1, DAYMW-02, DAYSB-03, Tank Pit/TP-2 and TP-3 shown on Figure 3, and test results for soil or fill samples collected during the RI from select test location in this area are included on Tables 5 through 8. Samples of the petroleum-contaminated soil from this southeast portion of the Site did not exceed Restricted Residential Use SCOs. However, it was suspected that the petroleum-contaminated soil in this area was contributing to petroleum contamination in groundwater on this portion of the Site. The area of petroleum-contaminated soil on the southeast portion of the Site was identified as requiring remediation.

Two limited areas of lower level petroleum-contaminated soil were documented on the central portion of the Site. Test locations in one area included TB-31 and DAYSB-07, and test location in the other area included MW-6, SB-02, TB-30, DAYSB-14, DAYSB-15, DAYSB15A, DAYSB-15B, DAYSB15C, DAYSB-20, and DAYSB-26. These test locations area shown on Figure 3, and test results for soil or fill samples collected during the RI from select test locations in these areas are included on Tables 5 through 8. Soil and fill in these two areas did not exceed restricted residential Use SCOs, and groundwater sampling and analysis in these areas confirmed that petroleum constituents were not leaching from soil. These areas of lower level petroleum contamination did not require remediation.

Groundwater

As part of the RI, groundwater samples were collected and analyzed from up to eleven monitoring wells across the Site. The locations of these wells are shown on Figure 3, Figure 8 and Figure 9. Test results for groundwater samples are included on Tables 9 (VOCs), Table 10 (SVOCs), Table 11 (metals and cyanide), and Table 12 (PCBs and pesticides).

As shown by Table 9 and Table 10, petroleum-related constituents were detected in groundwater samples from well MWURS-1 at concentrations exceeding standards and guidance values referenced in NYSDEC Division of Water Technical and Administrative Guidance Series (TOGS 1.1.1). The location of MWURS-1 is shown on the figures referenced above. This is at the area of petroleum-contaminated soil located on the southeast portion of the Site, and the petroleum-contaminated groundwater on this portion of the Site was also identified as requiring remediation.

As shown on Table 9, the VOC TCE was detected in groundwater samples from wells DAYMW-05, TW-1 and TW-3 at concentrations up to 3.6 times (i.e., highest detected concentrations of 15 ppb, 18 ppb and 10 ppb, respectively) the NYSDEC TOGS 1.1.1 groundwater standard of 5 ppb. TCE was also detected in one groundwater sample from monitoring well DAYMW-03, but at a concentration of only 3 ppb. In addition, Table 9 shows the VOC dichlorodifluoromethane (Freon 12) was detected in groundwater samples from monitoring well MW-5 at concentrations up to 1.6 times (i.e., 8 ppb) the NYSDEC TOGS 1.1.1 groundwater standard of 5 ppb. The locations of these wells are shown on the figures referenced above, and are on the central portion of the Site. The source of these VOCs detected in groundwater samples is unknown, but appears relatively localized given the fact they were not detected on a regular basis in other surface soil, subsurface soil, subsurface fill, or groundwater samples at the Site. Due to the localized distribution and minimal concentrations detected, aggressive remediation was not required by the NYSDEC for these areas of the Site; however, it was recommended that an evaluation be conducted to determine if institutional controls and engineering controls were needed to mitigate potential future exposures. As shown on Table 11, some metals were detected in groundwater samples from some of the wells at concentrations exceeding NYSDEC TOGS 1.1.1 groundwater standards and guidance values. The RI indicates that naturally occurring background conditions may be contributing to the detected concentrations of most metals detected in the groundwater samples, although it is possible past uses/operations may have also contributed to metals concentrations in groundwater at the Site. The metals in groundwater at the Site did not require remediation.

Soil Vapor Intrusion

A Vapor Intrusion Evaluation and supplemental Soil Vapor Evaluation were completed at the Site as part of the RI at the apartment buildings that have since been demolished. The vapor intrusion evaluation was used to determine if VOCs were accumulating beneath apartment building floor slabs or whether such VOCs were impacting indoor air. Vapor Intrusion sub-slab test locations SLB-01 through SLB-06, indoor air locations IA-01 through IA-06, background outdoor air locations BG-01 and BG-02 are shown on Figure 3 and the VOC test results are summarized on Table 13. The supplemental soil vapor evaluation was used to further determine the location, presence, type, and relative concentrations of VOCs on or near the central portion of the Site. Soil vapor test locations SV-1 through SV-7 and BG are shown on Figure 3 and the VOC test results are summarized on Table 14. The results showed that elevated concentrations of the VOCs TCE and/or dichlorodifluoromethane (Freon 12) were present on the central portion of the Site, most notably at some of the soil vapor sample locations. This is the same general area as that where elevated concentrations of TCE and Freon 12 were detected in groundwater samples. The source(s) of these VOCs are not known, but appear relatively localized given the fact they were not detected on a regular basis in other surface soil, subsurface soil, subsurface fill or groundwater samples. Due to the localized distribution, aggressive remediation was not required by the NYSDEC for this area of the Site; however, it was concluded that an evaluation be completed to determine the need for institutional controls and engineering controls to mitigate potential vapor intrusion at future buildings on the central portion of the Site, and that such controls be utilized if determined to be needed. The results of the supplemental soil vapor evaluation indicate that VOCs are also present in off-site soil vapor sample SV-7 (refer to Figure 3 and Table 14). The primary VOC of interest detected at the off-site test location SV-7 is TCE, and its source is unknown. The RI indicated that a determination needs to be made regarding whether further evaluation of VOCs by the NYSDEC and NYSDOH is warranted off-site.

Underground Storage Tanks

Test pit TP-2 was excavated as a result of a magnetic anomaly identified during a geophysical survey (refer to Figure 3). During excavation of this test pit, an abandoned underground storage tank (UST) was encountered. The UST was permanently closed (i.e., removed) in accordance with applicable regulations. The UST was observed to be constructed of bare steel, was observed in poor condition, had a storage capacity of approximately 1,000 gallons, contained approximately 128 gallons of water that was disposed as part of the closure process, and soil immediately beneath the UST was contaminated with petroleum most likely resembling weathered gasoline. This UST was located within the southeast portion of the Site where petroleum-contaminated soil and groundwater were identified in an area of the Site that was formerly operated as a gasoline and/or service station. Documentation concerning the permanent closure (i.e., removal) of this UST, including results of a soil sample collected beneath the UST, were included in the RI/RAA Report.

PCB Transformers

Four transformers were located at apartment buildings addressed as 225, 285, 345, and 385 Mt. Hope Avenue, and contained transformer oil with polychlorinated biphenyl (PCB) concentrations of 20,400 milligram/kilogram (mg/kg) or parts per million (ppm), 580 mg/kg, 2,880 mg/kg, and 1,340,000 mg/kg, respectively. The locations of these transformers are shown on Figure 3.

- On July 25, 2005, the PCB transformer at the 345 Mt. Hope Avenue building was reported leaking PCB fluid. The transformer and it contents were removed and disposed off-site, impacted media were remediated to the extent practicable, and the NYSDEC closed its associated spill file #0550701. The NYSDEC agreed that an area of PCB-impacted concrete floor inside the associated sidewalk vault could be addressed when the existing building was demolished.

- On September 16, 2005, the PCB transformer at the 225 Mt. Hope Avenue building was reported leaking PCB fluid. The transformer and it contents were removed and disposed off-site, impacted media were remediated to the extent practicable, and the NYSDEC closed its associated spill file #0551001. The NYSDEC agreed that an area of PCB-impacted curbing on the associated sidewalk vault could be addressed when the existing building was demolished. In addition, it was agreed that further evaluation of the concrete and soil under the transformer pad edges would be completed at the time the associated building was slated for demolition.

- It was agreed with the NYSDEC that the PCB transformers at the 285 Mt. Hope Avenue building and the 385 Mt. Hope Avenue building would be evaluated at the time the associated buildings were slated for demolition.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC approved Interim Remedial Measure Work Plan (IRM Work Plan) dated January 27, 2009, the NYSDEC-approved Remedial Work Plan (RWP) dated March 2009, and an Addendum to the March 2009 RWP dated July 30, 2009. In a letter dated March 19, 2009, the NYSDEC approved the IRM Work Plan, with a modification in the letter. In a letter dated November 2, 2009, the NYSDEC approved the RWP, with the modifications contained in the Addendum.

The following is a summary of the Remedial Actions performed at the site:

1. Excavation of soil/fill, exceeding restricted residential SCOs shown in Appendix C, to depths ranging between approximately 0.5 feet (topsoil) to 20 feet (i.e., approximately depth to bedrock) depending upon the conditions requiring remediation at the specific removal areas;

2. Post-excavation soil sampling and analysis as required at select excavation areas;

3. In-situ treatment with chemical oxidation and bioremediation products. This involved installation of the remediation products at two soil removal excavation areas prior to their backfilling, as well as subsequent direct injection in a localized area abutting these excavation areas;

4. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site;

5. Remediation of the four PCB transformer areas, which involved removal of the two existing PCB Transformers located at the 285 Mt. Hope Avenue building and at the 385 Mt. Hope Avenue building, as well as removal and disposal of impacted concrete pads, concrete curbing and/or soil present at three of the transformer areas;

6. Environmental screening of disturbed media during building demolition and utility disconnection work;

7. Removal and disposal of excess soil and fill material that was generated during demolition and rough grading activities at the Site; and

8. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.

The majority of remedial activities outlined in the IRM Work Plan and RWP were completed at the site between April 2009 and May 2010.

Remaining remediation components include:

1. Design, installation, operation and monitoring of engineering controls on future buildings on the central portion of the Site if determined to be needed for mitigating the potential for vapor intrusion of VOCs, generally consisting of TCE and Freon 12, into these buildings;

2. Installation of four new groundwater monitoring wells after the majority of redevelopment work is complete; and

3. Groundwater monitoring at up to twelve monitoring wells at the Site.

1.4.1 Removal of Contaminated Materials from the Site

For this project, the soil cleanup objectives (SCOs) for applicable land use are Restricted Residential SCOs. The Restricted Residential SCOs for the primary contaminants of concern (COCs) at the Site are included in the Table 375-6.8(b) in Appendix C. Contaminated materials were removed from the Site to meet the Restricted Residential SCOs for the Site-related COCs. As part of the IRM, the two remaining PCB Transformers and the two non-PCB Transformers were removed and disposed off-site. During the IRM and subsequent main remediation, a total of 9,457.14 tons (15.9 tons of hazardous material during IRM removal, and 9,440.76 tons of non-hazardous material during primary remediation removal) of soil, fill material and some concrete was removed from the Erie Harbor Site on NYSDEC Part 364-permitted trucks and disposed at a regulated landfill facility as part of the remedy. The removal work involved the following media:

<u>PCB Transformer Areas</u>

The two remaining PCB Transformers (i.e., Transformer #2 at 285 Mt. Hope Avenue, and Transformer #4 at 385 Mt. Hope Avenue), and the two non-PCB Transformers (i.e., Transformer #1 at 225 Mt. Hope Avenue and Transformer #3 at 345 Mt. Hope Avenue), and any contents, were disposed off-site in accordance with applicable regulations. The locations of the four transformer areas are shown on Figure 3. Soil, fill and concrete removal was subsequently required at three of the transformer areas, and confirmatory soil samples from these areas show PCB concentrations are below the Restricted Residential SCO for PCBs of 1.0 ppm. These transformer areas are as follows:

- Transformer #1 (225 Mt. Hope Avenue PCB Transformer). Removed material from this transformer area was disposed off-site as hazardous waste.
- Transformer #2 (285 Mt. Hope Avenue PCB Transformer). Based on supplemental testing, removed material from this transformer area was disposed off-site as non-hazardous waste.
- Transformer #3 (345 Mt. Hope Avenue PCB Transformer). Removed material from this transformer area was disposed off-site as hazardous waste and also as a non-hazardous waste based on PCB concentrations. This transformer area required more soil excavation (i.e., 20 feet deep, with a final excavation area of approximately 428 square feet, also discussed as the Area G excavation) than the other two transformer areas (refer to Figure 3) in order to meet the Restricted Residential SCO for PCBs of 1.0 ppm.

<u>Excess Soil/Fill</u>

The following areas of excess soil/fill material were removed from the Site:

- A pile of excess soil/fill and some topsoil that were generated as a result of constructing a paved parking lot on the northern portion of the Site for use by residents of the adjoining Hamilton apartment complex.
- A pile of excess topsoil/soil/fill material as a result of rough grading on the central portion of the Site.
- A pile of excess topsoil/soil/fill material as a result of rough grading on the central portion of the Site.

<u>Topsoil Soil Removal (Areas A, B and C)</u>

Topsoil (i.e., surface soil and shallow subsurface soil) present at locations across the Site that surrounded the footprints of apartment buildings and other site improvements prior to their demolition (i.e., covering a total of approximately 81,324 square feet) required removal in order to meet Restricted Residential SCOs for SVOCs, and also meet the Restricted Residential SCO for mercury in one limited location. Topsoil was removed from Area A (an approximate 74 square foot area) and Area B (an approximate 64 square foot area) as an IRM during the demolition of the apartment buildings at the Site (refer to Figure 3 and Figure 10). Area A was excavated to a depth of approximately 3.0 feet below the initial ground surface. Area B was excavated to depths ranging between approximately 2.5 feet and 3.2 feet below the initial ground surface. The results of final confirmatory soil samples from Area A and Area B are below Restricted Residential SCOs for SVOCs in Area A and Area B, and also for VOCs in the western portion of Area B, where unanticipated soil contamination with a citrus cleaner odor and elevated photoionization detector (PID) readings had been removed.

The results of twelve soil/fill samples collected at locations S-1 through S-12 immediately beneath the topsoil did not exceed Part 375 Restricted Residential Use SCOs for SVOCs (refer to Figure 10). These sub-soil samples were used as pre-excavation confirmatory soil samples for topsoil across remaining portions of the Site (i.e., designated as Area C covering approximately 81,186 square feet). The topsoil at Area C with an average thickness of 0.5 foot was subsequently removed (refer to Figure 10).

Area D Excavation

Subsurface fill was removed from the Area D excavation as shown on Figure 11. The fill material that was removed contained PAH SVOCs at concentrations exceeding Restricted Residential SCOs. The final excavation had an area of approximately 1,906 square feet with depths generally ranging between 6.8 feet and 10.5 feet below the existing ground surface. Fill was removed down to the top of indigenous soils, and until samples from each of four sidewalls and also two bottom samples were below the Restricted Residential Use SCOs for SVOCs.

Area E Excavation

Subsurface petroleum-contaminated soil and an empty UST were removed from the Area E excavation as shown on Figure 12. Further documentation pertaining to this removed UST is provided in the Final Engineering Report (FER). Where possible, soil was removed from the excavation until PID readings were at or below 25 ppm. The final excavation had an area of approximately 1,268 square feet with a depth of approximately 20 feet below the existing ground surface. Post-excavation soil samples were collected from excavation walls and bottom, and the results were below Restricted Residential Use SCOs for VOCs and SVOCs. In order to further remediate (i.e., polish) soil and groundwater within and in proximity to the Area E soil removal area, chemical oxidation and aerobic bioremediation products were placed in the excavation prior to backfilling (refer to Section 1.4.2).

Area F Excavation

Subsurface petroleum-contaminated soil was removed from the Area F excavation as shown on Figure 12. Soil was removed from the excavation until PID readings were at or below 25 ppm, except for the bottom of the excavation between two sheet pilings, which contained standing water and some sheen/petroleum globules and was located over a six-foot diameter storm sewer line. Approximately 5 boxes of absorbent pads (100 pads per box) and 4 boxes of absorbent socks (12 socks per box) were used to remove the majority of oil sheen/globules from the top of the standing water. Soil on the bottom of the Area F excavation that exhibited petroleum odors and PID readings greater than 1,000 ppm was not removed due to its proximity to the underlying storm sewer line. The final Area F excavation had an area of approximately 1,213 square feet with a depth generally ranging between 11 feet and 12 feet below the existing ground surface. As an exception, a portion of the excavation was only excavated to a depth of about 7 feet below the ground surface so that an east-west transecting sewer lateral would not be damaged (refer to Figure 12). Post-excavation soil samples were collected from excavation walls and bottom, and the results were below Restricted Residential Use SCOs for VOCs and SVOCs. In order to further remediate (i.e., polish) soil and groundwater within and in proximity to the Area F soil removal area, chemical oxidation and aerobic bioremediation products were placed in the excavation prior to backfilling (refer to Section 1.4.2).

Area F Extension Excavation

Subsurface petroleum-contaminated soil was removed from the Area F Extension excavation as shown on Figure 12. Where possible, soil was removed from the excavation until PID readings were at or below 25 ppm. The final excavation had an area of approximately 663 square feet with a depth of approximately 20 feet below the existing ground surface. Post-excavation soil samples were collected from excavation walls and bottom, and the results were below Restricted Residential Use SCOs for VOCs and SVOCs. However, soil from test boring T-1 immediately east of the eastern wall of the Area F Extension Excavation contained petroleum contaminants at concentrations that exhibited a peak PID reading of 1,878 ppm (refer to Figure 12). In order to further remediate (i.e., polish) soil and groundwater within and in proximity to the Area F Extension soil removal area, chemical oxidation and aerobic bioremediation products were placed in the excavation prior to backfilling and also outside the excavation including the area of Test Boring T-1 (refer to Section 1.4.2).

1.4.2 Site-Related Treatment Systems

In-Situ Chemical Oxidation and Bioremediation

Regenesis' RegenOx™ (RegenOx) and Oxygen Release Compound-Advanced® (ORC-A) were used for in-situ chemical oxidation and aerobic bioremediation on the southeast portion of the Site. Prior to backfilling, a total of approximately 2,000 pounds of RegenOx and 600 pounds of ORC-A were mixed with water and placed in the Area E, Area F, and Area F Extension F excavations. In addition, approximately 790 pounds of RegenOx and 350 pounds of ORC-A were mixed with water and injected at 6 injection points (i.e., I-1 through I-6) on the Site immediately east and south of the southeast corner of the backfilled Area F Extension excavation. Figure 12 shows the above-referenced excavation and subsequent injection point locations. Subsequent soil and groundwater performance monitoring have shown significant reductions in contaminant concentrations on this portion of the Site.

Soil Vapor Intrusion Mitigation Systems

With NYSDEC and NYSDOH input, an evaluation will be made to determine if the design of new buildings require soil vapor intrusion mitigation system engineering controls for future buildings to be constructed on the central portion of the Site (refer to "EC Area" on Figure 13). If needed, the engineering controls will be designed, implemented, operated and monitored. The purpose of these engineering controls will be to mitigate the potential for vapor intrusion into future on-site buildings on this portion of the Site. Based on a Preliminary Overall Plan (i.e., redevelopment site plan) dated June 2009 prepared by Passero Associates, it is currently anticipated that two proposed buildings for the Site redevelopment will likely require engineering controls depending upon their final design (i.e., approximately 5,100 square foot Building #3, and approximately 2,500 square foot Building #4 shown on Figure 13). The engineering controls could include a sub-slab depressurization system (SSDS), a sub-membrane depressurization system (SMDS), or other regulatory-approved alternative, and designs would utilize the guidance (e.g., Section 4.1 concerning methods of mitigation) listed in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006. A separate Engineering Control Design, Operation, and Monitoring Plan will be submitted for regulatory review and approval.

1.4.3 Remaining Contamination

The Site has been remediated to meet Restricted Residential SCOs for soil and fill material. Subsequent to implementing the remedy, remaining contamination at the Site is identified below.

Soil Exceeding Unrestricted Use Soil Cleanup Objectives

Table 15 (VOCs), Table 16 (Metals), and Table 17 (Pesticides and PCBs) and Figure 14 summarize the results of all soil samples remaining at the site after completion of Remedial Action that exceed the Track 1 (unrestricted) SCOs. As shown, this includes subsurface soil or historic subsurface fill at test pit, test boring and confirmatory sample locations for samples collected during previous investigations, the remedial investigation, the IRM work, and the remedial work.

Figure 14 also summarizes the results of all soil samples remaining at the site after completion of the remedial action that meet the SCOs for unrestricted use of the site.

Residual Petroleum-Contaminated Area (Area F)

Subsurface contamination consisting of petroleum-related constituents (i.e., weathered gasoline) remains on the southeast corner of the Site. The residual contamination left behind after source removal generally meets Track 1 Unrestricted Use SCOs. However, some petroleum contamination had to be left in the bottom of the Area F excavation shown on Figure 12. In general, the top of this petroleum contamination is located about 12 feet below the ground surface between two pre-existing sheet pilings that appear related to the previous installation of a 6-foot diameter storm sewer pipe that is beneath this excavation area. The presence of the active 6-foot storm sewer prohibited deeper excavation of contaminated media at this location. This area is within a 30-foot drainage easement that runs parallel to Mt. Hope Avenue. A total of 2,000 pounds of RegenOx and 600 pounds of ORC-A were placed in the excavations on this southeast portion of the Site prior to backfilling to assist with in-situ chemical oxidation and aerobic bioremediation of any remaining contamination. Some additional RegenOx and ORC-A were also placed immediately outside a limited portion of the area that was excavated (refer to Section 1.4.2). Further characteristics of the petroleum contamination are provided below.

- Contaminated soils below an approximately 12-foot depth beneath the Area F excavation, and also groundwater in this area, may exhibit petroleum-type nuisance odors when excavated.

- Brown petroleum globules and petroleum sheen may be encountered on the top of groundwater in or beneath the Area F excavation.

Confirmatory sampling/analysis and groundwater monitoring (including sampling/analysis) are planned for the southeast corner of the Site, which may show this petroleum contamination has been further remediated by the RegenOx and ORC-A excavation and in-situ applications

VOC Condition in Groundwater and Soil Vapor

TCE and Freon 12 remain in groundwater and soil vapor on the central portion of the Site. Some detected TCE and Freon 12 concentrations slightly exceed the TOGS 1.1.1 groundwater standard of 5 ug/l. Other VOCs (e.g., acetone, benzene, cyclohexane, hexane, toluene, xylenes, etc.) were also detected in soil vapor on this portion of the Site. While these VOCs do not exceed Track 1 Unrestricted SCOs and are therefore present at very low concentrations, nevertheless, their presence represents a potential for vapor intrusion into future buildings on this portion of the Site. In general, the detected concentrations of these VOCs do not appear to emit a noticeable odor or staining in the soil and/or groundwater, but their presence can sometimes be detected with a PID or flame ionization detector (FID).

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil, groundwater, and soil vapor exists beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

Engineering Controls are likely required on the central portion of the Site as described below.

<u>2.2.1.1 Soil Vapor Intrusion Mitigation System</u>

Based on the Preliminary Overall Plan for redevelopment of the Site, an approximately 5,100 square foot Building #3, and an approximately 2,500 square foot Building #4 are to be constructed on the central portion of the Site designated as "EC

Area" (refer to Figure 13). Current available information suggests these two new buildings will require soil vapor intrusion mitigation systems. Based on final design of the two new buildings, and with NYSDEC and NYSDOH input, a decision will be made if soil vapor intrusion mitigation systems are required. The purpose of this engineering control is to mitigate the potential for vapor intrusion into future on-site buildings on this portion of the Site. As previously identified, the engineering controls could include a SSDS, a SMDS, or other regulatory-approved alternative, and designs would utilize the guidance listed in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006. As the design of new buildings to be constructed on the central portion of the Site progresses, the NYSDEC and NYSDOH will be consulted, and an Engineering Control Design for soil vapor intrusion mitigation system will be development and submitted, if required.

The Operation and Maintenance Plan (Section 4.0 of this SMP) will be updated to include any required monitoring of a soil vapor intrusion mitigation system(s), as well as any required procedures for operating and maintaining soil vapor intrusion mitigation system(s). The Monitoring Plan also addresses act of god, or emergency, condition inspections in the event that such a condition, which may affect controls at the site, occurs.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Soil Vapor Intrusion Mitigation System

If an active soil vapor intrusion mitigation system is installed in a building on the central portion of the Site, the system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the system is no longer required (e.g., sub-slab air, soil, and groundwater contain no VOC concentrations with potential to adversely impact indoor air), a proposal to discontinue the system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.2 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC TOGS 1.1.1 groundwater standards and guidance values or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. Although not anticipated based on the current low levels of contaminants in groundwater, if groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional treatment and/or control measures will be evaluated.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the RWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to restricted residential, commercial, and/or industrial uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;

- All Engineering Controls must be operated and maintained as specified in this SMP;

- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.

- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP. Public health monitoring includes real-time air monitoring for particulates and VOCs when potentially impacted soil/fill are being disturbed;

- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property will only be used for restricted residential use, commercial use and/or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.

- The property will not be used for a higher level of use, such as unrestricted use as defined in 6NYCRR Part 375-6.8(a) without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;

- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- The use of groundwater is restricted as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH;

- The potential for vapor intrusion must be evaluated for any buildings developed in the central portion of the Site shown as "EC Area" on Figure 13. If necessary, actions needed to address exposures related to soil vapor intrusion will be implemented;

- Vegetable gardens and farming on the property are prohibited, unless approved by the NYSDEC and the NYSDOH; and

- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an environmental expert that has been selected by the Volunteer and has been found acceptable to the NYSDEC.

2.3.1 Excavation Work Plan

The site has been remediated for restricted residential, commercial and/or industrial use. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix A to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP that includes the CAMP is attached as Appendix D to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for soil vapor intrusion (SVI) has been identified (see "Area EC" on Figure 13), an SVI evaluation will be performed to determine whether actions are needed to address the potential for exposures related to soil vapor intrusion in the proposed structure. Alternatively, a soil vapor intrusion mitigation system may be installed as an element of the building foundation without first conducting an investigation. This soil vapor intrusion mitigation system will likely include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a soil vapor intrusion mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;

- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date;
- Changes, or needed changes, to the remedial or monitoring system; and
- Changes in site conditions or use.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

Change In Use Notice

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Brownfield Cleanup Agreement (BCA), 6NYCRR Part 375, and/or Environmental Conservation Law.

Intrusive Activity Notice

- 7-day advance notice of any proposed ground-intrusive activities below two feet that may have the potential to encounter impacted materials (e.g., potentially contaminated fill, soil, groundwater) and are pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

Emergency Notice

- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Change In Ownership Notice

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Brownfield Cleanup Agreement (BCA), and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to Day Environmental, Inc., the Owner's current qualified environmental professional, or any other qualified environmental professional. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 2.5.1-A: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 2.5.1-B: Contact Numbers

Day Environmental, Inc.	585-454-0210
Kelly Cloyd, PhD NYSDEC Project Manager	585-226-5351
Allen Handelman Erie Harbor, LLC	585-324-0512

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

A map and directions to the nearest health facility are included in the HASP in Appendix D of this SMP.

Site Location: Erie Harbor, 225-405 Mt. Hope Avenue, Rochester, New York

Nearest Hospital Name: Highland Hospital

Hospital Location: 1000 South Avenue, Rochester, New York

Hospital Telephone: (585) 473-2200 (Main);
(585) 341-6980 (Emergency Department)

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 2.5.1-A). The list will also posted prominently at the site and made readily available to all personnel at all times.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for monitoring the remaining contamination at the site and the potential for human exposures to the contamination, as well as evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, including affected site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil and New York States guidance for evaluating exposures related to soil vapor intrusion referenced in the NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated October 2006;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

It is anticipated that semi-annual (for the first two years) and annual (for the next three years) monitoring of the performance of the remedy and overall reduction in contamination on-site will be conducted for the first five years (i.e., monitored natural attenuation or MNA). As the monitoring progresses, its frequency, duration, and list of required test parameters may be modified (e.g., reduced) with NYSDEC approval. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3.1.2-A and outlined in detail in Sections 3.2 and 3.3 below.

During at least one of the MNA groundwater monitoring events, supplemental performance groundwater monitoring will be conducted. The supplemental performance monitoring test is further summarized in Table 3.1.2-A.

Table 3.1.2-A: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
MNA	Semi-Annually, years 1-2 Annually, years 3-5	Groundwater	TCL VOCs including TICS using NYSDEC ASP Method OLM04.3 TCL SVOCs including TICS using NYSDEC ASP method OLM04.3 TAL Metals using NYSDEC ASP Method ILM04.1
Supplemental Performance Monitoring	At Least One Event	Groundwater	COD using Standard Method 5220; Alkalinity (calcium carbonate) using Standard Method 2320 W; and Major Anions and Cations using EPA Methods E300IC W, SW6010B W, and SW7470A

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.

3.3 MEDIA MONITORING PROGRAM

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis (i.e., semi-annually for first two years; annually for next 3 years) to assess the performance of the remedy.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The locations of eight existing wells, the location of one new well (i.e., well DAYMW-09), and the tentative locations of three new wells to be installed in the future, are shown of Figure 15. The network of on-site wells has been designed based on the following criteria:

- Wells DAYMW-06, DAYMW-01, MW-6, DAYMW-04, MW-5, MW-8, and MW-URS2 provide general coverage across the Site.

- Well DAYMW-05 is located in the central portion of the Site where the VOC TCE in groundwater was previously been detected and require evaluation of vapor intrusion mitigation on any new buildings on this portion of the Site. Well DAYMW-10 will be installed after redevelopment of the Site, and will serve a similar purpose as well DAYMW-05. The location of Well DAYMW-10 is tentative and will be adjusted to fit actual redevelopment plans

- Well DAYMW-09 was installed on the southeast portion of the Site to monitor the effectiveness of the remedial actions on reducing petroleum contaminants. As requested by the NYSDEC, a groundwater sample was collected from this well in July 2010 and analyzed to so that post-treatment groundwater data for this part of the Site could be included in the FER.

- Once redevelopment is complete, wells DAYMW-7 and DAYMW-08 will be installed on the southeast portion of the Site to monitor the effectiveness of the remedial actions on reducing petroleum contaminants. The locations of these two wells are tentative and will be adjusted to fit actual redevelopment plans.

Boring logs and well construction diagrams for the eight existing wells and new well DAYMW-09 are included in Appendix E. Groundwater flow conditions based on the existing wells and three other wells that were decommissioned during soil removal work is included as Figure 15. Depending upon actual redevelopment plans, it is likely that one or more of the eight existing wells may need to be decommissioned and replaced with new wells in nearby locations (e.g., if existing well is within footprint of planned building, etc.).

Groundwater sampling will be conducted using the monitoring wells specified above. Refer to Table 3.1.2-A for sampling frequency and the anticipated test parameters.

The number of wells to be sampled, the sampling frequency, and the test parameters may be modified with the approval of the NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

Monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix F. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

It is anticipated that each groundwater monitoring event will include collecting groundwater samples from the twelve groundwater monitoring wells for water quality measurements and analytical laboratory testing using the low-flow purge and sample protocol a groundwater outlined in the Quality Assurance Project Plan (QAPP) included in Appendix G.

Using static water level measurements from the twelve wells, and the surveyed well elevations, groundwater elevations will be calculated for each groundwater monitoring event. With assistance of GIS software, the well locations and corresponding groundwater elevations will be used to develop a groundwater potentiometric map for each groundwater monitoring event.

For each groundwater monitoring event, it is anticipated that the following quality assurance/quality control (QA/QC) samples will be analyzed in accordance with the QAPP included in Appendix G:

- One matrix spike/matrix spike duplicate (MS/MSD) and one field blank (i.e., equipment rinsate) will be collected and tested for the same parameters as the accompanying field samples; and

- One trip blank will accompany each shipment of field samples, and the trip blank will an analyzed for TCL VOCs, including TICS.

The field samples and QA/QC samples will be analyzed by a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory, which will provide the results in ASP Category B deliverable reports. The detected concentrations of TCL VOCs, TCL SVOCs and TAL metals for each groundwater monitoring event will be compared on a summary table to TOGS 1.1.1 groundwater standards or guidance values. The test results will also be evaluated on a cumulative basis. A Data Usability Summary Report (DUSR) will be performed on at least one round of groundwater samples.

3.3.1.2 Monitoring Well Repairs, Replacement And Decommissioning

If biofouling or silt accumulation occurs in the on-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. In addition, current redevelopment plans indicate that existing wells MW-URS2 and DAYMW-05 (refer to Figure 15) will need to be decommissioned and replaced with new wells in nearby locations (e.g., these two existing wells are within footprint of planned buildings).

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix H). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) that was prepared for the site (Appendix G). Main Components of the QAPP include:

- Project/Task Organization;
- Sampling Procedures;
- Decontamination Procedures;

- Analytical QA/QC Objectives for Data Measurement;
- Sampling Program:
    - o Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - o Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - o Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Handling and Custody;
- Operation and Calibration Procedures:
    - o All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - o The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Record Keeping and Data Management;
- Preparation of Data Usability Summary Reports (DUSRs), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method;
- Internal QC and Checks; and
- QA Performance and System Audits.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be maintained by the Volunteer. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

Monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;

- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables is summarized in Table 3.5-A below.

Table 3.5-A: Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency*
Periodic Review Report	Annually

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the site. This plan will be kept at on-site at the Erie Harbor office once the residential complex is constructed and operational. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the future soil vapor intrusion mitigation systems that will likely need to be installed on two new buildings on the central portion of the Site (refer to "Area EC" on Figure 13); and

- Will be updated periodically to reflect changes in site conditions or the manner in which the soil vapor intrusion mitigation systems are operated and maintained.

Information on non-mechanical Engineering Controls is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

As identified in Section 2.2, evaluation of the need for a soil vapor intrusion mitigation system on future buildings to be constructed on the central portion of the Site designated as "Area EC" is required. As shown on Figure 13, proposed Building #3 and Building #4 are situated on this portion of the Site and may need soil vapor intrusion mitigation systems. If determined to be required, the soil vapor intrusion mitigation systems for these two buildings will be designed and installed, and this Operation and Maintenance Plan will be updated and submitted to NYSDEC for approval. Where applicable, this will include information such as: record drawings; system design information; system start-up and testing; and system operation (routine operation procedures, routine equipment maintenance, and non-routine equipment maintenance).

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

As discussed in Section 4.2, two proposed buildings to be located in the area on the central portion of the Site that requires evaluation of the need for soil vapor intrusion mitigation systems (refer to "Area EC" on Figure 13). If the soil vapor intrusion mitigation systems are required, designed and installed, this Operation and Maintenance Plan will be updated and submitted to the NYSDEC for approval. Where applicable, this will include information such as: monitoring schedule; general equipment monitoring; system monitoring devices and alarms; and sampling event protocol.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site and/or at the offices of the Volunteer. Reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Site wide inspection for in Appendix H, and also a form to be developed in the future for the engineering controls) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.4.2 Non-Routine Emergency Maintenance Reports

During each non-routine emergency maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

Inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually until such time that the NYSDEC determines such inspections are no longer required. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events of Engineering Controls (e.g., soil vapor intrusion mitigation systems on new buildings on central portion of Site) will be recorded on an appropriate form, which will be developed and approved by the NYSDEC for use once the Engineering Controls have a final design and/or are installed. Additionally, a general site-wide inspection form will be completed during the site-wide inspection (see Appendix H). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the RWP and FER.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

If the remedy includes any engineering controls, include the following:

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare the following certification:

For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [**name**], of [**business address**], am certifying as [**Owner or Owner’s Designated Site Representative**] for the site.
- No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the NYSDEC every year, beginning eighteen months after the Certificate of Completion is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix B (Metes and Bounds included in Draft Environmental Easement). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific RWP;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;

- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

TABLES

Table 1

205-405 MT. HOPE AVENUE, ROCHESTER, NEW YORK
NYSDEC SITE #C828125

RI ANALYTICAL LABORATORY SAMPLES

SAMPLE	DATE	LOCATION	DEPTH	MEDIA TYPE	LABORATORY ANALYSES
001	06/23/06	TP-3	2.7’	Subsurface soil	TCL VOC
002	07/25/06	DAYSS-01	0-2”	Surface soil	Full TCL/TAL + CN*
003	07/25/06	DAYSS-02	0-2”	Surface soil	Full TCL/TAL + CN
004	07/25/06	DAYSS-03	0-2”	Surface soil	Full TCL/TAL + CN
005	07/25/06	DAYSS-04	0-2”	Surface soil	Full TCL/TAL + CN
006	07/25/06	DAYSS-05	0-2”	Surface soil	Full TCL/TAL + CN
007	07/25/06	DAYSS-06	0-2”	Surface soil	Full TCL/TAL + CN
008	07/25/06	DAYSS-07	0-2”	Surface soil	Full TCL/TAL + CN
009	07/25/06	DAYSS-08	0-2”	Surface soil	Full TCL/TAL + CN
010	08/07/06	Tank Pit	6.3’	Subsurface soil	TCL VOC, TCL SVOC, Lead
011	08/14/06	DAYSB-13	0-4’	Subsurface fill	Full TCL/TAL + CN
012	08/14/06	DAYSB-07	15-17’	Subsurface soil	Full TCL/TAL + CN
013	08/14/06	DAYSB-06	8-12’	Subsurface fill	Full TCL/TAL + CN
014	08/15/06	DAYSB-03	12-15’	Subsurface soil	Full TCL/TAL + CN
015	08/14/06	DAYSB-02	4-8’	Subsurface soil	Full TCL/TAL + CN
016	08/15/06	DAYSB-04	4-8’	Subsurface fill	Full TCL/TAL + CN
017	08/15/06	DAYSB-04	12-15’	Subsurface soil	Full TCL/TAL + CN
018	08/15/06	DAYSB-05	4-8’	Subsurface fill	Full TCL/TAL + CN
019	08/15/06	DAYMW-03	4-8’	Subsurface fill	Full TCL/TAL + CN
020	08/15/06	DAYMW-03	8-12’	Subsurface soil	TCL VOC, TCL SVOC
021	08/15/06	DAYSB-01	12-15’	Subsurface fill	Full TCL/TAL + CN
022	08/15/06	DAYSB-18	4-8’	Subsurface soil	Full TCL/TAL + CN
023	08/15/06	Rinsate	NA	Water	Full TCL/TAL + CN
024	08/16/06	DAYSB-12	4-8’	Subsurface fill	Full TCL/TAL + CN
025	08/16/06	DAYSB-21	4-8’	Subsurface fill	Full TCL/TAL + CN
026	08/16/06	DAYSB-20	12-15’	Subsurface soil	Full TCL/TAL + CN
027	08/16/06	DAYSB-14	8-12’	Subsurface soil	Full TCL/TAL + CN
028	08/16/06	DAYSB-14	12-15’	Subsurface soil	Full TCL/TAL + CN
029	08/16/06	DAYSB-15A	8-12’	Subsurface soil	Full TCL/TAL + CN
030	08/16/06	DAYSB-14	0-4’	Subsurface fill	Full TCL/TAL + CN
031	08/17/06	DAYSB-25	12-15.7’	Subsurface fill	Full TCL/TAL + CN*
032	09/05/06	MW-URS1	NA	Groundwater	Full TCL/TAL + CN
033	09/06/06	MW-URS2	NA	Groundwater	Full TCL/TAL + CN*
034	09/06/06	TB090606	NA	Trip Blank	TCL VOC
035	09/07/06	DAYMW-02	NA	Groundwater	Full TCL/TAL + CN
036	09/07/06	RIN-090706	NA	Rinsate	Full TCL/TAL + CN
037	09/08/06	MW-8	NA	Groundwater	Full TCL/TAL + CN
038	09/08/06	TB-090806	NA	Trip Blank	TCL VOC
039	09/08/06	DAYMW-03	NA	Groundwater	Full TCL/TAL + CN
040	09/08/06	MW-5	NA	Groundwater	Full TCL/TAL + CN
041	09/08/06	TB090806-01	NA	Trip Blank	TCL VOC
042	09/09/06	MW-6	NA	Groundwater	Full TCL/TAL + CN
043	09/11/06	DAYMW-04	NA	Groundwater	Full TCL/TAL + CN
044	09/11/06	DAYMW-05	NA	Groundwater	Full TCL/TAL + CN
045	09/11/06	TB091106	NA	Trip Blank	TCL VOC
046	01/30/07	SLB-01	NA	Air	TO-15 VOC
047	01/30/07	IA-01	NA	Air	T)-15 VOC
048	01/30/07	SLB-02	NA	Air	TO-15 VOC

Full TCL/TAL + CN = Full Target Compound List/Target Analyte List parameters and Cyanide via ASP Methods OLM04.2 and ILM04.1
TAL Metals = Target analyte list metals and cyanide
Full TCL/TAL = Full target compound list / target analyte list parameters
NA = Not applicable
* = MS/MSD performed
TCL VOC = Target compound list volatile organic compounds via ASP Method OLM04.2
TCL SVOC = Target compound list semi-volatile organic compounds via ASP Method OLM04.2
Lead = Lead via ASP Method ILM04.1
TO-15 = VOCs using USEPA Method TO-15

Table 1 (Continued)

205-405 MT. HOPE AVENUE, ROCHESTER, NEW YORK
NYSDEC SITE #C828125

RI ANALYTICAL LABORATORY SAMPLES

SAMPLE	DATE	LOCATION	DEPTH	MEDIA TYPE	LABORATORY ANALYSES
049	01/30/07	IA-02	NA	Air	TO-15 VOC
050	01/30/07	SLB-03	NA	Air	TO-15 VOC
051	01/30/07	IA-03	NA	Air	TO-15 VOC
052	01/30/07	SLB-04	NA	Air	TO-15 VOC
053	01/30/07	IA-04	NA	Air	TO-15 VOC
054	01/30/07	SLB-05	NA	Air	TO-15 VOC
055	01/30/07	IA-05	NA	Air	TO-15 VOC
056	01/30/07	SLB-06	NA	Air	TO-15 VOC
057	01/30/07	IA-06	NA	Air	TO-15 VOC
058	01/30/07	BG-01	NA	Air	TO-15 VOC
059	01/30/07	BG-02	NA	Air	TO-15 VOC
060	04/04/07	DAYMW-02	NA	Groundwater	TCL VOC, TCL SVOC
061	04/05/07	DAYMW-03	NA	Groundwater	TCL VOC, TCL SVOC
062	04/04/07	DAYMW-04	NA	Groundwater	TCL VOC, TCL SVOC
063	04/04/07	DAYMW-05	NA	Groundwater	TCL VOC, TCL SVOC, TAL Metals
064	04/03/07	MW-5	NA	Groundwater	TCL VOC, TCL SVOC
065	04/03/07	MW-6	NA	Groundwater	TCL VOC, TCL SVOC
066	04/04/07	MW-8	NA	Groundwater	TCL VOC, TCL SVOC
067	04/02&05/07	MW-URS1	NA	Groundwater	TCL VOC, TCL SVOC*
068	04/03/07	MW-URS2	NA	Groundwater	TCL VOC, TCL SVOC
069	04/05/07	DAYMW-01	NA	Groundwater	TCL VOC, TCL SVOC, TAL Metals, CN*
070	05/23/07	DAYSB-15C	10-11’	Subsurface soil	TCL VOC, TCL SVOC
071	04/04/07	TB(4-4-07)	NA	Trip Blank	TCL VOC
072	04/05/07	TB(4-5-07)	NA	Trip Blank	TCL VOC
073	04/05/07	RIN(4-5-07)	NA	Rinsate	Full TCL/TAL + CN
074	05/23/07	DAYSB-15C	7-8’	Subsurface soil	TCL VOC, TCL SVOC
075	05/23/07	DAYSB-26	7-8’	Subsurface soil	TCL VOC, TCL SVOC
076	05/23/07	DAYSB-26	8-10.5’	Subsurface soil	TCL VOC, TCL SVOC
077	05/23/07	DAYSB-27	4-7’	Subsurface fill	TCL VOC, TCL SVOC*
078	05/23/07	DAYSB-28	2-4’	Subsurface fill	TCL SVOC*
079	05/23/07	RIN(5-23-07)	NA	Rinsate	TCL VOC, TCL SVOC*
Tank 1	06/23/06	UST	NA	Tank Contents	BNA SVOC, TCL/STARS VOC, TAL Metals
080	09/11/08	Rinsate 9-11-08	NA	Rinsate	TCL VOC
081	09/11/08	TW-3	NA	Groundwater	TCL VOC
082	09/11/08	BG Outdoor Air	NA	Air	TO-15 VOC
083	09/11/08	SV-1	NA	Air	TO-15 VOC
084	09/11/08	SV-2	NA	Air	TO-15 VOC
085	09/11/08	SV-3	NA	Air	TO-15 VOC
086	09/11/08	SV-4	NA	Air	TO-15 VOC
087	09/11/08	SV-5	NA	Air	TO-15 VOC
088	09/11/08	SV-6	NA	Air	TO-15 VOC
089	09/12/08	TW-5	NA	Groundwater	TCL VOC
090	09/12/08	TW-6	NA	Groundwater	TCL VOC
091	09/12/08	TW-4	NA	Groundwater	TCL VOC
092	098/12/08	TW-2	NA	Groundwater	TCL VOC
093	09/12/08	TW-1	NA	Groundwater	TCL VOC
094	09/01/08	TB-9-11-08	NA	Trip Blank	TCL VOC
095	12/05/08	SV-7	NA	Air	TO-15 VOC

Full TCL/TAL + CN = Full Target Compound List/Target Analyte List parameters and Cyanide via ASP Methods OLM04.2 and ILM04.1
TAL Metals = Target analyte list metals and cyanide
Full TCL/TAL = Full target compound list / target analyte list parameters
NA = Not applicable
* = MS/MSD performed
TCL VOC = Target compound list volatile organic compounds via ASP Method OLM04.2
TCL SVOC = Target compound list semi-volatile organic compounds via ASP Method OLM04.2
Lead = Lead via ASP Method ILM04.1
TO-15 = VOCs using USEPA Method TO-15
BNA SVOC = Base, neutral, acid SVOCs via USEPA Method 8270
TCL STARS VOC = Target Compound List and Spill technology and Remediation Series list VOCs via USEPA Method 8260

Table 2 (Page 1 of 2)

205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Nature and Extent of Contamination
RI Samples

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[b]	SCG[c] (ppb)[b]	Frequency of Exceeding SCG[c]
Volatile Organic Compounds (VOCs)	Dichlorodifluoromethane	ND – 8	5	2 of 25
	Benzene	ND – 13	1	2 of 25
	Trichloroethene	ND – 18	5	4 of 25
	Ethylbenzene	ND – 190	5	2 of 25
	Isopropylbenzene	ND – 38	5	2 of 25
	Toluene	ND – 8	5	2 of 25
	Total Xylenes	ND – 530	5	2 of 25
Semi-Volatile Organic Compounds (SVOCs)	Phenol	ND – 2	1	1 of 19
	Naphthalene	ND – 250	10	2 of 19
	Benzo(a)anthracene	ND – 2	0.002	1 of 19
	Chrysene	ND – 6	0.002	1 of 19
	Bis(2-ethylhexyl)phthalate	ND – 25	5	2 of 19
	Benzo(b)fluoranthene	ND – 7	0.002	1 of 19
	Benzo(k)fluoranthene	ND – 3	0.002	1 of 19
	Indeno(1,2,3-cd)pyrene	ND – 2	0.002	1 of 19
Inorganics	Antimony	ND – 10.2	3	2 of 11
	Arsenic	ND – 43.6	25	1 of 11
	Barium	ND – 1550	1000	2 of 11
	Beryllium	ND – 5.7	3	1 of 11
	Cadmium	ND – 6.9	5	1 of 11
	Chromium	ND – 206	50	1 of 11
	Copper	ND – 286	200	1 of 11
	Iron	ND – 179000	300	9 of 11
	Lead	ND – 251	25	1 of 11
	Magnesium	ND – 154000	35000	6 of 11
	Manganese	ND – 6110	300	6 of 11
	Nickel	ND – 239	100	1 of 11
	Selenium	ND – 27	10	3 of 11
	Sodium	ND – 665000	20000	8 of 11
	Thallium	ND – 26.8	0.5	6 of 11

Table 2 (Page 2 of 2)

205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Nature and Extent of Contamination
RI Samples

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	City of Rochester Maximum Background Concentrations (ppm)[d]	SCG[c] (ppm)[a]	Frequency of Exceeding SCG[c]
SVOCs	Benzo(a)anthracene	0.13 – 27	2.9	1	6 of 8
	Chrysene	0.17 – 34	3.6	3.9	3 of 8
	Benzo(b)fluoranthene	0.21 – 41	4.4	1	7 of 8
	Benzo(k)fluoranthene	0.088 – 19	3.7	3.9	2 of 8
	Benzo(a)pyrene	0.11 – 27	3.9	1	6 of 8
	Indeno(1,2,3-cd)pyrene	0.059 – 12	NL	0.5	3 of 8
	Dibenzo(a,h)anthracene	0.063 – 3.4	9	0.33	3 of 8
Inorganics	Mercury	ND – 3.1	NL	0.81	1 of 8

SUBSURFACE SOIL & FILL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	City of Rochester Maximum Background Concentrations (ppm)[d]	SCG[c] (ppm)[a]	Frequency of Exceeding SCG[c]
SVOCs	Benzo(a)anthracene	ND – 14	2.9	1	1 of 27
	Chrysene	ND – 13	3.6	3.9	1 of 27
	Benzo(b)fluoranthene	ND – 13	4.4	1	1 of 27
	Benzo(k)fluoranthene	ND – 5.5	3.7	3.9	1 of 27
	Benzo(a)pyrene	ND – 12	3.9	1	1 of 27
	Indeno(1,2,3-cd)pyrene	ND – 5.4	NL	0.5	1 of 27
	Dibenzo(a,h)anthracene	ND – 1.9	9	0.33	1 of 27

[a] ppm = parts per million, which is equivalent to milligrams per kilogram (mg/Kg) in soil

[b] ppb = parts per billion, which is equivalent to micrograms per liter (ug/L) in water

[c] SCG = standards, criteria and guidance: NYSDEC Part 375 Track 2 (Restricted Residential Use) SCOs for soil; NYSDEC TOGS 1.1.1 standards and guidance values for groundwater

[d] = Maximum background range detected in background surface soil samples in a document titled “Supplemental Groundwater and Background Surface Soil Sampling Report, Former APCO Property, 79 Woodstock Road, Rochester, New York” dated February 6, 1998 and prepared by Sear-Brown Group

ND = Not detected above reported analytical laboratory detection limit

NL = Not Listed

Table 3
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in mg/Kg or Parts Per Million (ppm)

RI Surface Soil Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	002 DAYSS-01 (0-2")	003 DAYSS-02 (0-2")	004 DAYSS-03 (0-2")	005 DAYSS-04 (0-2")	006 DAYSS-05 (0-2")	007 DAYSS-06 (0-2")	008 DAYSS-07 (0-2")	009 DAYSS-08 (0-2")
Acetophenone	NA	NA	U	0.36 J	U	1.4 J	0.044 J	U	U	U
2-Methylnaphthalene	NA	NA	U	U R	U	U J	0.05 J	U	U	U
Acenaphthylene	100	100	U	0.047 J	U	U J	0.05 J	U	U	0.055 J
Acenaphthene	20	100	U	0.065 J	0.1 J	1.2 J	0.69	0.51 J	0.084 J	0.039 J
Dibenzofuran	7	59	U	U R	0.058 J	U J	0.4 J	U	0.055 J	U
Fluorene	30	100	U	0.081 J	0.11 J	1.3 J	0.8	0.55 J	0.093 J	0.052 J
Phenanthrene	100	100	0.11 J	1.7	2.1 J	24 J	10 D	13 J	1.6 J	0.85 J
Anthracene	100	100	U	0.27 J	0.22 J	3.8 J	1.3	1.3 J	0.17 J	0.18 J
Carbazole	NA	NA	U	0.17 J	0.15 J	3.3 J	0.97	1.7 J	0.11 J	0.13 J
Di-n-butylphthalate	NA	NA	U	0.2 J	U	U J	0.046 J	U	0.06 J	U
Fluoranthene	100	100	0.24 J	2.1 DJ	2.5 D	55 J	15 D	28 J	2.5 J	2 J
Pyrene	100	100	0.3 J	2.5 DJ	3.3 J	48 J	13 D	23 J	2.4 J	2.3 J
Butylbenzylphthalate	NA	NA	0.048 J	0.36 J	U	U J	U R	U	0.079 J	0.22 J
Benzo(a)anthracene	1	1	0.13 J	**2.2**	**1.1** J	**27** J	**5.2** D	**8.9** J	0.84 J	**1.1** J
Chrysene	1	3.9	0.17 J	2	1.5 J	**34** J	**7.5** D	**10** J	0.93 J	1.4 J
Bis(2-Ethylhexyl)phthalate	NA	NA	0.25 J	12 D	0.9 J	11 J	1.2	5.4 J	2.9 J	0.7 J
Di-n-Octylphthalate	NA	NA	U	0.46	U	U J	0.1 J	U	U	U
Benzo(b)fluoranthene	1	1	0.21 J	**2.2** DJ	**2.2** J	**41** J	**7.7** D	**19** J	**1.4** J	**2.3** J
Benzo(k)fluoranthene	0.8	3.9	0.088 J	1.3	0.65 J	**19** J	3.2 DJ	**6.9** J	0.5 J	0.88 J
Benzo(a)pyrene	1	1	0.11 J	**1.9**	**1.3** J	**27** J	**5.1** D	**10** J	0.81 J	**1.3** J
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.059 J	0.43	0.34 J	**12** J	**1.1**	**2.9** J	0.21 J	0.34 J
Dibenzo(a,h)anthracene	0.33	0.33	U	0.14 J	0.11 J	**3.4** J	**0.37** J	**1.1** J	0.063 J	0.096 J
Benzo(g,h,i)perylene	100	100	U	0.28 J	0.22 J	11 J	0.75	1.9 J	0.16 J	0.25 J
TOTAL SVOCS	NA	NA	1.715 J	30.763 DJ	16.858 DJ	323.4 J	74.526 DJ	134.16 J	14.964 J	14.192 J
TOTAL TICS	NA	NA	12.776 J	101.84 NJ	14.013 NJ	137.9 NJ	24.329 NJ	38.33 NJ	26.624 NJ	16.82 NJ
TOTAL SVOCS AND TICS	NA	NA	14.491 J	132.603 DNJ	30.871 DNJ	461.3 DNJ	98.855 DNJ	172.49 NJ	41.588 NJ	31.012 NJ

N = Indicates presumptive evidence of tentatively identified compound

D = Concentration obtained from a diluted analysis

R = rejected due to sample matrix effect

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

J = Estimated value

1.9 = Exceeds Restricted Residential SCO

TIC = Tentatively identified compound

NA = Not available

Table 4
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in mg/Kg or Parts Per Million (ppm)

RI Surface Soil Samples

Detected Analyte	Unrestricted SCO (1)	Restricted Residential SCO (2)	002 DAYSS-01 (0-2")	003 DAYSS-02 (0-2")	004 DAYSS-03 (0-2")	005 DAYSS-04 (0-2")	006 DAYSS-05 (0-2")	007 DAYSS-06 (0-2")	008 DAYSS-07 (0-2")	009 DAYSS-08 (0-2")
Aluminum	NA	NA	10100	7280	9430	10300	7970	8830	8410	7290
Antimony	NA	NA	U JN	U JN	U JN	U JN	U JN	U JN	U JN	0.68 BNJ
Arsenic	13	16	5.4	4.6	6.2	3.9	6.9	4.9	5.1	5.5
Barium	350	400	87	61.1	55	149	64.1	72.7	61.6	68
Beryllium	7.2	72	0.75 B	0.56 B	0.67 B	1.1	0.63 B	0.64 B	0.62 B	0.53 B
Cadmium	2.5	4.3	0.17 B	0.26 B	0.19 B	1.1	0.53 B	0.25 B	0.27 B	0.51 B
Calcium	NA	NA	11300	12600	4190	32200	7690	11100	7250	15000
Chromium	30	180	13.4 E	13.2 E	11.8 E	44.7 E	13.3 E	18.4 E	11.6 E	13.3 E
Cobalt	NA	NA	5.1 B	4.9 B	5.1 B	5.5 B	4.6 B	4.7 B	4.6 B	4.3 B
Copper	50	270	21.8	31.9	21.9	83.7	38	34.8	30	38.2
Iron	NA	NA	18100	13700	14000	22100	14100	13400	13300	14400
Lead	63	400	42.4	92.1	45.1	159	64	49.2	82.7	323
Magnesium	NA	NA	5830	5840	3220	15700	3550	5600	3890	8860
Manganese	1600	2000	535	404	397	343	487	411	385	407
Mercury	0.18	0.81	0.082 J	0.29 J	0.055 UJ	**3.1** J	0.2 J	0.046 UJ	0.19 J	0.16 J
Nickel	30	310	11.9 E	12.9 E	11.5 E	22.7 E	12.8 E	12.4 E	11.4 E	12.3 E
Potassium	NA	NA	1220	1020	1020	1540	747 B	1040	1160	981
Selenium	3.9	180	R	R	R	R	R	R	R	R
Silver	2	180	U	0.2 B	U	0.74 B	0.16 B	U	U	U
Sodium	NA	NA	107 B	178 B	99.5 B	602 B	96.8 B	155 B	99 B	828
Thallium	NA	NA	1.2 B	0.97 B	1.1 B	1.2 B	0.88 B	0.74 B	0.61 B	0.63 B
Vanadium	NA	NA	23.8	15.2	19.9	21.6	17.8	16.5	17.1	16.8
Zinc	109	10000	81.7	199	89.9	455	136	168	122	133
Cyanide	27	27	U	U	U	0.34 B	U	U	U	0.41 B

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

3.1 = Exceeds Restricted Residential SCO

U = Not detected at concentration above reported analytical laboratory detection limit

E = Reported value estimated due to interference

B= Reported value less than contract required detection limit, but greater than instrument detection limit

N = Spiked sample recovery not within control limits

J = Estimated value

Table 5 (Page 1 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	001 TP-3 (2.7')		010 Tank Pit (6.3')		011 DAYSB-13 (0-4')		012 DAYSB-07 (15-17')		013 DAYSB-06 (8-12')		014 DAYSB-03 (12-15')		015 DAYSB-02 (4-8')	
Acetone	0.05	100	U		0.024	J	0.03		U		0.014		U		0.01	J
Carbon Disulfide	NA	NA	U		U		U		U		U		0.001	J	U	
Methylene Chloride	0.05	100	U		0.004	JB	U		U		U		U		U	
Chloroform	0.37	49	0.003	J	0.003	JB	U		U		U		U		U	
Cyclohexane	NA	NA	U		U		U		U		U		U		U	
Trichloroethene	0.47	21	U		U		U		U		U		U		U	
Methylcyclohexane	NA	NA	U		U		U		0.001	J	U		1.3	D	U	
Toluene	0.7	100	0.003	JB	U		0.004	J	0.003	J	0.003	J	0.002	J	0.001	J
Ethylbenzene	1	41	U		U		U		U		U		0.16	D	U	
Xylene (Total)	0.26	100	U		U		U		0.002	J	U		0.36	D	U	
Isopropylbenzene	NA	NA	U		0.007	J	U		U		U		0.22	D	U	
1,2-Dichlorobenzene	1.1	100	U		U		U		U		U		U		U	
TOTAL VOCS*	NA	NA	0.003	J	0.031	J	0.034	J	0.006	J	0.017	J	2.043	J	0.011	J
TOTAL TICS*	NA	NA	U		22.87	NJ	U		U		U		42.21	J	U	
TOTAL VOCS AND TICS*	NA	NA	0.003	J	22.901	NJ	0.034	J	0.006	J	0.017	J	44.253	J	0.011	J

NA = Not available   TIC = Tentatively identified compound   B = Detected in associated method blank   J = Estimated value

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

D = Compound identified in an analysis at a secondary dilution factor   U = Not detected at concentration above reported analytical laboratory detection limit

N = Indicates presumptive evidence of tentatively identified compound   * = Does not include compounds that were also detected in the associated method blank

Table 5 (Page 2 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	016 DAYSB-04 (4-8')	017 DAYSB-04 (12-15')	018 DAYSB-05 (4-8')	019 DAYMW-03 (4-8')	020 DAYMW-03 (8-12')	021 DAYSB-01 (12-15')	022 DAYSB-18 (4-8')
Acetone	0.05	100	U	0.018	0.023 J	0.079	0.065 J	0.021 J	0.046
Carbon Disulfide	NA	NA	U	U	U J	U	U J	U J	U
Methylene Chloride	0.05	100	U	U	U J	U	U J	U J	U
Chloroform	0.37	49	U	U	U J	U	U J	U J	U
Cyclohexane	NA	NA	U	U	U J	U	U J	U J	U
Trichloroethene	0.47	21	U	U	U J	U	U J	U J	U
Methylcyclohexane	NA	NA	U	U	U J	U	U J	U J	U
Toluene	0.7	100	0.002 J	0.002 J	U J	U	U J	U J	U
Ethylbenzene	1	41	U	U	U J	U	U J	U J	U
Xylene (Total)	0.26	100	U	U	U J	U	U J	U J	U
Isopropylbenzene	NA	NA	U	U	U J	U	U J	U J	U
1,2-Dichlorobenzene	1.1	100	U	U	U J	U	U J	U J	U
TOTAL VOCS*	NA	NA	0.002 J	0.02 J	0.023	0.079	0.065 J	0.021 J	0.046
TOTAL TICS*	NA	NA	U	U	U	U	U	U	U
TOTAL VOCS AND TICS*	NA	NA	0.002 J	0.02 J	0.023	0.079	0.065 J	0.021 J	0.046

NA = Not available   TIC = Tentatively identified compound   B = Detected in associated method blank   J = Estimated value

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

D = Compound identified in an analysis at a secondary dilution factor   U = Not detected at concentration above reported analytical laboratory detection limit

N = Indicates presumptive evidence of tentatively identified compound   * = Does not include compounds that were also detected in the associated method blank

Table 5 (Page 3 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	024 DAYSB-12 (4-8')	025 DAYSB-21 (4-8')	026 DAYSB-20 (12-15')	027 DAYSB-14 (8-12')	028 DAYSB-14 (12-15')	029 DAYSB-15A (8-12')	030 DAYSB-14 (0-4')
Acetone	0.05	100	U	0.03	U	0.006 J	0.011 J	U	0.038
Carbon Disulfide	NA	NA	U J	U J	U J	U J	0.001 J	U J	U J
Methylene Chloride	0.05	100	0.004 JB	0.005 JB	0.004 JB	0.003 JB	0.003 JB	0.003 JB	0.004 JB
Chloroform	0.37	49	0.002 JB	0.002 JB	0.001 JB	0.001 JB	0.001 JB	0.001 JB	0.001 JB
Cyclohexane	NA	NA	U	U	0.001 J	U	U	U	U
Trichloroethene	0.47	21	U	U	U	U	U	U	U
Methylcyclohexane	NA	NA	U	U	0.001 J	U	U	0.007 J	U
Toluene	0.7	100	U	U	0.001 J	0.003 J	U	U	U
Ethylbenzene	1	41	U	U	U	U	U	0.001 J	U
Xylene (Total)	0.26	100	U	U	0.001 J	0.005 J	U	0.01 J	U
Isopropylbenzene	NA	NA	U	U	U	U	U	0.037	U
1,2-Dichlorobenzene	1.1	100	U	U	U	U	U	U	U
TOTAL VOCS*	NA	NA	U	0.03	0.004 J	0.014 J	0.012 J	0.055 J	0.038
TOTAL TICS*	NA	NA	U	U	1.622 NJ	2.472 NJ	0.427 NJ	6.57 NJ	0.007 J
TOTAL VOCS AND TICS*	NA	NA	U	0.03	1.626 NJ	2.486 NJ	0.439 NJ	6.625 NJ	0.045 J

NA = Not available TIC = Tentatively identified compound B = Detected in associated method blank J = Estimated value

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

D = Compound identified in an analysis at a secondary dilution factor

U = Not detected at concentration above reported analytical laboratory detection limit

N = Indicates presumptive evidence of tentatively identified compound

* = Does not include compounds that were also detected in the associated method blank

Table 5 (Page 4 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	031 DAYSB-25 (12-15.7')	070 DAYSB-15C (10-11')	074 DAYSB-15C (7-8')	075 DAYSB-26 (7-8')	076 DAYSB-26 (8-10.5')	077 DAYSB-27 (4-7')	078 DAYSB-28 (2-4')
Acetone	0.05	100	0.005 J	U	U	U	U	U	U
Carbon Disulfide	NA	NA	U J	U	U	U	U	U	U
Methylene Chloride	0.05	100	0.003 JB	0.003 J	U	0.004 J	U	U	U
Chloroform	0.37	49	0.001 JB	U	U	U	U	U	U
Cyclohexane	NA	NA	U	U	U	U	U	U	U
Trichloroethene	0.47	21	U	U	0.008 JB	U	U	U	U
Methylcyclohexane	NA	NA	U	0.003 J	U	U	U	U	U
Toluene	0.7	100	U	U	U	U	U	U	U
Ethylbenzene	1	41	U	U	U	U	U	U	U
Xylene (Total)	0.26	100	U	U	U	U	U	U	U
Isopropylbenzene	NA	NA	U	U	U	U	U	U	U
1,2-Dichlorobenzene	1.1	100	0.003 J	U	U	U	U	U	U
TOTAL VOCS*	NA	NA	0.008 J	0.006 J	U	0.004 J	U	U	U
TOTAL TICS*	NA	NA	U	0.745 NJ	U	0.743 NJ	U	0.891 NJ	0.039 J
TOTAL VOCS AND TICS*	NA	NA	0.008 J	0.751 NJ	U	0.747 NJ	U	0.891 NJ	0.039 J

NA = Not available   TIC = Tentatively identified compound   B = Detected in associated method blank   J = Estimated value

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

D = Compound identified in an analysis at a secondary dilution factor   U = Not detected at concentration above reported analytical laboratory detection limit

N = Indicates presumptive evidence of tentatively identified compound   * = Does not include compounds that were also detected in the associated method blank

Table 6 (Page 1 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	010 Tank Pit (6.3')	011 DAYSB-13 (0-4')	012 DAYSB-07 (15-17')	013 DAYSB-06 (8-12')	014 DAYSB-03 (12-15')	015 DAYSB-02 (4-8')	016 DAYSB-04 (4-8')
Acetophenone	NA	NA	U	U	U	0.063 J	U	U	U
Naphthalene	12	100	U	U	U	U	0.087 J	U	0.041 J
Caprolactam	NA	NA	U	U	U	U	U	U	U
2-Methylnaphthalene	NA	NA	U	U	U	U	0.059 J	U	0.06 J
1,1-Biphenyl	NA	NA	U	U	U	U	U	U	U
Acenaphthylene	100	100	U	U	U	U	U	U	U
Acenaphthene	20	100	U	U	U	U	U	U	U
Dibenzofuran	7	59	U	U	U	U	U	U	U
Fluorene	30	100	U	U	U	U	U	U	U
Pentachlorophenol	0.8	6.7	U	U	U	U	U	U	U
Phenanthrene	100	100	0.067 J	0.37 J	U	U	U	U	0.24 J
Anthracene	100	100	U	0.12 J	U	U	U	U	0.065 J
Carbazole	NA	NA	U	U	U	U	U	U	U
Di-n-butylphthalate	NA	NA	U	U	U	U	U	U	U
Fluoranthene	100	100	U	0.53	U	U	U	U	0.4
Pyrene	100	100	0.049 J	0.54	U	U	U	0.046 J	0.4
Benzo(a)anthracene	1	1	U	0.27 J	U	U	U	U	0.22 J
Chrysene	1	3.9	0.062 J	0.26 J	U	U	U	U	0.25 J
bis(2-Ethylhexyl)phthalate	NA	NA	0.16 JB	0.044 J	0.052 J	0.048 J	0.058 J	0.057 J	0.087 J
Benzo(b)fluoranthene	1	1	U	0.22 J	U	U	U	U	0.26 J
Benzo(k)fluoranthene	0.8	3.9	U	0.14 J	U	U	U	U	0.13 J
Benzo(a)pyrene	1	1	U	0.21 J	U	U	U	U	0.2 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	U	0.11 J	U	U	U	U	0.13 J
Dibenzo(a,h)anthracene	0.33	0.33	U	U	U	U	U	U	0.039 J
Benzo(g,h,i)perylene	100	100	U	0.09 J	U	U	U	U	0.12 J
TOTAL SVOCS*	NA	NA	0.178 J	2.904 J	0.052 J	0.111 J	0.204 J	0.103 J	2.642 J
TOTAL TICS*	NA	NA	9.59 NJ	0.682 NJ	2.315 J	0.287 J	1.739 J	U	0.517 NJ
TOTAL SVOCS AND TICS*	NA	NA	9.768 NJ	3.586 NJ	2.367 J	0.398 J	1.943 J	0.103 J	3.159 NJ

NA = Not available TIC = Tentatively identified compound J = Estimated value B = Detected in associated method blank

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit N = Indicates presumptive evidence of tentatively identified compound

5.5 = Exceeds Restricted Residential SCO * = Does not include compounds that were also detected in the associated method blank

Table 6 (Page 2 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	017 DAYSB-04 (12-15')	018 DAYSB-05 (4-8')	019 DAYMW-03 (4-8')	020 DAYMW-03 (8-12')	021 DAYSB-01 (12-15')	022 DAYSB-18 (4-8')	024 DAYSB-12 (4-8')
Acetophenone	NA	NA	U	0.063 J	U	U	U	U	U
Naphthalene	12	100	U	0.16 J	13	U	U	U	0.046 J
Caprolactam	NA	NA	U	U	U	U	U	U	U
2-Methylnaphthalene	NA	NA	U	0.29 J	4.8 J	U	U	U	0.041 J
1,1-Biphenyl	NA	NA	U	0.051 J	1.3 J	U	U	U	U
Acenaphthylene	100	100	U	0.11 J	1.6 J	U	U	U	0.054 J
Acenaphthene	20	100	U	U	4.2 J	U	U	U	U
Dibenzofuran	7	59	U	0.15 J	6.7 J	U	U	U	U
Fluorene	30	100	U	0.06 J	7.5 J	U	U	U	U
Pentachlorophenol	0.8	6.7	U	U	U	U	U	U	U
Phenanthrene	100	100	U	0.9	57	U	0.067 J	0.069 J	0.67
Anthracene	100	100	U	0.21 J	7.8 J	U	U	U	0.12 J
Carbazole	NA	NA	U	0.086 J	5.5 J	U	U	U	0.095 J
Di-n-butylphthalate	NA	NA	U	U	1.5 J	U	U	U	U
Fluoranthene	100	100	U	1.3	38	U	0.096 J	0.092 J	1.1
Pyrene	100	100	U	1.2	37	U	0.095 J	0.1 J	0.94
Benzo(a)anthracene	1	1	U	0.74	**14**	U	0.056 J	0.065 J	0.44
Chrysene	1	3.9	U	0.84	**13**	U	0.051 J	0.072 J	0.49
bis(2-Ethylhexyl)phthalate	NA	NA	0.077 J	0.092 J	U	0.06 J	0.061 J	0.065 J	0.06 J
Benzo(b)fluoranthene	1	1	U	1	**13**	U	0.052 J	0.073 J	0.72
Benzo(k)fluoranthene	0.8	3.9	U	0.37 J	**5.5** J	U	U	0.05 J	0.26 J
Benzo(a)pyrene	1	1	U	0.7	**12**	U	0.049 J	0.062 J	0.55
Indeno(1,2,3-cd)pyrene	0.5	0.5	U	0.39 J	**5.4** J	U	U	U	0.29 J
Dibenzo(a,h)anthracene	0.33	0.33	U	0.13 J	**1.9** J	U	U	U	0.088 J
Benzo(g,h,i)perylene	100	100	U	0.33 J	5 J	U	U	U	0.27 J
TOTAL SVOCS*	NA	NA	0.077 J	9.17 J	255.7 J	0.06 J	0.527 J	0.648 J	6.234 J
TOTAL TICS*	NA	NA	0.804 J	6.53 NJ	52.2 NJ	U	1.414 J	12.699 NJ	2.066 NJ
TOTAL SVOCS AND TICS*	NA	NA	0.881 J	15.7 NJ	307.9 NJ	0.06 J	1.941 J	13.347 NJ	8.3 NJ

NA = Not available   TIC = Tentatively identified compound   J = Estimated value   B = Detected in associated method blank

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit   N = Indicates presumptive evidence of tentatively identified compound

5.5 = Exceeds Restricted Residential SCO   * = Does not include compounds that were also detected in the associated method blank

Table 6 (Page 3 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	025 DAYSB-21 (4-8')	026 DAYSB-20 (12-15')	027 DAYSB-14 (8-12')	028 DAYSB-14 (12-15')	029 DAYSB-15A (8-12')	030 DAYSB-14 (0-4')	031 DAYSB-25 (12-15.7')
Acetophenone	NA	NA	U	U	0.071 J	U	0.037 J	U	U
Naphthalene	12	100	U	U	U J	U	U	U	U
Caprolactam	NA	NA	U	U	U J	U	U	U	U
2-Methylnaphthalene	NA	NA	U	U	U J	U	U	U	U
1,1-Biphenyl	NA	NA	U	0.35	U J	U	U	U	U
Acenaphthylene	100	100	U	U	U J	U	U	U	U
Acenaphthene	20	100	U	U	U J	U	U	U	U
Dibenzofuran	7	59	U	U	U J	U	U	U	U
Fluorene	30	100	U	U	U J	U	U	U	U
Pentachlorophenol	0.8	6.7	U	U	U	U	U	U	U
Phenanthrene	100	100	U	U	2.5 J	0.72 J	0.79 J	U	U
Anthracene	100	100	U	U	U J	U	U	U	U
Carbazole	NA	NA	U	U	U J	U	U	U	U
Di-n-butylphthalate	NA	NA	U	U	U J	U	U	U	U
Fluoranthene	100	100	U	U	U J	U	U	0.046 J	U
Pyrene	100	100	U	U	U J	U	U	0.052 J	U
Benzo(a)anthracene	1	1	U	U	U J	U	U	U	U
Chrysene	1	3.9	U	U	U J	U	U	U	U
bis(2-Ethylhexyl)phthalate	NA	NA	0.14 J	0.15 J	0.093 J	0.15 J	0.12 J	0.094 J	0.096 J
Benzo(b)fluoranthene	1	1	U	U	U J	U	U	U	U
Benzo(k)fluoranthene	0.8	3.9	U	U	U J	U	U	U	U
Benzo(a)pyrene	1	1	0.045 J	U	U J	U	U	U	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	U	U	U J	U	U	U	U
Dibenzo(a,h)anthracene	0.33	0.33	U	U	U J	U	U	U	U
Benzo(g,h,i)perylene	100	100	U	U	U J	U	U	U	U
TOTAL SVOCS*	NA	NA	0.185 J	0.15 J	2.664 J	0.87 J	0.947 J	0.192 J	0.096 J
TOTAL TICS*	NA	NA	0.1 J	2.159 J	28.957 NJ	19.947 NJ	24.002 NJ	0.389 J	0.246 J
TOTAL SVOCS AND TICS*	NA	NA	0.285 J	2.309 J	31.621 NJ	20.817 NJ	24.949 NJ	0.581 J	0.342 J

NA = Not available TIC = Tentatively identified compound J = Estimated value B = Detected in associated method blank

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit N = Indicates presumptive evidence of tentatively identified compound

5.5 = Exceeds Restricted Residential SCO * = Does not include compounds that were also detected in the associated method blank

Table 6 (Page 4 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	070 DAYSB-15C (10-11')	074 DAYSB-15C (7-8')	075 DAYSB-26 (7-8')	076 DAYSB-26 (8-10.5')	077 DAYSB-27 (4-7')	078 DAYSB-28 (2-4')
Acetophenone	NA	NA	U J	U J	U J	U J	U J	U J
Naphthalene	12	100	U J	U J	U J	U J	U J	U J
Caprolactam	NA	NA	1.1 J	U J	U J	U J	0.62 J	U J
2-Methylnaphthalene	NA	NA	U J	U J	U J	U J	U J	U J
1,1-Biphenyl	NA	NA	U J	U J	U J	U J	U J	U J
Acenaphthylene	100	100	U J	U J	U J	U J	U J	0.048 J
Acenaphthene	20	100	U J	U J	U J	U J	U J	U J
Dibenzofuran	7	59	U J	U J	U J	U J	U J	U J
Fluorene	30	100	0.28 J	U J	0.28 J	U J	0.25 J	U J
Pentachlorophenol	0.8	6.7	U J	U J	U J	U J	U J	0.063 J
Phenanthrene	100	100	1.8 J	U J	1.5 J	U J	1.4 J	0.36 J
Anthracene	100	100	U J	U J	U J	U J	U J	0.097 J
Carbazole	NA	NA	U J	U J	U J	U J	U J	0.11 J
Di-n-butylphthalate	NA	NA	U J	U J	U J	U J	U J	U J
Fluoranthene	100	100	U J	U J	U J	U J	U J	0.73 J
Pyrene	100	100	U J	U J	U J	U J	U J	0.67 J
Benzo(a)anthracene	1	1	U J	U J	U J	U J	U J	0.35 J
Chrysene	1	3.9	U J	U J	U J	U J	U J	0.45 J
bis(2-Ethylhexyl)phthalate	NA	NA	U J	U J	U J	U J	U J	U J
Benzo(b)fluoranthene	1	1	U J	U J	U J	U J	U J	0.58 J
Benzo(k)fluoranthene	0.8	3.9	U J	U J	U J	U J	U J	0.22 J
Benzo(a)pyrene	1	1	U J	U J	U J	U J	U J	0.33 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	U J	U J	U J	U J	U J	0.14 J
Dibenzo(a,h)anthracene	0.33	0.33	U J	U J	U J	U J	U J	0.04 J
Benzo(g,h,i)perylene	100	100	U J	U J	U J	U J	U J	0.12 J
TOTAL SVOCS*	NA	NA	3.18 J	U J	1.78 J	U J	2.27 J	4.308 J
TOTAL TICS*	NA	NA	19.64 NJ	0.98 NJ	22.27 NJ	0.13 NJ	24.16 J	1.491 NJ
TOTAL SVOCS AND TICS*	NA	NA	22.82 NJ	0.98 NJ	24.05 NJ	0.13 NJ	26.43 J	5.799 NJ

NA = Not available   TIC = Tentatively identified compound   J = Estimated value   B = Detected in associated method blank

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit   N = Indicates presumptive evidence of tentatively identified compound

5.5 = Exceeds Restricted Residential SCO   * = Does not include compounds that were also detected in the associated method blank

Table 7 (Page 1 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Analyte	Unrestricted SCO (1)	Restricted Residential SCO (2)	010 Tank Pit (6.3')		011 DAYSB-13 (0-4')		012 DAYSB-07 (15-17')		013 DAYSB-06 (8-12')		014 DAYSB-03 (12-15')		015 DAYSB-02 (4-8')	
Aluminum	NA	NA	NT		5520	J	1440	J	4370	J	3550	J	4310	J
Antimony	NA	NA	NT		U		U		U		U		U	
Arsenic	13	16	NT		6.2	J	4.8	J	3.7	J	4.9	J	5.5	J
Barium	350	400	NT		59.0	J	9.4	B	44.3	J	32.9	J	43.9	J
Beryllium	7.2	72	NT		0.32	B	0.077	B	0.23	B	0.21	B	0.28	B
Cadmium	2.5	4.3	NT		0.039	B	U		U		U		0.027	B
Calcium	NA	NA	NT		39800	J	140000	J	44900	J	69700	J	85100	J
Chromium	30	180	NT		8.4	J	3.1	J	7.4	J	6.6	J	6.2	J
Cobalt	NA	NA	NT		4.2	B	1.3	B	3.3	B	2.9	B	3.3	B
Copper	50	270	NT		23.4	J	4.6	J	7.8	J	9.6	J	12.0	J
Iron	NA	NA	NT		11200	J	3590	J	9090	J	8320	J	9080	J
Lead	63	400	3.8	*	93.5	J	4.1	J	3.8	J	10.9	J	14.5	J
Magnesium	NA	NA	NT		17600	J	71400	J	11600	J	21200	J	15500	J
Manganese	1600	2000	NT		315	J	293	J	325	J	309	J	384	J
Mercury	0.18	0.81	NT		0.25	J	U		U		U		U	
Nickel	30	310	NT		9.5	J	2.7	B	7.4	J	6.2	B	7.9	J
Potassium	NA	NA	NT		922	J	400	B	1080	J	1050	J	1490	J
Selenium	3.9	180	NT		U		U		U		U		U	
Silver	2	180	NT		0.76	B	U		0.54	B	0.44	B	0.44	B
Sodium	NA	NA	NT		190	B	255	B	220	B	165	B	133	B
Thallium	NA	NA	NT		1.3	B	0.93	B	0.76	B	U		1.1	B
Vanadium	NA	NA	NT		13.2	J	4.2	B	11.5	J	9.7	J	9.3	J
Zinc	109	10000	NT		71.4	J	26.1	J	23.8	J	21	J	68.1	J
Cyanide	27	27	NT		U		U		U		U		U	

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

N = Spiked sample recovery not within control limits   * = Duplicate analysis not within control limits

B = Reported value less than contract required detection limit, but greater than instrument detection limit

NT = Not Tested   J = estimated value

Table 7 (Page 2 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Analyte	Unrestricted SCO (1)	Restricted Residential SCO (2)	016 DAYSB-04 (4-8')		017 DAYSB-04 (12-15')		018 DAYSB-05 (4-8')		019 DAYMW-03 (4-8')		021 DAYSB-01 (12-15')		022 DAYSB-18 (4-8')	
Aluminum	NA	NA	5090	J	5050	J	7350	J	7790	J	8120	J	9790	J
Antimony	NA	NA	U		U		U		U		U		U	
Arsenic	13	16	7.0	J	4.2	J	10.8	J	5.3	J	6.2	J	15.3	J
Barium	350	400	40.0	J	39.4	J	80.4	J	71.7	J	84.7	J	98.5	J
Beryllium	7.2	72	0.27	B	0.27	B	0.42	B	0.38	B	0.44	B	0.53	B
Cadmium	2.5	4.3	0.029	B	U		0.023	B	U		U		U	
Calcium	NA	NA	62500	J	48600	J	30300	J	5600	J	53800	J	11200	J
Chromium	30	180	6.9	J	8.0	J	10.4	J	10.1	J	12.7	J	12.6	J
Cobalt	NA	NA	3.9	B	3.7	B	11.2	J	5.9	B	6.2	B	8.4	B
Copper	50	270	24.9	J	9.4	J	33.3	J	16.8	J	15.2	J	141	J
Iron	NA	NA	10300	J	10500	J	16700	J	14100	J	15600	J	22500	J
Lead	63	400	41.0	J	4.3	J	147	J	73.7	J	8.7	J	59.3	J
Magnesium	NA	NA	13500	J	12100	J	13000	J	3630	J	15000	J	6490	J
Manganese	1600	2000	389	J	353	J	499	J	161	J	491	J	299	J
Mercury	0.18	0.81	0.070	B	U		0.3	J	0.089	B	U		U	
Nickel	30	310	8.8	J	8.5	J	13.5	J	13.0	J	15.0	J	20.6	J
Potassium	NA	NA	837	J	1180	J	910	B	953	J	1750	J	1160	J
Selenium	3.9	180	U		U		U		U		U		U	
Silver	2	180	0.65	B	0.63	B	1.3	B	1.1	B	1.0	B	1.9	J
Sodium	NA	NA	144	B	154	B	146	B	83.8	B	208	B	151	B
Thallium	NA	NA	0.86	B	0.81	B	1.5	B	0.95	B	1.1	B	1.3	B
Vanadium	NA	NA	11.4	J	13.3	J	16.2	J	15.2	J	20.1	J	21.4	J
Zinc	109	10000	64.0	J	21.6	J	133	J	58.0	J	36.3	J	89.1	J
Cyanide	27	27	U		U		0.18	B	U		U		U	

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

N = Spiked sample recovery not within control limits   * = Duplicate analysis not within control limits

B = Reported value less than contract required detection limit, but greater than instrument detection limit

NT = Not Tested   J = estimated value

Table 7 (Page 3 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Analyte	Unrestricted SCO (1)	Restricted Residential SCO (2)	024 DAYSB-12 (4-8')		025 DAYSB-21 (4-8')		026 DAYSB-20 (12-15')		027 DAYSB-14 (8-12')		029 DAYSB-15A (8-12')		030 DAYSB-14 (0-4')		031 DAYSB-25 (12-15.7')	
Aluminum	NA	NA	5760		7080		930		2900		2800		13200		5180	
Antimony	NA	NA	U	N	U	N	U	N	U	N	U	N	U	N	U	N
Arsenic	13	16	8.4	*	7.2	*	4.4	*	3.8	*	6.0	*	6.9	*	6.1	*
Barium	350	400	57.2		65.9		10.9	B	16.8	B	44.2		157		50.7	
Beryllium	7.2	72	0.36	BJ	0.31	BJ	0.060	BJ	0.15	BJ	0.16	BJ	0.70	BJ	0.28	BJ
Cadmium	2.5	4.3	0.16	B	0.017	U	0.41	B	U		U		U		U	
Calcium	NA	NA	38700	*	1660	*	162000	*	109000	*	62500	*	5810	*	38700	*
Chromium	30	180	8.6	J	10.3	J	1.9	J	4.6	J	4.4	J	13.3	J	9.3	J
Cobalt	NA	NA	4.7	BJ	5.4	BJ	0.72	BJ	2.0	BJ	2.3	BJ	7.6	BJ	4.4	BJ
Copper	50	270	76.7	N	7.5	N	3.9	BN	10.2	N	8.3	N	13.9	N	17.4	N
Iron	NA	NA	12700		14700		2510		6600		6730		19700		10800	
Lead	63	400	163	*J	12.2	*J	5.6	*J	8.4	*J	6.5	*J	31.2	*J	21.1	*J
Magnesium	NA	NA	12200		2880		76700		43300		37300		3510		12200	
Manganese	1600	2000	386		256		276		313		599		804		433	
Mercury	0.18	0.81	0.42		0.017	B	U		U		U		0.078	B	U	
Nickel	30	310	13.3		16.5		1.7	B	5.6	B	6.4		16.7		9.7	
Potassium	NA	NA	730	B	730	B	273	B	657	B	599	B	901		863	
Selenium	3.9	180	U	*J	U	*J	U	*J	U	*J	U	*J	2.3	*J	U	*J
Silver	2	180	0.99	B	1.1	B	U		0.18	B	0.31	B	1.6	B	0.63	B
Sodium	NA	NA	135	B	215	B	218	B	189	B	193	B	1510		120	B
Thallium	NA	NA	1.1	B	1.2	B	1.0	B	U		1.0	B	1.6	B	1.4	B
Vanadium	NA	NA	12.5		12.1		2.9	B	6.9	B	6.3	B	20.1		11.5	
Zinc	109	10000	152	N*J	130	N*J	205	N*J	63.5	N*J	100	N*J	63.8	N*J	51.2	N*J
Cyanide	27	27	U	N	U	N	U	N	U	N	U	N	U	N	U	N

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

N = Spiked sample recovery not within control limits   * = Duplicate analysis not within control limits

B = Reported value less than contract required detection limit, but greater than instrument detection limit

NT = Not Tested   J = estimated value

Table 8 (Page 1 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of PCBs and Pesticides
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	011 DAYSB-13 (0-4')		012 DAYSB-07 (15-17')		013 DAYSB-06 (8-12')		014 DAYSB-03 (12-15')		015 DAYSB-02 (4-8')		016 DAYSB-04 (4-8')	
Dieldrin	0.005	0.2	U		U		U		U		U		U	
4,4'-DDE	0.0033	8.9	U		U		U		U		U		0.0017	JP
4,4'-DDT	0.0033	7.9	U		U		U		U		U		U	
gamma-Chlordane	NA	NA	U		U		U		U		U		U	
PCB	0.1	1	U		U		U		U		U		U	

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

P = Greater than 25% difference in detection between two GC columns used for primary and confirmation analyses. The lower of the two values is reported.

NA = Not available J = Estimated Value

Table 8 (Page 2 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of PCBs and Pesticides
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	017 DAYSB-04 (12-15')		018 DAYSB-05 (4-8')		019 DAYMW-03 (4-8')		021 DAYSB-01 (12-15')		022 DAYSB-18 (4-8')		024 DAYSB-12 (4-8')	
Dieldrin	0.005	0.2	U		0.0091		U		U		U		U	
4,4'-DDE	0.0033	8.9	U		U		U		U		U		U	
4,4'-DDT	0.0033	7.9	U		0.0048		U		U		U		0.0026	JP
gamma-Chlordane	NA	NA	U		0.0012	JP	U		U		U		U	
PCB	0.1	1	U		U		U		U		U		U	

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

P = Greater than 25% difference in detection between two GC columns used for primary and confirmation analyses. The lower of the two values is reported.

NA = Not available J = Estimated Value

Table 8 (Page 3 of 3)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of PCBs and Pesticides
in mg/Kg or Parts Per Million (ppm)

RI Subsurface Soil and Fill Samples

Detected Compound	Unrestricted SCO (1)	Restricted Residential SCO (2)	025 DAYSB-21 (4-8')	026 DAYSB-20 (12-15')	027 DAYSB-14 (8-12')	029 DAYSB-15A (8-12')	030 DAYSB-14 (0-4')	031 DAYSB-25 (12-15.7')
Dieldrin	0.005	0.2	U	U	U	U	U	U
4,4'-DDE	0.0033	8.9	U	U	U	U	U	U
4,4'-DDT	0.0033	7.9	U	U	U	U	U	U
gamma-Chlordane	NA	NA	U	U	U	U	U	U
PCB	0.1	1	U	U	U	U	U	U

(1) = Unrestricted soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

(2) = Restricted residential soil cleanup objective (SCO) as referenced in 6 NYCRR Part 375 dated December 14, 2006.

U = Not detected at concentration above reported analytical laboratory detection limit

P = Greater than 25% difference in detection between two GC columns used for primary and confirmation analyses. The lower of the two values is reported.

NA = Not available J = Estimated Value

Table 9 (Page 1 of 5)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	032 MW-URS1 09/05/06	033 MW-URS2 09/05/06	035 DAYMW-02 09/07/06	037 MW-8 09/08/06	039 DAYMW-03 09/08/06
Dichlorodifluoromethane	5	U	U	U	U	U
Acetone	50	U	U	U	U	U
Cyclohexane	NA	130 D	U	U	U	U
Benzene	1	**13**	U	U	U	U
Trichloroethene	5	U	U	U	U	3 J
Methylcyclohexane	NA	100 D	U	U	U	U
Toluene	5	**7**	U	U	U	U
Ethylbenzene	5	**64**	U	U	U	U
Xylene (total)	5	**330**	U	U	U	U
Isopropylbenzene	5	**38**	U	U	U	U
TOTAL VOCS	NA	682 D	U	U	U	3 J
TOTAL TICS	NA	2904 NJ	U	U	U	U
TOTAL VOCS AND TICS	NA	3586 NJD	U	U	U	3 J

NA = Not available   J = Estimated value   TIC = Tentatively Identified Compound

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

13 = Exceeds groundwater standard or guidance value   D = Compound concentration was obtained from a diluted analysis.

U = Not detected at concentrations above reported analytical laboratory detection limits

N = Analyte passed identification criteria and is considered to be positively identified

Table 9 (Page 2 of 5)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	040 MW-5 09/08/06	042 MW-6 09/09/06	043 DAYMW-04 09/11/06	044 DAYMW-05 09/11/06
Dichlorodifluoromethane	5	**7**	U	U	U
Acetone	50	U	U	U	U
Cyclohexane	NA	U	U	U	U
Benzene	1	U	U	U	U
Trichloroethene	5	U	U	U	**15**
Methylcyclohexane	NA	U	U	U	U
Toluene	5	U	U	U	U
Ethylbenzene	5	U	U	U	U
Xylene (total)	5	U	U	U	U
Isopropylbenzene	5	U	U	U	U
TOTAL VOCS	NA	7	U	U	15
TOTAL TICS	NA	U	U	U	U
TOTAL VOCS AND TICS	NA	7	U	U	15

NA = Not available   J = Estimated value   TIC = Tentatively Identified Compound

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

13 = Exceeds groundwater standard or guidance value   D = Compound concentration was obtained from a diluted analysis.

U = Not detected at concentrations above reported analytical laboratory detection limits

N = Analyte passed identification criteria and is considered to be positively identified

Table 9 (Page 3 of 5)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	060 DAYMW-02 04/04/07	061 DAYMW-03 04/05/07	062 DAYMW-04 04/04/07	063 DAYMW-05 04/04/07	064 MW-5 04/03/07
Dichlorodifluoromethane	5	U	U	U	U	**8** J
Acetone	50	U	U	15	U	U
Cyclohexane	NA	U	U	U	U	U
Benzene	1	U	U	U	U	U
Trichloroethene	5	U	U	U	**7** J	U
Methylcyclohexane	NA	U	U	U	U	U
Toluene	5	U	U	U	U	U
Ethylbenzene	5	U	U	U	U	U
Xylene (total)	5	U	U	U	U	U
Isopropylbenzene	5	U	U	U	U	U
TOTAL VOCS	NA	U	U	15	7 J	8 J
TOTAL TICS	NA	U	U	U	U	U
TOTAL VOCS AND TICS	NA	U	U	15	7 J	8 J

NA = Not available   J = Estimated value   TIC = Tentatively Identified Compound

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

13 = Exceeds groundwater standard or guidance value   D = Compound concentration was obtained from a diluted analysis.

U = Not detected at concentrations above reported analytical laboratory detection limits

N = Analyte passed identification criteria and is considered to be positively identified

205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	065 MW-6 04/03/07		066 MW-8 04/04/07		067 MW-URS1 04/02/07		068 MW-URS2 04/03/07		069 DAYMW-01 04/05/07	
Dichlorodifluoromethane	5	U		U		U		U		U	
Acetone	50	U		U		U		U		U	
Cyclohexane	NA	U		U		170	D	U		U	
Benzene	1	U		U		**12**		U		U	
Trichloroethene	5	U		U		U		U		U	
Methylcyclohexane	NA	U		U		200		U		U	
Toluene	5	U		U		**8**	J	U		U	
Ethylbenzene	5	U		U		**190**		U		U	
Xylene (total)	5	U		U		**530**	D	U		U	
Isopropylbenzene	5	U		U		**36**		U		U	
TOTAL VOCS	NA	U		U		1146	JD	U		U	
TOTAL TICS	NA	U		U		3415	NJ	U		U	
TOTAL VOCS AND TICS	NA	U		U		4561	NJD	U		U	

NA = Not available   J = Estimated value   TIC = Tentatively Identified Compound

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

13 = Exceeds groundwater standard or guidance value   D = Compound concentration was obtained from a diluted analysis.

U = Not detected at concentrations above reported analytical laboratory detection limits

N = Analyte passed identification criteria and is considered to be positively identified

Table 9 (Page 5 of 5)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Volatile Organic Compounds (VOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	081 TW-3 09/11/08	089 TW-5 09/12/08	090 TW-6 09/12/08	091 TW-4 09/12/08	092 TW-2 09/12/08	093 TW-1 09/12/08
Dichlorodifluoromethane	5	U	U	U	U	U	U
Acetone	50	U	U	U	U	U	U
Cyclohexane	NA	U	U	U	U	U	U
Benzene	1	U	U	U	U	U	U
Trichloroethene	5	**10**	U	U	U	U	**18**
Methylcyclohexane	NA	U	U	U	U	U	U
Toluene	5	U	U	U	U	U	U
Ethylbenzene	5	U	U	U	U	U	U
Xylene (total)	5	U	U	U	U	U	U
Isopropylbenzene	5	U	U	U	U	U	U
TOTAL VOCS	NA	10	U	U	U	U	18
TOTAL TICS	NA	U	U	U	U	U	U
TOTAL VOCS AND TICS	NA	10	U	U	U	U	18

NA = Not available J = Estimated value TIC = Tentatively Identified Compound

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

13 = Exceeds groundwater standard or guidance value D = Compound concentration was obtained from a diluted analysis.

U = Not detected at concentrations above reported analytical laboratory detection limits

N = Analyte passed identification criteria and is considered to be positively identified

Table 10 (Page 1 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	032 MW-URS1 09/05/06		033 MW-URS2 09/06/06		035 DAYMW-02 09/07/06		037 MW-8 09/08/06		039 DAYMW-03 09/08/06	
Phenol	1	U		U		U		U		U	
Isophorone	50	U		U		U		U		U	
2,4-Dimethylphenol	50	2	J	U		U		U		U	
Naphthalene	10	**90**	D	U		U		U		U	
Caprolactam	NA	U		U		U		U		U	
2-Methylnaphthalene	NA	19		U		U		U		U	
4-Nitrophenol	NA	U		U		U		U		U	
Diethylphthalate	50	U		U		1	J	U		U	
Fluorene	50	U		U		U		U		U	
Phenanthrene	50	U		U		U		U		U	
Carbazole	NA	U		U		U		U		U	
Fluoranthene	50	U		U		U		U		U	
Pyrene	50	U		U		U		U		U	
Benzo(a)anthracene	0.002	U		U		U		U		U	
Chrysene	0.002	U		U		U		U		U	
bis(2-Ethylhexyl)phthalate	5	**25**		U		1	J	U		U	
Benzo(b)fluoranthene	0.002	U		U		U		U		U	
Benzo(k)fluoranthene	0.002	U		U		U		U		U	
Benzo(a)pyrene	U	U		U		U		U		U	
Indeno(1,2,3-cd)pyrene	0.002	U		U		U		U		U	
Benzo(g,h,i)perylene	NA	U		U		U		U		U	
TOTAL SVOCS*	NA	136	JD	U		2	J	U		U	
TOTAL TICS*	NA	408	NJD	U		92	NJ	131	NJ	53	NJ
TOTAL SVOCS AND TICS*	NA	544	NJD	U		94	NJ	131	NJ	53	NJ

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

25 = Exceeds groundwater standard or guidance value

B = Compound also detected in associated method blank

D = Compound concentration was obtained from a diluted analysis.

NA = Not Available

U = Not detected at concentrations above reported analytical laboratory detection limits

J = Estimated Value

N = Analyte passed identification criteria and is considered to be positively identified

TIC = Tentatively Identified Compound

* = Does not include constituents that were detected in associated blank as well as in the sample

Table 10 (Page 2 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	040 MW-5 09/08/06		042 MW-6 09/09/06		043 DAYMW-04 09/11/06		044 DAYMW-05 09/11/06	
Phenol	1	U		U		U		U	
Isophorone	50	U		U		U		U	
2,4-Dimethylphenol	50	U		U		U		U	
Naphthalene	10	U		U		U		U	
Caprolactam	NA	U		U		2	J	U	
2-Methylnaphthalene	NA	U		U		U		U	
4-Nitrophenol	NA	U		U		U		U	
Diethylphthalate	50	U		U		U		U	
Fluorene	50	U		1	J	U		U	
Phenanthrene	50	U		2	J	U		U	
Carbazole	NA	U		U		U		U	
Fluoranthene	50	U		U		U		U	
Pyrene	50	U		U		U		U	
Benzo(a)anthracene	0.002	U		U		U		U	
Chrysene	0.002	U		U		U		U	
bis(2-Ethylhexyl)phthalate	5	U		2	JB	5	JB	4	JB
Benzo(b)fluoranthene	0.002	U		U		U		U	
Benzo(k)fluoranthene	0.002	U		U		U		U	
Benzo(a)pyrene	U	U		U		U		U	
Indeno(1,2,3-cd)pyrene	0.002	U		U		U		U	
Benzo(g,h,i)perylene	NA	U		U		U		U	
TOTAL SVOCS*	NA	U		3	J	2	J	U	
TOTAL TICS*	NA	366	NJ	183	NJ	287	NJ	141	NJ
TOTAL SVOCS AND TICS*	NA	366	NJ	186	NJ	289	NJ	141	NJ

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

25 = Exceeds groundwater standard or guidance value

B = Compound also detected in associated method blank

D = Compound concentration was obtained from a diluted analysis.

NA = Not Available

U = Not detected at concentrations above reported analytical laboratory detection limits

J = Estimated Value

N = Analyte passed identification criteria and is considered to be positively identified

TIC = Tentatively Identified Compound

* = Does not include constituents that were detected in associated blank as well as in the sample

Table 10 (Page 3 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	060 DAYMW-02 04/04/07		061 DAYMW-03 04/05/07		062 DAYMW-04 04/04/07		063 DAYMW-05 04/04/07		064 MW-5 04/03/07	
Phenol	1	U		U		**2**	J	U		U	
Isophorone	50	U		U		1	J	U		U	
2,4-Dimethylphenol	50	U		U		U		U		U	
Naphthalene	10	U		U		U		U		U	
Caprolactam	NA	10		U		26		U		U	
2-Methylnaphthalene	NA	U		U		U		U		U	
4-Nitrophenol	NA	U		U		2	J	U		U	
Diethylphthalate	50	U		U		U		U		U	
Fluorene	50	U		U		U		U		U	
Phenanthrene	50	U		U		5	J	U		U	
Carbazole	NA	U		U		2	J	U		U	
Fluoranthene	50	U		U		11		U		U	
Pyrene	50	U		U		7		U		U	
Benzo(a)anthracene	0.002	U		U		**2**	J	U		U	
Chrysene	0.002	U		U		**6**		U		U	
bis(2-Ethylhexyl)phthalate	5	U		U		**15**		U		U	
Benzo(b)fluoranthene	0.002	U		U		**7**		U		U	
Benzo(k)fluoranthene	0.002	U		U		**3**	J	U		U	
Benzo(a)pyrene	U	U		U		3	J	U		U	
Indeno(1,2,3-cd)pyrene	0.002	U		U		**2**	J	U		U	
Benzo(g,h,i)perylene	NA	U		U		3	J	U		U	
TOTAL SVOCS*	NA	10		U		97	J	U		U	
TOTAL TICS*	NA	4	J	10	J	311	NJ	U		93	NJ
TOTAL SVOCS AND TICS*	NA	14	J	10	J	408	NJ	U		93	NJ

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

25 = Exceeds groundwater standard or guidance value

B = Compound also detected in associated method blank

D = Compound concentration was obtained from a diluted analysis.

NA = Not Available

U = Not detected at concentrations above reported analytical laboratory detection limits

J = Estimated Value

N = Analyte passed identification criteria and is considered to be positively identified

TIC = Tentatively Identified Compound

* = Does not include constituents that were detected in associated blank as well as in the sample

Table 10 (Page 4 of 4)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Detected Semi-Volatile Organic Compounds (SVOCs)
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Compound	Groundwater Standard or Guidance Value (1)	065 MW-6 04/03/07		066 MW-8 04/04/07		067 MW-URS1 04/02/07		068 MW-URS2 04/03/07		069 DAYMW-01 04/05/07	
Phenol	1	U		U		U		U		U	
Isophorone	50	U		U		U		U		U	
2,4-Dimethylphenol	50	U		U		U		U		U	
Naphthalene	10	U		U		**250**	D	U		U	
Caprolactam	NA	U		U		U		U		U	
2-Methylnaphthalene	NA	U		U		71		U		U	
4-Nitrophenol	NA	U		U		U		U		U	
Diethylphthalate	50	U		U		U		U		U	
Fluorene	50	U		U		U		U		U	
Phenanthrene	50	U		U		U		U		U	
Carbazole	NA	U		U		U		U		U	
Fluoranthene	50	U		U		U		U		U	
Pyrene	50	U		U		U		U		U	
Benzo(a)anthracene	0.002	U		U		U		U		U	
Chrysene	0.002	U		U		U		U		U	
bis(2-Ethylhexyl)phthalate	5	2	J	1	J	2	J	U		U	
Benzo(b)fluoranthene	0.002	U		U		U		U		U	
Benzo(k)fluoranthene	0.002	U		U		U		U		U	
Benzo(a)pyrene	U	U		U		U		U		U	
Indeno(1,2,3-cd)pyrene	0.002	U		U		U		U		U	
Benzo(g,h,i)perylene	NA	U		U		U		U		U	
TOTAL SVOCS*	NA	2	J	1	J	323	J	U		U	
TOTAL TICS*	NA	246	NJ	4	J	2,632	NJ	77	J	11	J
TOTAL SVOCS AND TICS*	NA	248	NJ	5	J	2,995	NJ	77	J	11	J

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

25 = Exceeds groundwater standard or guidance value

B = Compound also detected in associated method blank

D = Compound concentration was obtained from a diluted analysis.

NA = Not Available

U = Not detected at concentrations above reported analytical laboratory detection limits

J = Estimated Value

N = Analyte passed identification criteria and is considered to be positively identified

TIC = Tentatively Identified Compound

* = Does not include constituents that were detected in associated blank as well as in the sample

Table 11 (Page 1 of 2)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Analyte	Groundwater Standard or Guidance Value (1)	032 MW-URS1 09/05/06		033 MW-URS2 09/06/06		035 DAYMW-02 09/07/06		037 MW-8 09/08/06		039 DAYMW-03 09/08/06	
Aluminum	NA	112	B	U		16100		U		263	
Antimony	3	U		U		U		U		U	
Arsenic	25	U		U		8.6	B	U		7.3	B
Barium	1000	466		117	B	234		160	B	758	
Beryllium	3	U		U		0.81	B	U		U	
Cadmium	5	0.24	B	0.33	B	0.53	B	U		0.24	B
Calcium	NA	118000		148000		208000		136000		181000	
Chromium	50	0.69	B	0.59	B	28.5		0.34	B	U	
Cobalt	NA	0.56	B	0.41	B	10.2	B	0.44	B	1.8	B
Copper	200	9.5	B	6.9	B	29		4	B	5.4	B
Iron	300	**8690**		47.6	B	**25700**		**963**		**7530**	
Lead	25	U		U		18.2		U		U	
Magnesium	35000	**61400**		30700		**54000**		25800		32800	
Manganese	300	45		5	B	**838**		141		**6110**	
Mercury	0.7	U		0.032	B	U		U		U	
Nickel	100	1.4	B	1.1	B	25.1	B	2	B	5.1	B
Potassium	NA	1590	B	8300		16600		8350		13900	
Selenium	10	U	N	U	N	U	N	U	N	U	N
Silver	50	U		U		U		U		U	
Sodium	20000	**23200**		11200		11700		**30500**		**135000**	
Thallium	0.5	**3.1**	B	U		**3.4**	B	U		**26.8**	
Vanadium	NA	0.75	B	U		30.8	B	U		0.82	B
Zinc	2000	16.9	B	25.8		88.5		8.8	B	25.1	
Cyanide	200	U		U		U		U		U	

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

6110 = Exceeds groundwater standard or guidance value NT = Not Tested

B = Reported value less than contract required detection limit, but greater than instrument detection limit

N = Spiked sample recovery not within control limits R = rejected due to 0% recovery in spiked sample

U = Not detected at concentrations above reported analytical laboratory detection limits

Table 11 (Page 2 of 2)
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Target Analyte List Metals and Cyanide
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Detected Analyte	Groundwater Standard or Guidance Value (1)	040 MW-5 09/08/06		042 MW-6 09/08/06		043 DAYMW-04 09/11/06		044 DAYMW-05 09/11/06		063 DAYMW-05 04/04/07		069 DAYMW-01 04/05/07	
Aluminum	NA	U		79.7	B	2510		128000		284		13100	
Antimony	3	U		U		U		U		**6.7**	BJ	**10.2**	BJ
Arsenic	25	U		6.5	B	U		**43.6**		U		20.9	
Barium	1000	152	B	**1550**		421		**1010**		309		375	
Beryllium	3	U		U		U		**5.7**		U		0.56	B
Cadmium	5	0.31	B	13.8		0.72	B	**6.9**		0.38	B	0.9	B
Calcium	NA	212000		117000		542000		485000		256000		227000	
Chromium	50	2.3	B	1.7	B	5.6	B	**206**		U		27.7	
Cobalt	NA	0.32	B	0.37	B	1.3	B	82.1		1.6	B	11.9	B
Copper	200	7.7	B	3.1	B	11.2	B	**286**		17.7	B	57.7	
Iron	300	104		**10900**		**11700**		**179000**		**473**		**31700**	
Lead	25	U		U		U		**251**		U		10	
Magnesium	35000	34000		34900		**116000**		**154000**		**45400**		**47100**	
Manganese	300	36.6		250		**608**		**4630**		**770**		**2170**	
Mercury	0.7	U		U		U		0.68		U		U	
Nickel	100	3.5	B	1.6	B	3.9	B	**239**		U		32.9	B
Potassium	NA	22800		10700		78400		28900		11900		20900	
Selenium	10	U	N	U	N	U	N	**17.2**	N	**18.4**		**27**	
Silver	50	U		U		U		U		R		R	
Sodium	20000	**362000**		**196000**		**665000**		**270000**		**300000**		16100	
Thallium	0.5	**2.5**	B	U		**2.4**	B	**3.4**	B	U		U	
Vanadium	NA	U		0.64	B	4.7	B	201		2	B	21.3	B
Zinc	2000	9.7	B	10.7	B	19.7	B	1920		40.5	E	225	E
Cyanide	200	U		U		U		U		NT		4.9	B

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

6110 = Exceeds groundwater standard or guidance value   NT = Not Tested

B = Reported value less than contract required detection limit, but greater than instrument detection limit

N = Spiked sample recovery not within control limits   R = rejected due to 0% recovery in spiked sample

U = Not detected at concentrations above reported analytical laboratory detection limits

Table 12
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Summary of Polychlorinated Biphenyls (PCBs) and Pesticides
in ug/L or Parts per Billion (ppb)

RI Groundwater Samples

Constituent	Groundwater Standard or Guidance Value (1)	032 MW-URS1 09/05/06	033 MW-URS2 09/05/06	035 DAYMW-02 09/07/06	037 MW-8 09/08/06	039 DAYMW-03 09/08/06	040 MW-5 09/08/06	042 MW-6 09/08/06	043 DAYMW-04 09/11/06	044 DAYMW-05 09/11/06
Pesticides	NA	U	U	U	U	U	U	U	U	U
Total Aroclors (PCBs)	0.09	U	U	U	U	U	U	U	U	U

NA = Not available

(1) = Groundwater standard or guidance value as referenced in NYSDEC TOGS 1.1.1dated June 1998 as amended by the NYSDEC's supplemental table dated April 2000

U = Not detected at concentrations above reported analytical laboratory detection limits

Table 13

Vapor Intrusion Evaluation Air Sample Results
205-405 Mt. Hope Ave., Rochester, New York

Summary of Detected Volatile Organic Compounds Reported in ug/m^3
RI Samples Collected January 30, 2007

Detected Constituent	NYSDOH Indoor (ug/m3)[(1)]	NYSDOH Outdoor (ug/m3)[(2)]	Sample Location													
			046 SLB-01	047 IA-01	048 SLB-02	049 IA-02	050 SLB-03	051 IA-03	052 SLB-04	053 IA-04	054 SLB-05	055 IA-05	056 SLB-06	057 IA-06	058 BG-01	059 BG-02
Chloromethane	4.13	4.13	U (<0.64)	0.87	U (<0.66)	U (<0.77)	U (<0.65)	U (<0.82)	U (<0.68)	U (<0.79)	U (<0.66)	U (<0.90)	U (<0.80)	U (<0.77)	U (<0.78)	U (<0.77)
Acetone	115.15	29.9	17	12	260	14	32	17	290	12	19	U (<9.0)	18 J	8.7	U (<7.8)	9.7
Trichlorofluoromethane	11.85	5.13	1.6	1.3	1.3	1.2	12	1.2 J	3.7	1.2	36	1.3	37	1.3	1.1	1.2
Trichlorotrifluoroethane	2.38	2.38	1.0	U (<0.64)	U (<0.66)	U (<0.77)	U (<0.65)	U (<0.82)	U (<0.68)	U (<0.79)	U (<0.66)	U (<0.90)	U (<0.80)	U (<0.77)	U (<0.78)	U (<0.77)
Carbon Disulfide	NA	NA	U (<0.64)	U (<0.64)	2.1	U (<0.77)	1.1	U (<0.82)	4.6 J	U (<0.79)	U (<0.66)	U (<0.90)	1.3	U (<0.77)	U (<0.78)	U (<0.77)
Vinyl Acetate	NA	NA	U (<1.3)	U (<1.3)	2.4 J	U (<1.5)	1.9 J	4.8 J	U (<1.4)	U (<1.6)	U (<1.3)	U (<1.8)	U (<1.6)	U (<1.5)	U (<1.6)	U (<1.5)
2-Butanone (MEK)	16.15	5.3	2.1	1.2	7.2	2.5	3.4	1.8	29	1.4	2.8	1.2	3.8	1.4	1.2	1.2
Chloroform	0.88	<0.25	5.3 J	U (<0.64)	3.0 J	U (<0.77)	0.98 J	U (<0.82)	1.4 J	U (<0.79)	U (<0.66)	U (<0.90)	U (<0.80)	U (<0.77)	U (<0.78)	U (<0.77)
Benzene	13.1	4.6	2.3	1.7 J	3.9	1.4 J	2.4 J	1.2 J	5.3	1.1 J	2.5 J	1.4 J	4.7	1.1 J	1.5 J	1.0 J
Trichloroethene [(3)]	<0.25	<0.25	7.1	U (<0.32)	5.9 J	U (<0.39)	12	U (<0.41)	2.7 J	U (<0.39)	0.5 J	U (<0.45)	U (<0.40)	U (<0.38)	U (<0.39)	U (<0.39)
4-Methyl-2-Pentanone	1.88	<0.25	1.1	U (<0.64)	2.1	U (<0.77)	1.6	U (<0.82)	3.7	U (<0.79)	1.7	U (<0.90)	1.6	U (<0.77)	U (<0.78)	U (<0.77)
Toluene	57.25	5.1	23	4.1 J	28	2.9 J	23	2.1 J	31	2.1 J	20	2.9 J	26	2.0 J	3.9 J	1.8 J
Tetrachloroethene [(4)]	2.38	0.38	1.8 J	U (<0.64)	3.7 J	U (<0.77)	2.5 J	U (<0.82)	4.8 J	U (<0.79)	1.9 J	U (<0.90)	2.4 J	U (<0.77)	U (<0.78)	U (<0.77)
Ethylbenzene	6.4	0.88	10	0.74	18	U (<0.77)	12	U (<0.82)	14	U (<0.79)	11	U (<0.90)	10	U (<0.77)	U (<0.78)	U (<0.77)
m/p-Xylene	10.75	0.88	40	3.1 J	65	2.4 J	40	U (<1.6)	56	1.7 J	41	2.3 J	37	U (<1.5)	**2.8 J**	U (<1.5)
Styrene	1.13	<0.25	1.6 J	U (<0.64)	3.9 J	U (<0.77)	2.6 J	U (<0.82)	3.2 J	U (<0.79)	1.6 J	U (<0.90)	1.7 J	U (<0.77)	U (<0.78)	U (<0.77)
o-Xylene	7.15	1.38	11	1.1 J	17	0.85 J	9.5	U (<0.82)	U (<0.68)	U (<0.79)	12	U (<0.90)	8.9	U (<0.77)	0.94 J	U (<0.77)
1,3-Dichlorobenzene	<0.25	<0.25	U (<0.64)	U (<0.64)	0.92	U (<0.77)	U (<0.65)	U (<0.82)	0.76	U (<0.79)	U (<0.66)	U (<0.90)	U (<0.80)	U (<0.77)	U (<0.78)	U (<0.77)
1,4-Dichlorobenzene	0.88	<0.25	2.6	**1.6**	5.1	U (<0.77)	2.9	U (<0.82)	4.3	U (<0.79)	19	**12**	2.9	U (<0.77)	U (<0.78)	U (<0.77)

U = Not detected at concentration above analytical laboratory reporting limit noted in parentheses. NA = Not Available.

[(1)] Indoor Air Upper Fence value calculated as 1.5 times the interquartile range (difference between the 25th and 75th percentile values) above the 75th percentile value of the specified compound as set forth in Section 3.2.4 of the New York State Department of Health (NYSDOH) document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 (used to for comparison to indoor air sample results).

[(2)] Outdoor Air Upper Fence value calculated as 1.5 times the interquartile range (difference between the 25th and 75th percentile values) above the 75th percentile value of the specified compound as set forth in Section 3.2.4 of the New York State Department of Health (NYSDOH) document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 (used for comparison to outdoor air background sample results).

25th percentiles that are reported as a detection limit (I.e., <0.25 ug/m^3) were assumed to equal an actual detected value (i.e., 0.25 ug/m^3) when calculating the Upper Fence values.

1.6 = exceeds Indoor Air Upper Fence Value **2.8** = exceeds Outdoor Air Upper Fence Value Sub-Slab results are not compared to Upper Fence values. J = Estimated value

[(3)] The NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 5 ug/m^3 for Trichloroethene (TCE).

[(4)] The NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 100 ug/m^3 for Tetrachloroethene (PCE).

Table 14

Soil Vapor Sample Results
205-405 Mt. Hope Ave., Rochester, New York

Summary of Detected Volatile Organic Compounds Reported in ug/m^3
RI Samples Collected September 11, 2008 and December 5, 2008

Detected Constituent	NYSDOH Indoor (ug/m3)(1)	NYSDOH Outdoor (ug/m3)(2)	Sample Location							
			082 BG Outdoor Air	083 SV-1	084 SV-2	085 SV-3	086 SV-4	087 SV-5	088 SV-6	095 SV-7
			9/11/2008	9/11/2008	9/11/2008	9/11/2008	9/11/2008	9/11/2008	9/11/2008	12/5/2008
Acetone	115	30	7.8 J	510 J	64 J	130 J	150 J	150 J	270 J	34
Benzene	13	4.8	0.42 J	110	78	73	190	330	450	5
1,3-Butadiene	NA	NA	U	U	U	U	U	U	U	0.51
2-Butanone (MEK)	16	5.3	0.62	29	13	30	35	16	53	6.5
Carbon Disulfide	NA	NA	U	43	46	75	100	130	210	0.32
Carbon Tetrachloride	1.3	1.2	0.53 J	U	U	U	U	U	U	0.37
Chloroform	1.2	0.5	U	1.3 J	1.2 J	13	14	U	U	1.4 J
Chloromethane	4.2	4.3	1.0 J	U	1.0 J	U	U	U	U	0.82 J
Cyclohexane	6.3	0.9	U	100	98	320	78	310	640	8.3
1,4-Dichlorobenzene	1.2	0.5	U	U	1.5	U	U	U	U	U
Dichlorodifluoromethane	10	10	2.5	6600	1600	19000	14000	110	4100	1.5
1,2-Dichloroethane	0.4	0.4	U	U	2.9 J	U	U	U	U	U
cis-1,2-Dichloroethene	0.4	0.4	U	U	U	U	U	U	3.9	U
Ethanol	1300	34	3.6 J	36 J	49 J	32 J	41 J	63 J	60 J	22
Ethyl Acetate	NA	NA	U	U	25	U	U	U	U	U
Ethylbenzene	6.4	1.0	0.32 J	4.9 J	6.3 J	4.6 J	5.3 J	110	17 J	3.2 J
4-Ethyl Toluene	NA	NA	U	6.5	4.7	6.1	6.7	7.4	7.2	2.0
n-Heptane	18	4.5	0.15	36	20	74	85	440	690	8.6
Hexane	14	2.2	0.61	70	35	150	120	630	960	17
Isopropanol	NA	NA	0.35	13	36	11	10	12	13	7.3
Methylene Chloride (3)	16	1.6	U	5.1 J	29	2.3 J	1.2 J	2.0 J	2.2 J	11
4-Methyl-2-Pentanone (MIBK)	1.9	0.5	U	U	U	U	28	U	U	U
Styrene	1.4	0.5	U	1.0	20	1.2	1.1	1.2	1.2	0.15 J
Tetrachloroethene (4)	2.5	0.7	U	3.0	6.7	3.3	4.0	5.5	35	0.40
Tetrahydrofuran	0.8	0.4	U	3.1	3.5	4.1	5.7	U	5.0	22
Toluene	57	5.1	1.8 J	17	110	33	49	300	210	21
1,1,1-Trichloroethane	2.5	0.6	U	4.7 J	U	61	1.0 J	U	U	U
Trichloroethene (5)	0.5	0.4	U	1.0	4.9	1.4	0.99	1.9	57	11
Trichlorofluoromethane	12	5.1	1.4	2.4	5.2	3.7	22	U	6.2	1.4
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.5	2.5	0.56	0.84	U	U	U	U	U	U
1,2,4-Trimethylbenzene	9.8	1.9	0.43	40	26	37	40	43	43	10
1,3,5-Trimethylbenzene	3.9	0.7	U	9.3	6.5	8.6	9.3	11	10	2.6
Vinyl Chloride	0.4	0.4	U	U	U	U	U	U	U	0.09 J
m/p-Xylene	11	1.0	U	17	U	17	20	250	50	11
o-Xylene	7.1	1.2	0.41 J	9.0 J	8.2	8.7 J	9.3 J	68	16 J	5.4 J

U = Not detected at concentration above analytical laboratory reporting limit. NA = Not Available.

(1) Indoor Air Upper Fence value referenced in Table C1 of the New York State Department of Health (NYSDOH) document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

(2) Outdoor Air Upper Fence value referenced in Table C1 of the NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

(3) The NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 60 ug/m^3 for Methylene Chloride.

(4) The NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 100 ug/m^3 for Tetrachloroethene.

(5) The NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 5 ug/m^3 for Trichloroethene.

No NYSDOH criteria is available for soil vapor samples

J = Estimated value B = Compound also detected in associated method blank

Table 15
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

VOCs In Soil Samples Exceeding Unrestricted Use SCOs

		RI SAMPLES				REMEDIATION SAMPLES							
Contaminant	**A** Unrestricted Use SCO	**014 DAYSB-03 (12-15')**		**019 DAYMW-03 (8-12')**		**073 C - 12 (12') 03/18/10 S Bottom**		**074 C - 13 (7-10') 03/18/10 E Wall**		**088 T- 6 (18-20') 03/24/10**		**089 T- 1 (10-12') 03/24/10**	
Acetone	0.05	U		**0.065** J	**A**	0.014		U		U		U	
Xylene (mixed)	0.26	**0.36** D	**A**	U J		**0.44**	**A**	**0.5**	**A**	**0.28**	**A**	**1.8**	**A**

Values Are In Milligrams Per Kilogram (mg/kg) Or Parts Per Million (ppm)

Soil Cleanup Objectives (SCOs) Are As Referenced In 6 NYCRR Part 375-6, Remedial Program Soil Cleanup Objectives, Dated December 14, 2006

Volatile Organic Compounds (VOCs)

D = Diluted Sample

J = Estimated Value

U = Not Detected

Remedial Investigation (RI)

A = Exceeds Unrestricted Use SCO

Table 16
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Metals In Soil Samples Exceeding Unrestricted Use SCOs

		PHASE II SAMPLES				RI SAMPLES											
Contaminant	**A** Unrestricted Use SCO	**TB-21 (0-4') 8/25/00**		**TB-24 (0-4') 8/25/00**		**011 DAYSB-13 (0-4')**		**018 DAYSB-05 (4-8')**		**022 DAYSB-18 (4-8')**		**024 DAYSB-12 (4-8')**		**025 DAYSB-21 (4-8')**		**026 DAYSB-20 (12-15')**	
Arsenic	13	**13.1**	**A**	**17.2**	**A**	6.2 J		10.8 J		**15.3 J**	**A**	8.4 *		7.2 *		4.4 *	
Copper	50	NT		NT		23.4 J		33.3 J		**141 J**	**A**	**76.7** N	**A**	7.5 N		3.9 BN	
Lead	63	9.68		9.49		**93.5** J	**A**	**147** J	**A**	59.3 J		**163** *J	**A**	12.2 *J		5.6 *J	
Total Mercury	0.18	U		U		**0.25** J	**A**	**0.3** J	**A**	U		**0.42**	**A**	0.017 B		U	
Zinc	109	NT		NT		71.4 J		**133** J	**A**	89.1 J		**152** N*J	**A**	**130** N*J	**A**	**205** N*J	**A**

Values Are In Milligrams Per Kilogram (mg/kg) Or Parts Per Million (ppm)

Soil Cleanup Objectives (SCOs) Are As Referenced In 6 NYCRR Part 375-6, Remedial Program Soil Cleanup Objectives, Dated December 14, 2006

B = Trace Concentration Below Reporting Limit And Equal To Or Above Detection Limit

J = Estimated Value

N = Matrix Spike Recovery Falls Outside Control Limit

U = Not Detected

* = RPD Duplicate Analyses Outside Control Limit

Phase II Study (P II)

Remedial Investigation (RI)

A = Exceeds Unrestricted Use SCO

NT = Not Tested

Table 17
205-405 Mt. Hope Avenue, Rochester, New York
NYSDEC Site #C828125

Pesticides And PCBs in Soil Samples Exceeding Unrestricted Use SCOs

		RI SAMPLE		REMEDIATION SAMPLES															
Contaminant	A Unrestricted Use SCO	018 DAYSB-05 (4-8')		022 / P-4 08/03/09		024 / P-6 08/03/09		026 / P-8 08/03/09		027 / P-9 08/03/09		028 / P-10 08/03/09		029 / P-11 08/03/09		030 / P-12 08/03/09		032 / P-14 08/03/09	
4,4'-DDT	0.0033	**0.0048**	**A**	NT		NT		NT		NT		NT		NT		NT		NT	
Dieldrin	0.005	**0.0091**	**A**	NT		NT		NT		NT		NT		NT		NT		NT	
Polychlorinated biphenyls	0.1	U		**0.29**	**A**	**0.17**	**A**	**0.27**	**A**	**0.206**	**A**	**0.34 P**	**A**	**0.78 P**	**A**	**0.23**	**A**	**0.78**	**A**

Values Are In Milligrams Per Kilogram (mg/kg) Or Parts Per Million (ppm)

Soil Cleanup Objectives (SCOs) are as referenced in 6 NYCRR Part 375-6, Remedial Program Soil Cleanup Objectives, dated December 14, 2006

U = Not Detected

P = Lower Of Two Values Reported From Primary And Confirmation Analyses When > 25% Difference Detected

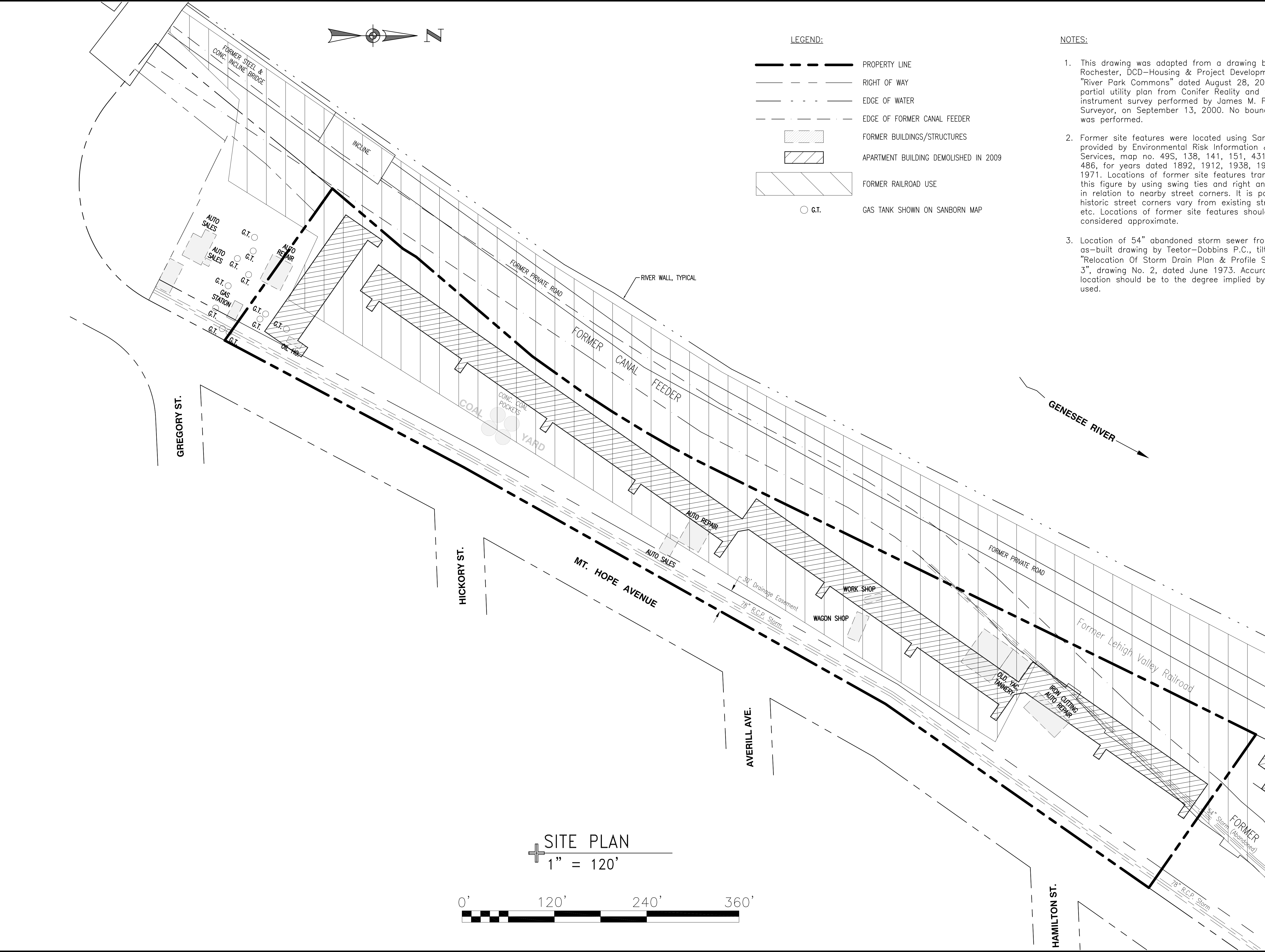
Remedial Investigation (RI)

A = Exceeds Unrestricted Use SCO

NT - Not Tested

FIGURES

DATE **1-19-2009**	day DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14623-2700	PROJECT TITLE **205-405 MT. HOPE AVENUE ROCHESTER, NEW YORK** **BROWNFIELD CLEANUP PROGRAM**	PROJECT NO. **4155R-09**
DRAWN BY **CPS**			
SCALE **1" = 400'**		DRAWING TITLE **PROJECT LOCUS MAP**	**FIGURE 1**



LEGEND:

- PROPERTY LINE
- RIGHT OF WAY
- EDGE OF WATER
- EDGE OF FORMER CANAL FEEDER
- FORMER BUILDINGS/STRUCTURES
- APARTMENT BUILDING DEMOLISHED IN 2009
- FORMER RAILROAD USE
- G.T. GAS TANK SHOWN ON SANBORN MAP

NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD–Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Realty and from an instrument survey performed by James M. Parker, Land Surveyor, on September 13, 2000. No boundary survey was performed.
2. Former site features were located using Sanborn Maps provided by Environmental Risk Information & Imaging Services, map no. 49S, 138, 141, 151, 431, 432 and 486, for years dated 1892, 1912, 1938, 1950, and 1971. Locations of former site features transferred to this figure by using swing ties and right angle distances in relation to nearby street corners. It is possible that historic street corners vary from existing street corners, etc. Locations of former site features should be considered approximate.
3. Location of 54" abandoned storm sewer from an as–built drawing by Teetor–Dobbins P.C., titled "Relocation Of Storm Drain Plan & Profile Sheet 2 of 3", drawing No. 2, dated June 1973. Accuracy of location should be to the degree implied by the method used.

DATE	5-2010
DATE DRAWN	5-3-2010
DATE ISSUED	5-21-2010
FIELD VERIFIED BY	JAD
DRAWN BY	RJM
SCALE	As Noted

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Site Plan Depicting Select Historical Uses

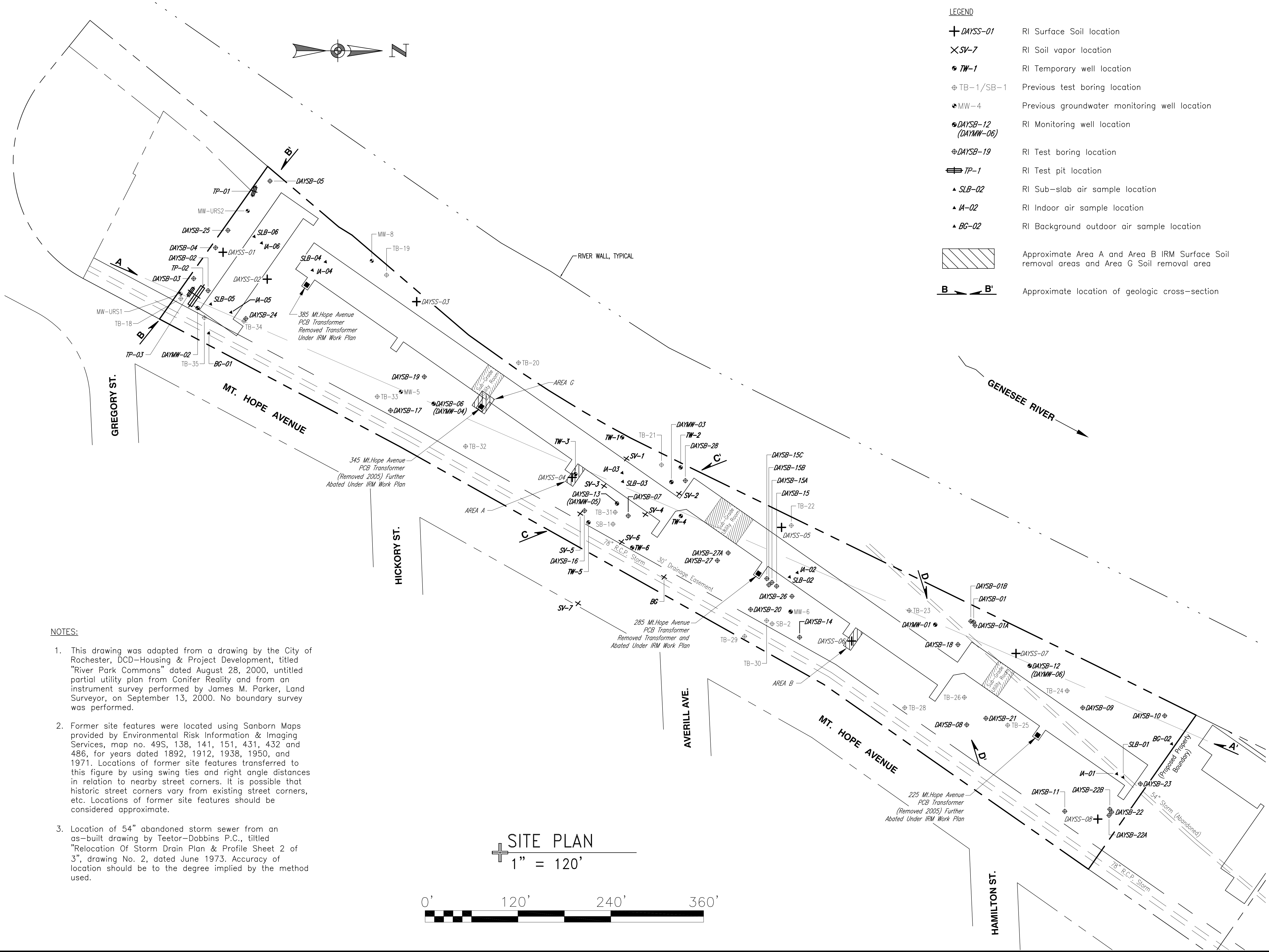
PROJECT NO.
4155R-09

FIGURE 2

Ref1:
Ref2:
Ref3:

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout1
Pen Setting File: 800psHalfScaleColor.ctb

Time Plotted: Friday, May 21, 2010 8:47:31 AM
File Name: P:\Drawings\Brownfield\4155R-09ErieHq\Site Plan.dwg



NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD–Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Reality and from an instrument survey performed by James M. Parker, Land Surveyor, on September 13, 2000. No boundary survey was performed.

2. Former site features were located using Sanborn Maps provided by Environmental Risk Information & Imaging Services, map no. 49S, 138, 141, 151, 431, 432 and 486, for years dated 1892, 1912, 1938, 1950, and 1971. Locations of former site features transferred to this figure by using swing ties and right angle distances in relation to nearby street corners. It is possible that historic street corners vary from existing street corners, etc. Locations of former site features should be considered approximate.

3. Location of 54" abandoned storm sewer from an as-built drawing by Teetor–Dobbins P.C., titled "Relocation Of Storm Drain Plan & Profile Sheet 2 of 3", drawing No. 2, dated June 1973. Accuracy of location should be to the degree implied by the method used.

DATE	5-2010
DATE DRAWN	5-5-2010
DATE ISSUED	5-21-2010
FIELD VERIFIED BY	JAD
DRAWN BY	RJM
SCALE	As Noted

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Site Plan With Select Test Locations

PROJECT NO.
4155R-09

FIGURE 3

Ref1:
Ref2:
Ref3:

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout1
Pen Setting File: 800psHalfScaleColor.ctb

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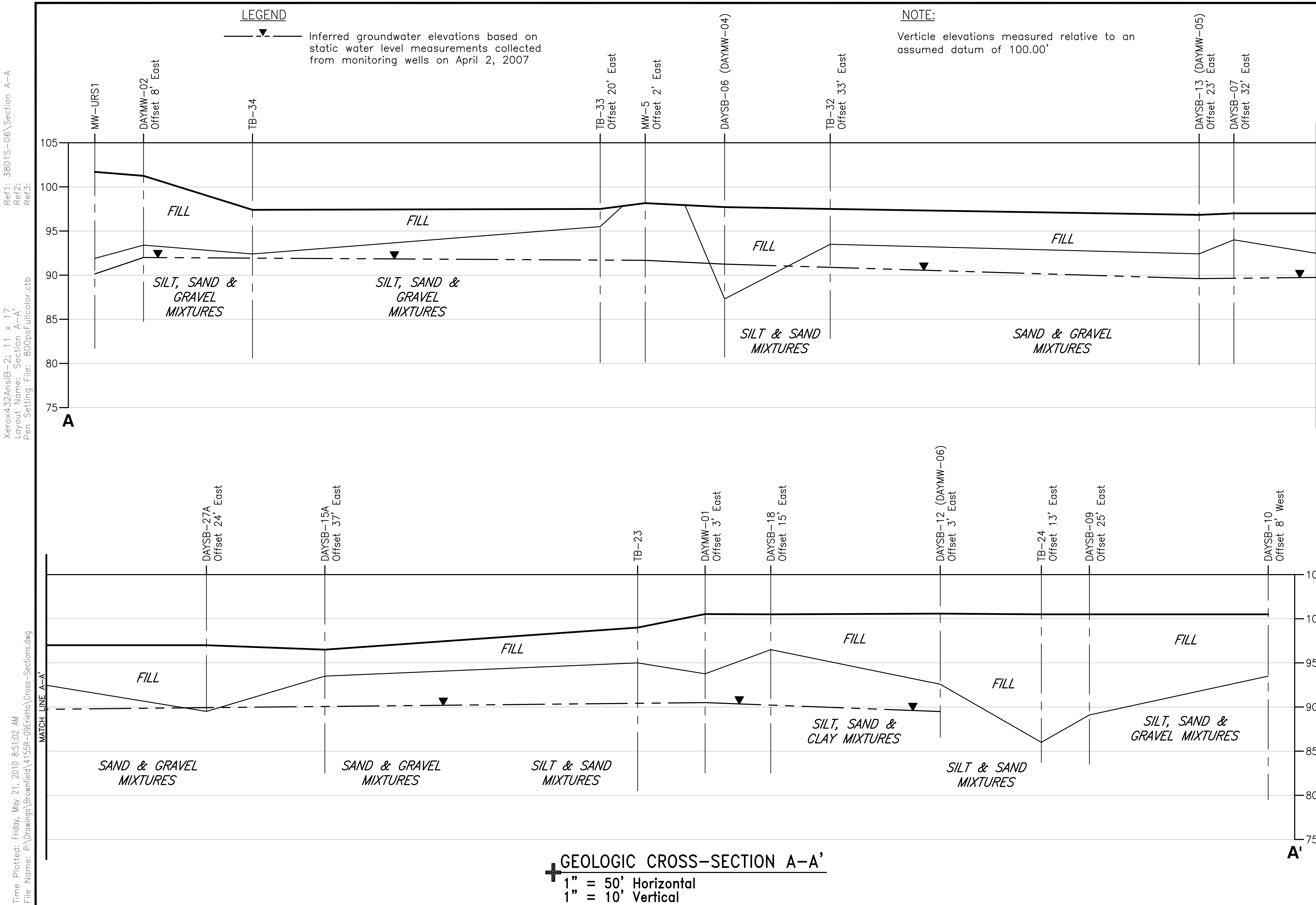
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\4155R-09-11.dwg



FIELD VERIFIED BY: JAD	DATE: 5-2010
DRAWN BY: RJM	DATE DRAWN: 5-5-2010
SCALE: As Noted	DATE ISSUED: 5-21-2010

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

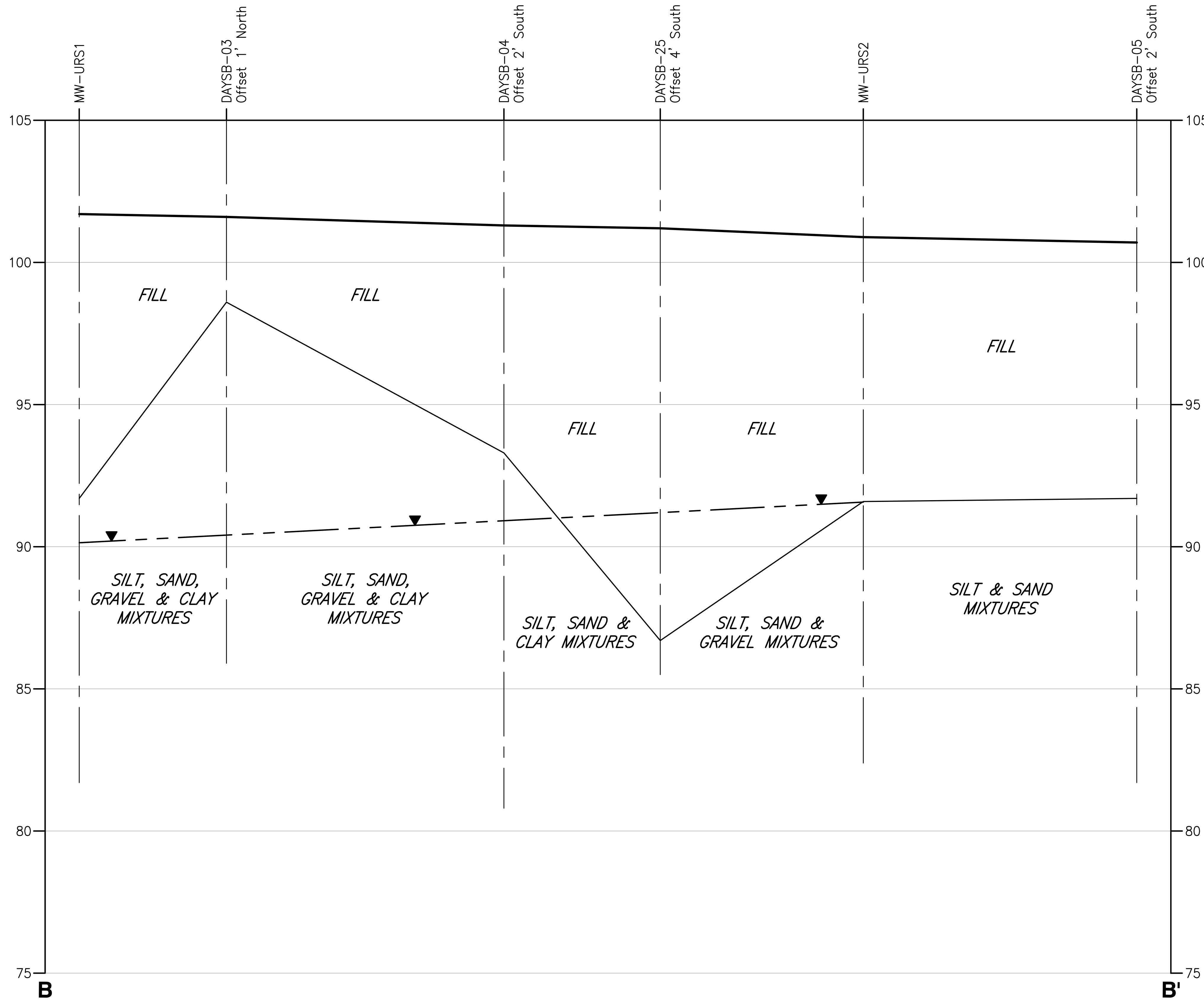
PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Geologic Cross-Section A-A'

PROJECT NO.
4155R-09

FIGURE 4



GEOLOGIC CROSS-SECTION B-B'
1" = 20' Horizontal
1" = 4' Vertical

LEGEND

▼ Inferred groundwater elevations based on static water level measurements collected from monitoring wells on April 2, 2007

NOTE:

Verticle elevations measured relative to an assumed datum of 100.00'

FIELD VERIFIED BY: JAD	DATE: 5-2010	
DRAWN BY: RJM	DATE DRAWN: 5-5-2010	
SCALE: As Noted	DATE ISSUED: 5-21-2010	

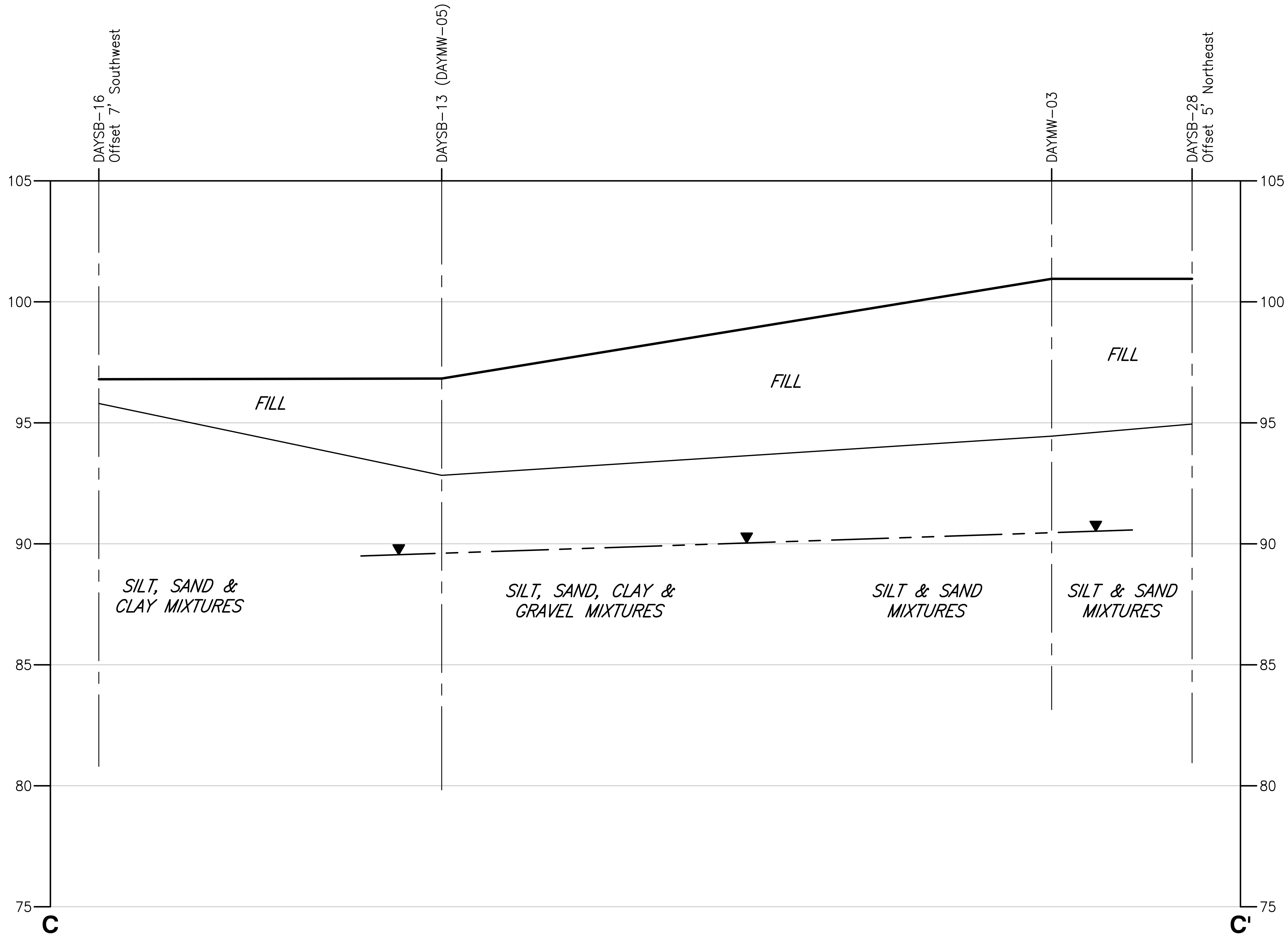
day
DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK
BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Geologic Cross-Section B-B'

PROJECT NO.
4155R-09

FIGURE 5



LEGEND

Inferred groundwater elevations based on static water level measurements collected from monitoring wells on April 2, 2007

NOTE:

Verticle elevations measured relative to an assumed datum of 100.00'

GEOLOGIC CROSS-SECTION C-C'
1" = 15' Horizontal
1" = 5' Vertical

FIELD VERIFIED BY: JAD	DATE: 5-2010
DRAWN BY: RJM	DATE DRAWN: 5-5-2010
SCALE: As Noted	DATE ISSUED: 5-21-2010

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ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Geologic Cross-Section C-C'

PROJECT NO.
4155R-09

FIGURE 6

Ref1: 3801S-06\Section C-C
Ref2:
Ref3:

Xerox432AnsiB-2: 11 x 17
Layout Name: Section C-C'
Pen Setting File: 800psFullcolor.ctb

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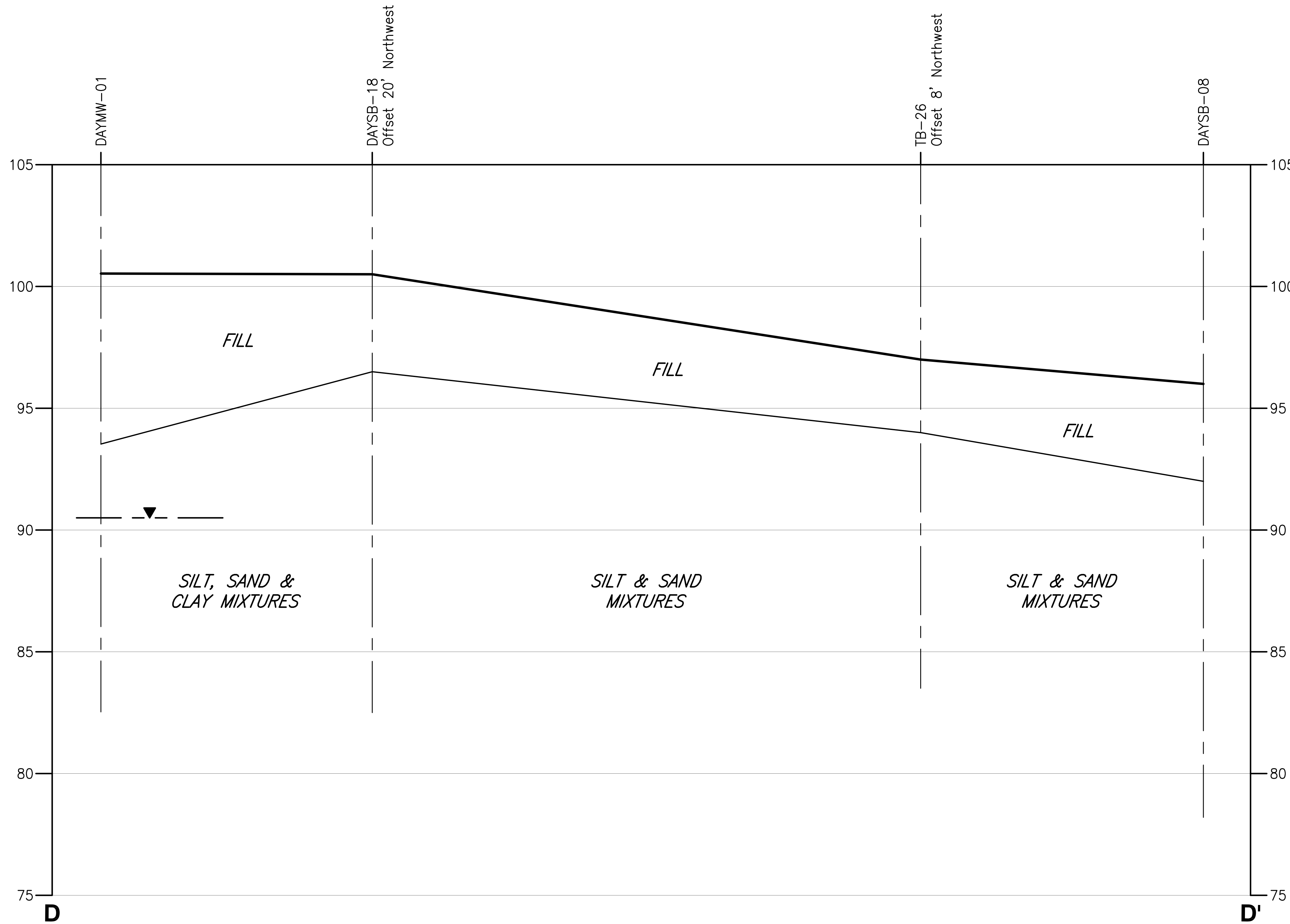
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\Cross-Sections.dwg



GEOLOGIC CROSS-SECTION D-D'

1" = 15' Horizontal
1" = 5' Vertical

LEGEND

Inferred groundwater elevations based on static water level measurements collected from monitoring wells on April 2, 2007

NOTE:

Verticle elevations measured relative to an assumed datum of 100.00'

FIELD VERIFIED BY: JAD
DATE: 5-2010
DRAWN BY: RJM
DATE DRAWN: 5-5-2010
SCALE: As Noted
DATE ISSUED: 5-21-2010

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Geologic Cross-Section D-D'

PROJECT NO.
4155R-09

FIGURE 7

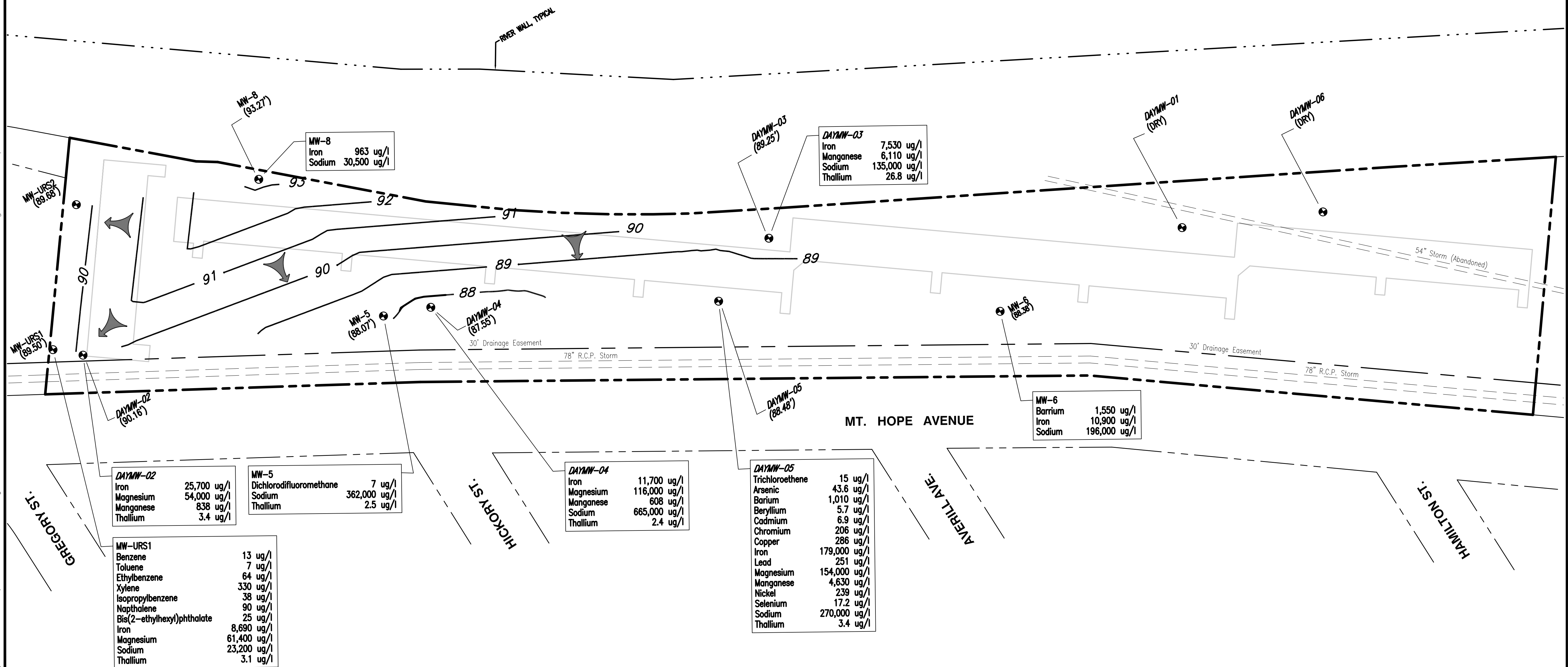
Ref1: 3801S-06\Section D-D
Ref2:
Ref3:
Xerox432AnsiB-2: 11 x 17
Layout Name: Section D-D'
Pen Setting File: 800psFullcolor.ctb
Time Plotted: Friday, May 21, 2010 8:54:20 AM
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\Cross-Sections.dwg

NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD–Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Reality and from an instrument survey performed by James M. Parker, Land Surveyor, on October 2006. No boundary survey was performed.
2. Detected concentrations of constituents that exceed NYSDEC TOGS 1.1.1 Groundwater Standard or Guidance values are provided as shown.
3. Metals concentrations in groundwater sample from DAYMW–05 appear elevated due to high turbidity of sample.
4. Groundwater samples could not be obtained from monitoring wells DAYMW–01 or DAYMW–06 during the September 2006 sampling event.

LEGEND:

—90—	GROUNDWATER CONTOUR
MW-8 (93.27')	MONITORING WELL WITH GROUND WATER ELEVATION OBTAINED ON SEPTEMBER 5, 2006
— — —	PROPERTY LINE



SITE PLAN
1" = 100'

0' 100' 200' 300'

Ref1:
Ref2:
Ref3:

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout1
Pen Setting File: 800psFullcolor.ctb

Time Plotted: Friday, May 21, 2010 8:55:37 AM
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\GW Flow 09-2006.dwg

DATE 5-2010	DATE DRAWN 5-5-2010	DATE ISSUED 5-21-2010
FIELD VERIFIED BY JAD	DRAWN BY RJM	SCALE As Noted

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Potentiometric Groundwater Contour Map For September 5, 2006

PROJECT NO.
4155R-09

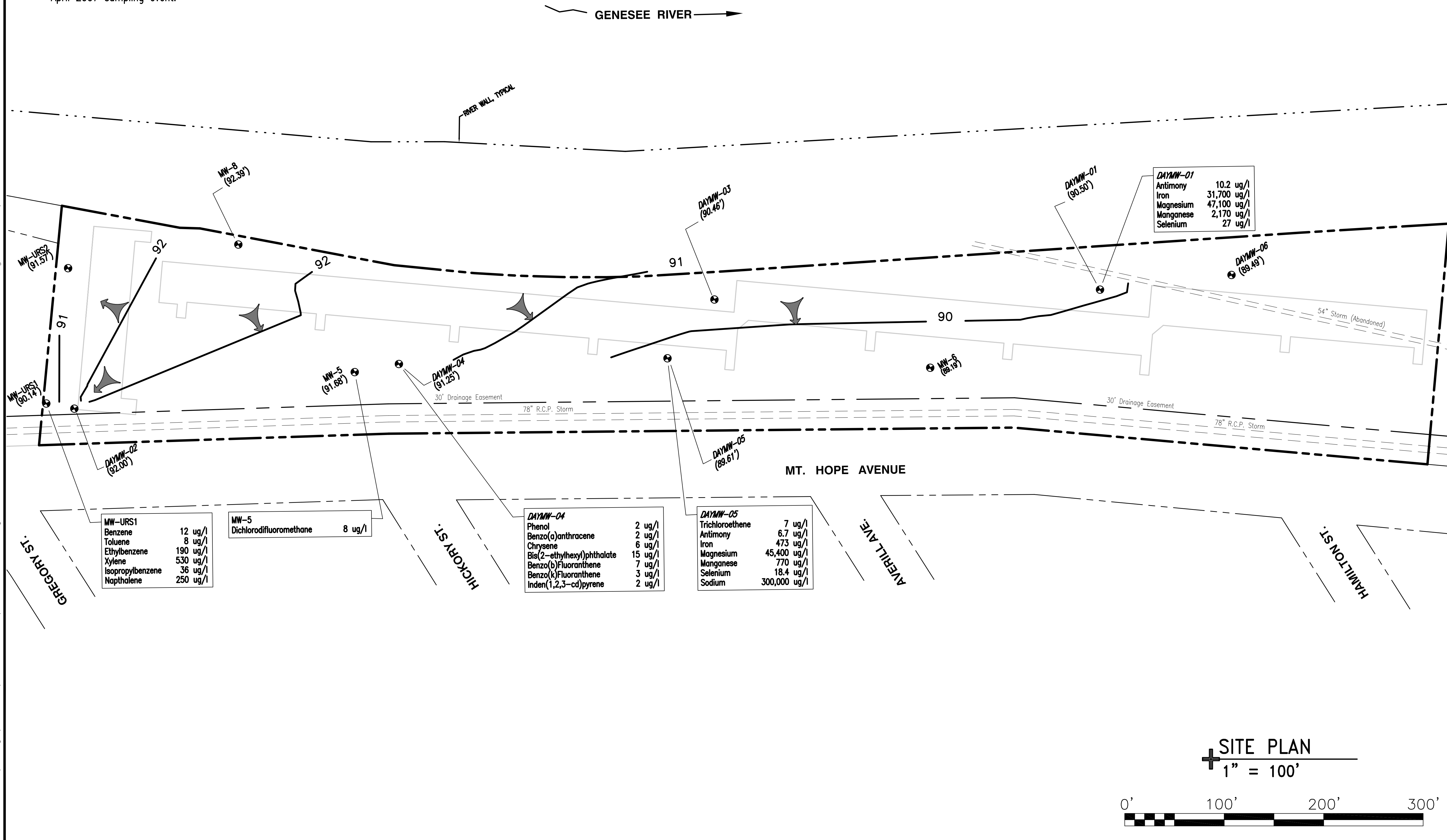
FIGURE 8

NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD–Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Reality and from an instrument survey performed by James M. Parker, Land Surveyor, on October 2006. No boundary survey was performed.
2. Detected concentrations of constituents that exceed NYSDEC TOGS 1.1.1 Groundwater Standard or Guidance values are provided as shown.
3. Groundwater sample could not be obtained from monitoring well DAYMW–06 during the April 2007 sampling event.

LEGEND:

—90—	GROUNDWATER CONTOUR
MW–8 (92.38')	MONITORING WELL WITH GROUND WATER ELEVATION OBTAINED ON APRIL 2, 2007
— - - —	PROPERTY LINE



DAYMW–01	
Antimony	10.2 ug/l
Iron	31,700 ug/l
Magnesium	47,100 ug/l
Manganese	2,170 ug/l
Selenium	27 ug/l

MW–URS1	
Benzene	12 ug/l
Toluene	8 ug/l
Ethylbenzene	190 ug/l
Xylene	530 ug/l
Isopropylbenzene	36 ug/l
Napthalene	250 ug/l

MW–5	
Dichlorodifluoromethane	8 ug/l

DAYMW–04	
Phenol	2 ug/l
Benzo(a)anthracene	2 ug/l
Chrysene	6 ug/l
Bis(2–ethylhexyl)phthalate	15 ug/l
Benzo(b)Fluoranthene	7 ug/l
Benzo(k)Fluoranthene	3 ug/l
Inden(1,2,3–cd)pyrene	2 ug/l

DAYMW–05	
Trichloroethene	7 ug/l
Antimony	6.7 ug/l
Iron	473 ug/l
Magnesium	45,400 ug/l
Manganese	770 ug/l
Selenium	18.4 ug/l
Sodium	300,000 ug/l

FIELD VERIFIED BY: JAD | DATE: 5-2010
DRAWN BY: RJM | DATE DRAWN: 5-5-2010
SCALE: As Noted | DATE ISSUED: 5-21-2010

day
DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

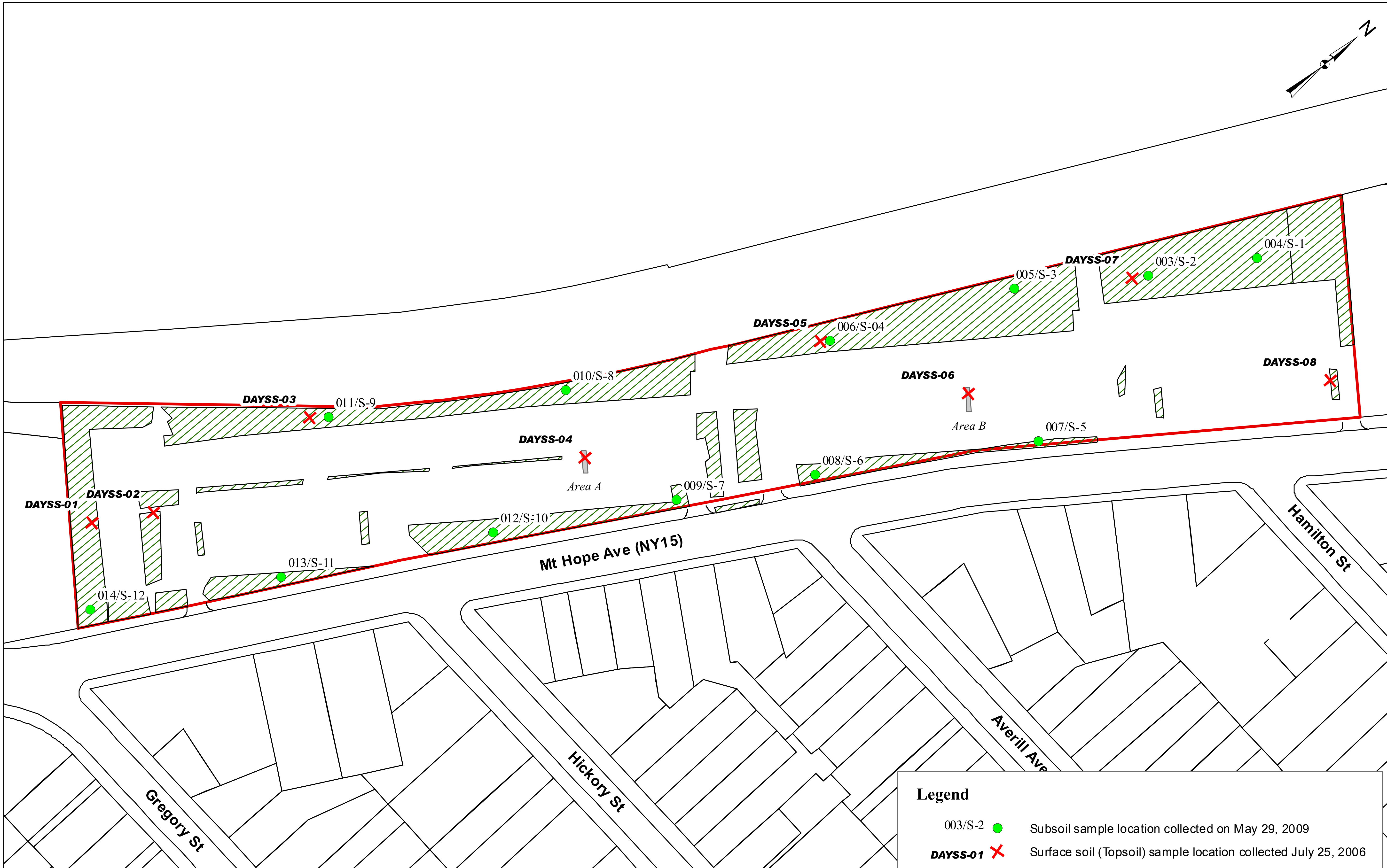
PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Potentiometric Groundwater Contour Map For April 2, 2007

PROJECT NO.
4155R-09

FIGURE 9



NOTES:

Site place generated from GIS Data provided by the City of Rochester, Dated 2008.

Surface soil locations located in the field by a representative of Day Environmental Inc. Sub-Surface Soil Samples located using a Trimble GeoXH GPS Unit with sub-foot accuracy. Data was differientially corrected to improve accuracy. Locations are to be considered approximate.

DESIGNED BY JAD	DATE 05-07-2010
DRAWN BY CPS	DATE DRAWN 05-07-2010
SCALE AS NOTED	DATE ISSUED 05-07-2010

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10016-0710

Project Title
205-405 MT HOPE AVENUE
ROCHESTER, NEW YORK

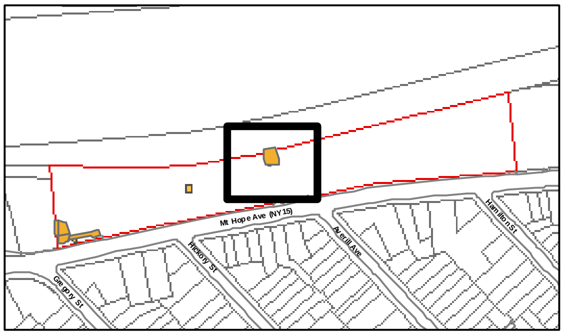
BROWNFIELD CLEANUP PROGRAM

Drawing Title
Site Plan with Surface Soil (Topsoil) and Subsoil Sample Locations

Project No.
4155R-09

FIGURE 10

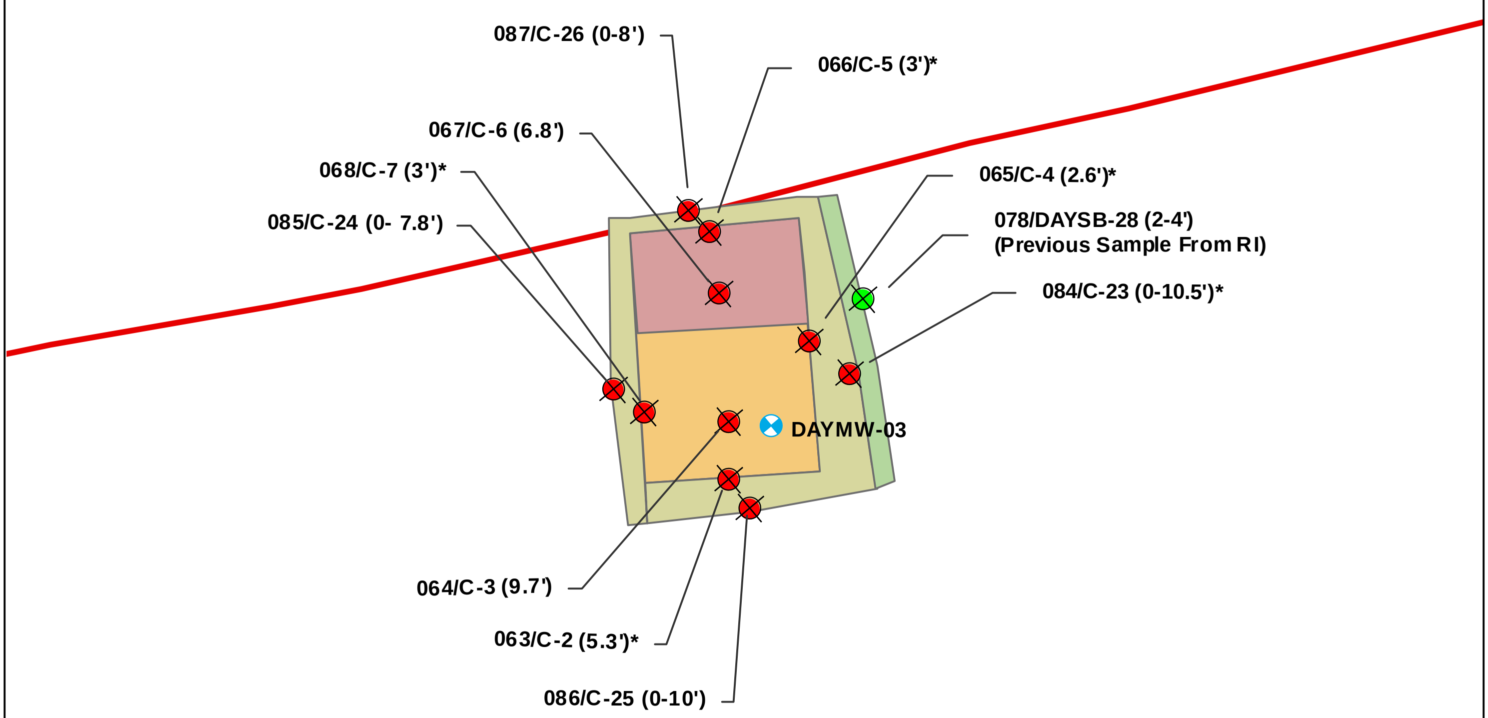
C:\GIS\GIS Mapping\4155R-09\ErieHa\4155R-15



Legend

- Decommissioned Monitoring Well
- Sub-surface sample (Depth in Feet)
- Test boring Sample
- Project (Parcel) boundary
- Area D 8' Excavation on March 8, 2010
- Area D 10' Excavation on March 8, 2010
- Area D Additonal Excavation on March 23, 2010
- Area D Additional Excavation on April 6, 2010

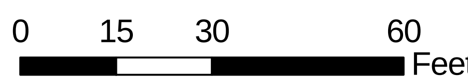
* Soil represented by this sample was later removed and disposed



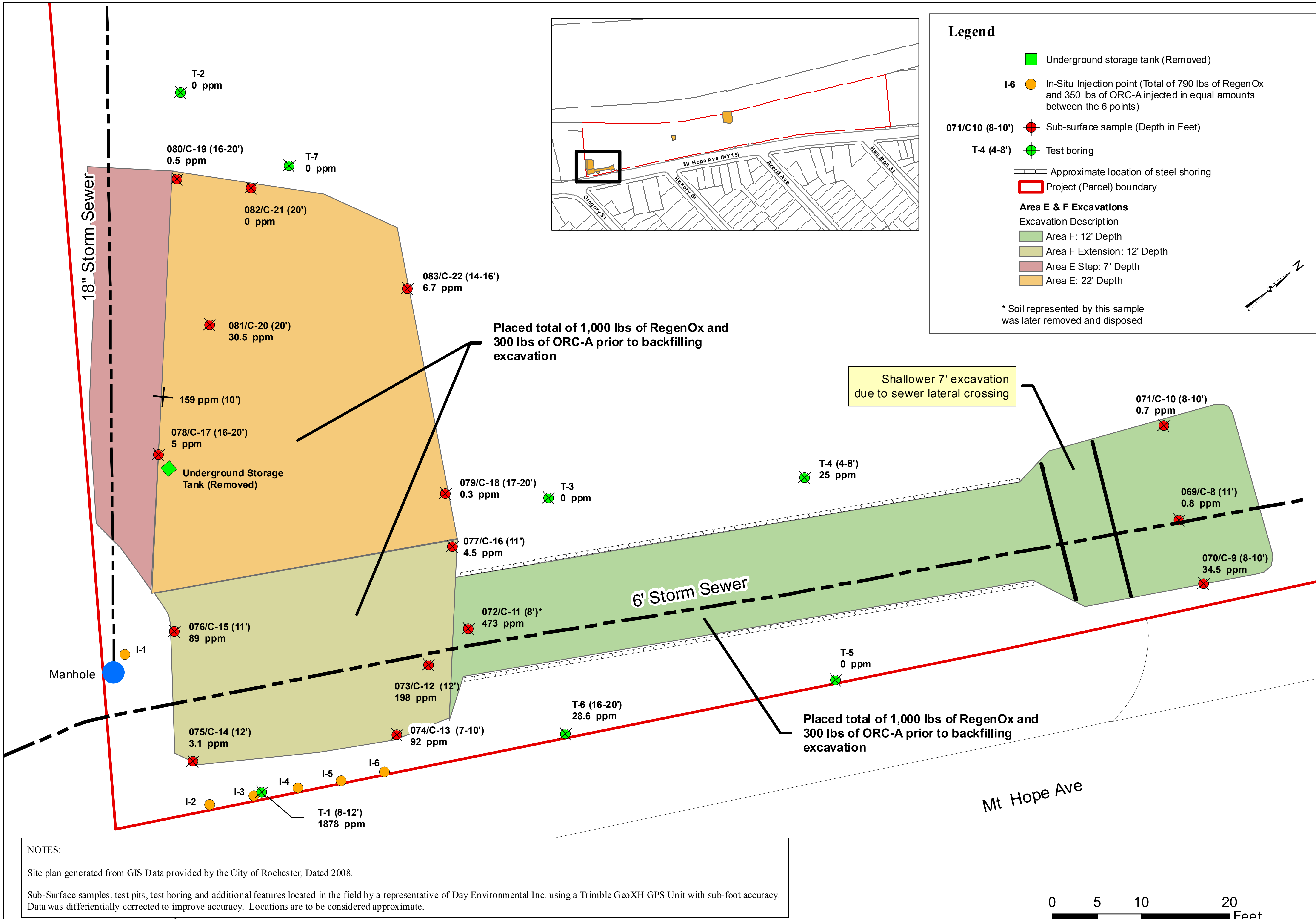
NOTES:

Site plan generated from GIS Data provided by the City of Rochester, Dated 2008.

Sub-Surface samples, test pits, test boring and additional features located in the field by a representative of Day Environmental Inc. using a Trimble GeoXH GPS Unit with sub-foot accuracy. Data was differientially corrected to improve accuracy. Locations are to be considered approximate.



Date	day DAY ENVIRONMENTAL, INC.	Project Title	Project No.
06-18-2010	Environmental Consultants	205-405 MT HOPE AVENUE ROCHESTER, NEW YORK	4155R-09
Drawn By CPS	Rochester, New York 14614-1008	BROWNFIELD CLEANUP PROGRAM	FIGURE 11
Scale AS NOTED	New York, New York 10016-0701	Drawing Title Excavation and Sampling Locations for Fill Removal Area D	



NOTES:

Site plan generated from GIS Data provided by the City of Rochester, Dated 2008.

Sub-Surface samples, test pits, test boring and additional features located in the field by a representative of Day Environmental Inc. using a Trimble GeoXH GPS Unit with sub-foot accuracy. Data was differentially corrected to improve accuracy. Locations are to be considered approximate.

C:\GIS\GIS Mapping\4155R-09\EnetHa\4155R-19

DATE	06-07-2010
DESIGNED BY	JAD
DATE DRAWN	05-07-2010
DRAWN BY	CPS
DATE ISSUED	06-17-2010
SCALE	AS NOTED

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10016-0710

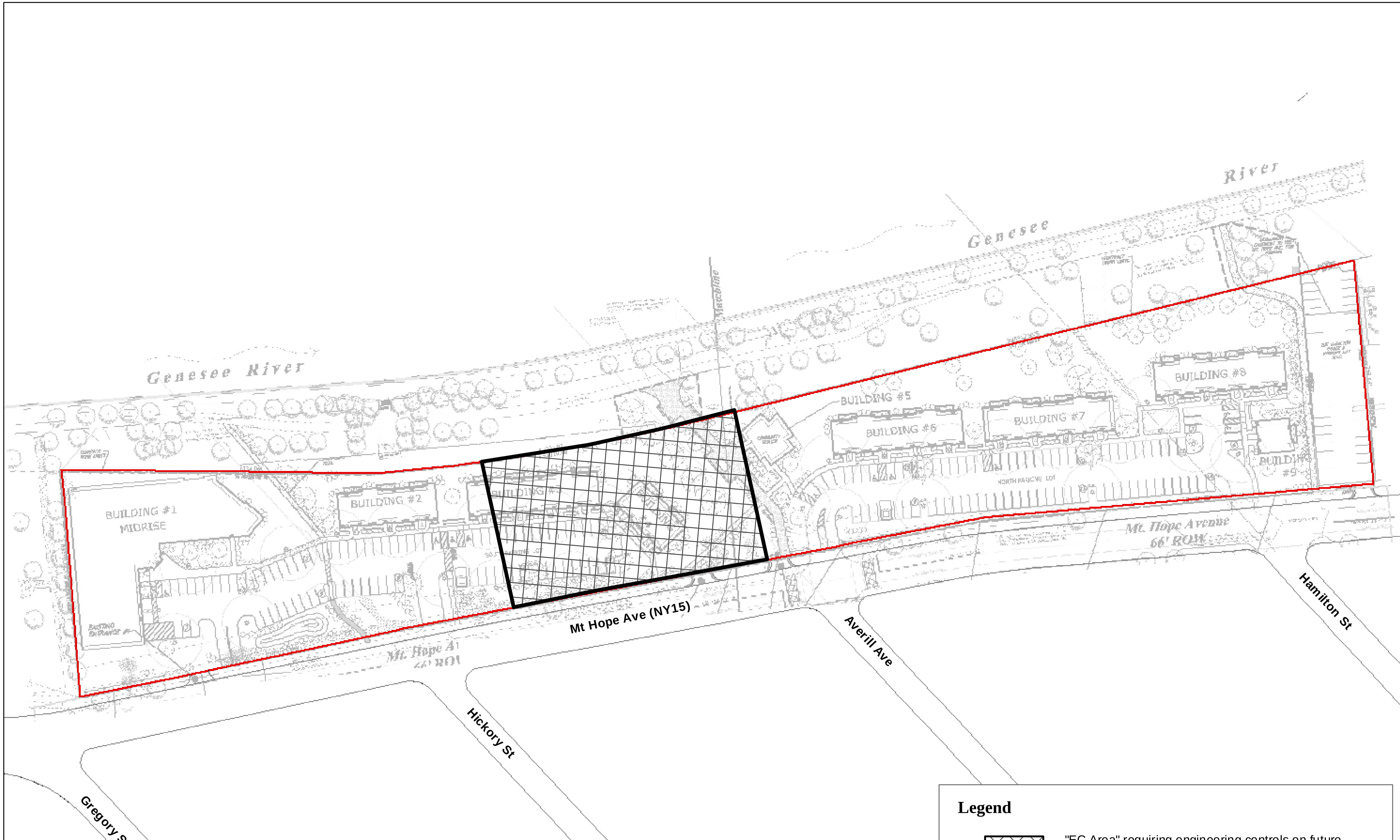
Project Title
205-405 MT HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

Drawing Title
Excavation and Sampling Plan for Soil Removal Area E, Area F and Area F Extension, and location of In-Situ Injection Points

Project No.
4155R-09

FIGURE 12



NOTES:

Site place generated from GIS Data provided by the City of Rochester, Dated 2008.

Future building plan provided by Passero Associates entitled "Overall Plan," dated June 2009, revised through May 2, 2010

Surface soil locations located in the field by a representative of Day Environmental Inc. Sub-Surface Soil Samples located using a Trimble GeoXH GPS Unit with sub-foot accuracy. Data was differientially corrected to improve accuracy. Locations are to be considered approximate.

Legend

- "EC Area" requiring engineering controls on future buildings for mitigation of potential vapor intrusion
- Project (Parcel) boundary

DESIGNED BY	DATE
JAD	05-07-2010
DRAWN BY	DATE DRAWN
CPS	05-07-2010
SCALE	DATE ISSUED
AS NOTED	05-07-2010

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10016-0710

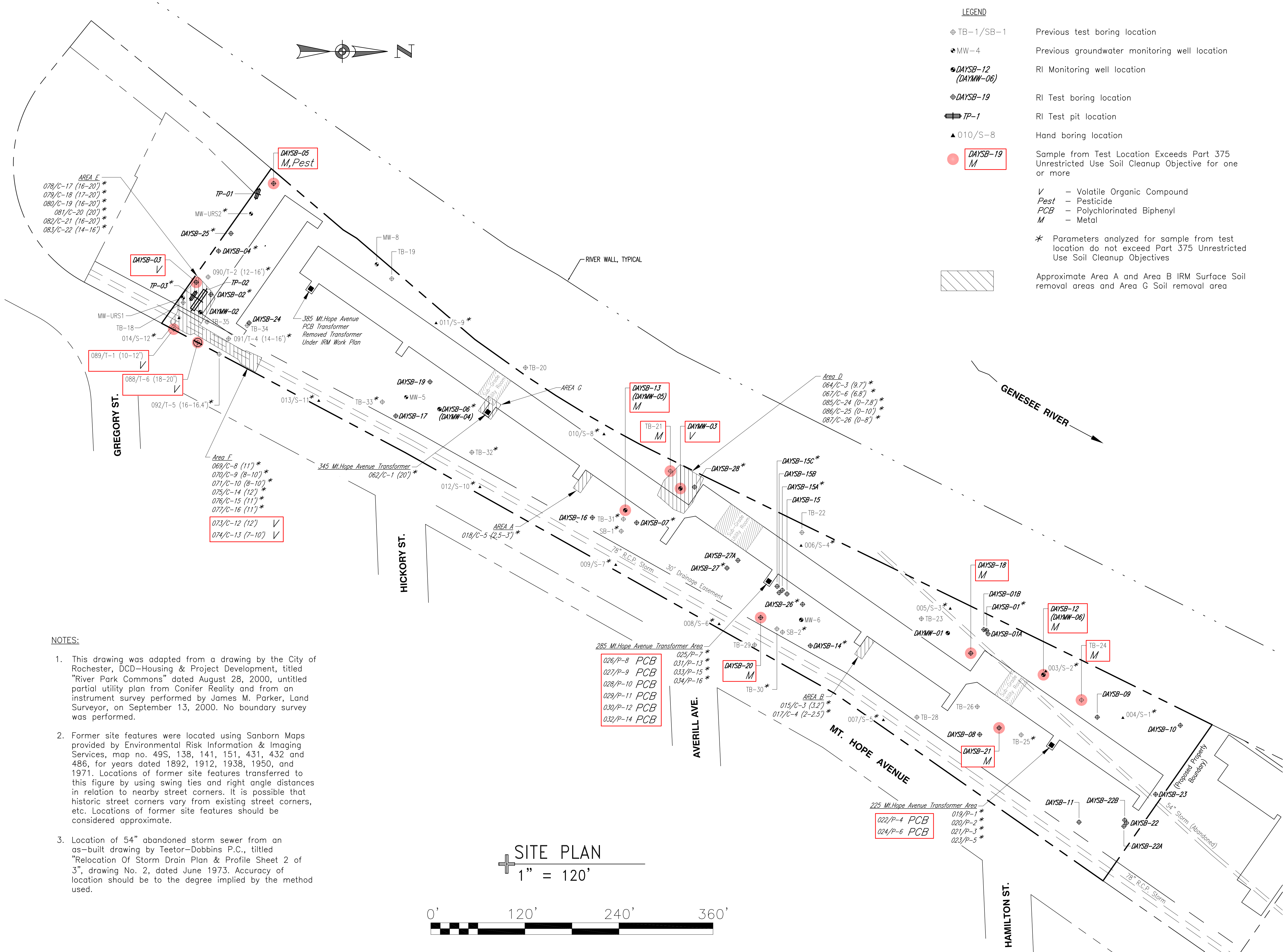
Project Title
205-405 MT HOPE AVENUE
ROCHESTER, NEW YORK
BROWNFIELD CLEANUP PROGRAM

Drawing Title
Location of Area Requiring Engineering Controls on Future Buildings

Project No.
4155R-09

FIGURE 13

C:\GIS\GIS Mapping\4155R-09\EnHa\4155R-18



SITE PLAN

1" = 120'

0' 120' 240' 360'

LEGEND

⊕ TB-1/SB-1	Previous test boring location
MW-4	Previous groundwater monitoring well location
DAYSB-12 (DAYMW-06)	RI Monitoring well location
⊕ DAYSB-19	RI Test boring location
TP-1	RI Test pit location
▲ 010/S-8	Hand boring location
DAYSB-19 M	Sample from Test Location Exceeds Part 375 Unrestricted Use Soil Cleanup Objective for one or more
V	– Volatile Organic Compound
Pest	– Pesticide
PCB	– Polychlorinated Biphenyl
M	– Metal
*	Parameters analyzed for sample from test location do not exceed Part 375 Unrestricted Use Soil Cleanup Objectives
(hatched area)	Approximate Area A and Area B IRM Surface Soil removal areas and Area G Soil removal area

NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD–Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Realty and from an instrument survey performed by James M. Parker, Land Surveyor, on September 13, 2000. No boundary survey was performed.

2. Former site features were located using Sanborn Maps provided by Environmental Risk Information & Imaging Services, map no. 49S, 138, 141, 151, 431, 432 and 486, for years dated 1892, 1912, 1938, 1950, and 1971. Locations of former site features transferred to this figure by using swing ties and right angle distances in relation to nearby street corners. It is possible that historic street corners vary from existing street corners, etc. Locations of former site features should be considered approximate.

3. Location of 54" abandoned storm sewer from an as-built drawing by Teetor–Dobbins P.C., titled "Relocation Of Storm Drain Plan & Profile Sheet 2 of 3", drawing No. 2, dated June 1973. Accuracy of location should be to the degree implied by the method used.

DATE	5-2010
DATE DRAWN	5-5-2010
DATE ISSUED	5-21-2010
FIELD VERIFIED BY	JAD
DRAWN BY	RJM
SCALE	As Noted

day

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE
Cumulative Test Location Plan Depicting Sample Locations Exceeding/Not Exceeding Part 375 Unrestricted Use Soil Cleanup Objectives

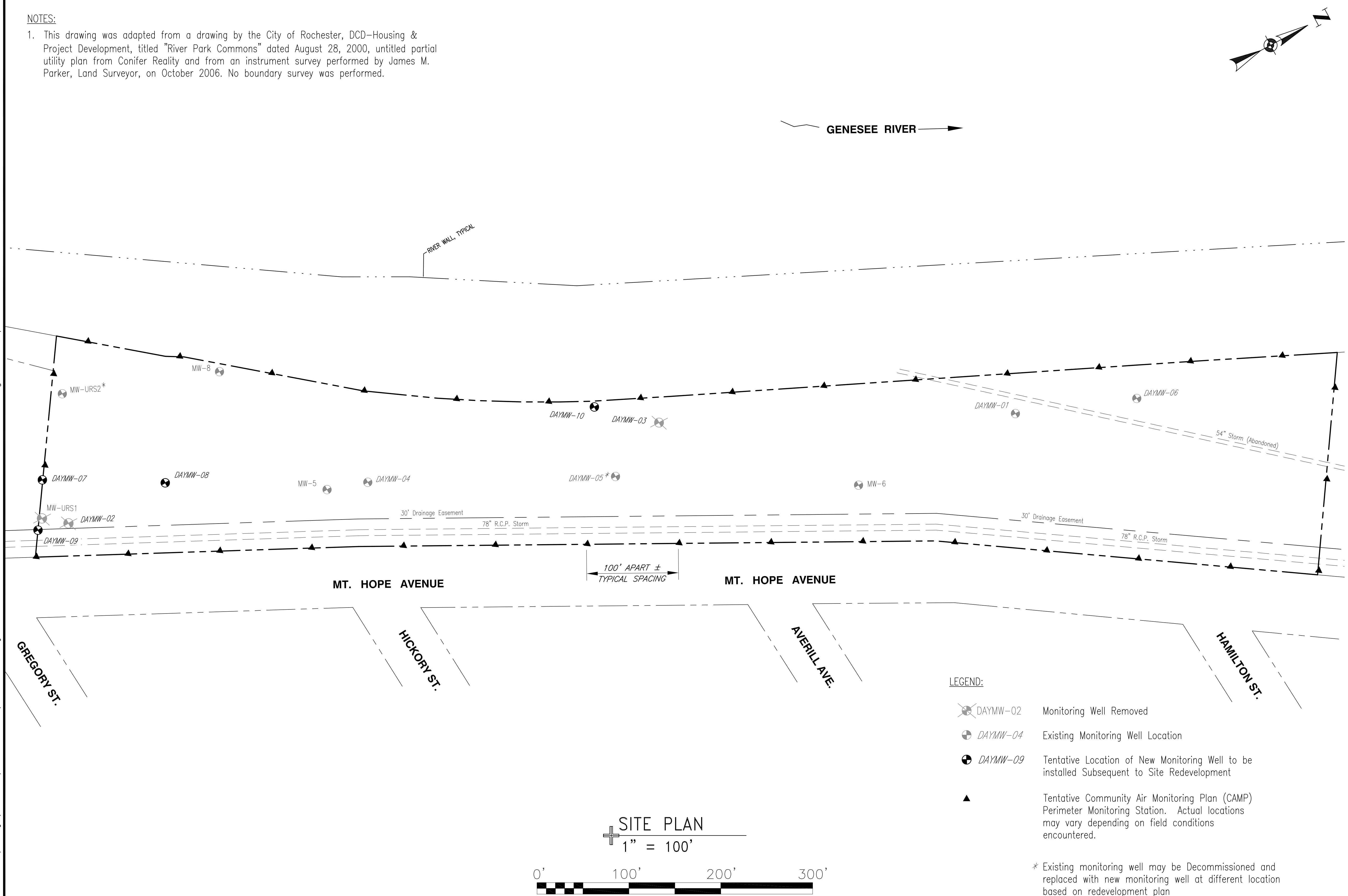
PROJECT NO.
4155R-09

FIGURE 14

Time Plotted: Friday, May 21, 2010 8:58:00 AM
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\4155R-09-13.dwg
Xerox432AnsiB-2; 11 x 17
Layout Name: Layout1
Pen Setting File: 800psHalfScaleColor.ctb
Ref1:
Ref2:
Ref3:

NOTES:

1. This drawing was adapted from a drawing by the City of Rochester, DCD-Housing & Project Development, titled "River Park Commons" dated August 28, 2000, untitled partial utility plan from Conifer Reality and from an instrument survey performed by James M. Parker, Land Surveyor, on October 2006. No boundary survey was performed.



Project Manager: JAD | DATE: 5-2010

DRAWN BY: RJM/CPS | DATE DRAWN: 5-2010

SCALE: AS NOTED | DATE ISSUED: 5-21-2010

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE: 205 - 405 MT HOPE AVENUE ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROGRAM

DRAWING TITLE: Well Location Plan & Tentative CAMP Perimeter Monitoring Locations

PROJECT NO. 4155R-09

FIGURE 15

Ref1:
Ref2:
Ref3:

Xerox432AnsiB-2; 11 x 17
Layout Name: Alternative #3
Pen Setting File: 800psFullcolor.ctb

Time Plotted: Friday, May 21, 2010 8:59:12 AM
File Name: P:\Drawings\Brownfield\4155R-09ErieHa\4155R-09-12.dwg

APPENDIX A

Excavation Work Plan

APPENDIX A – EXCAVATION WORK PLAN

A-1 NOTIFICATION

Activity that is anticipated to encounter remaining contamination and only involve on-site re-use does not require notification to the NYSDEC since the remaining contamination meets Restricted Residential SCOs and the Site is approved by the NYSDEC for restricted residential, commercial and/or industrial use. However, the site owner or their representative will notify the NYSDEC at least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination and involves off-site re-use or disposal. Currently, this notification will be made to:

Bartholomew H. Putzig, P.E.

Regional Hazardous Waste Remediation Engineer

6274 East Avon-Lima Road, Avon, New York 14414

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix D of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

A-2 MATERIALS EXCAVATION AND LOAD OUT

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the property and its contractors. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The property and its contractors will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

A-3 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

A map and directions from the site via approved truck transport routes will be obtained by the transporter prior to transporting materials off-site for reuse or disposal. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

A-4 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the site that will not be reused on-site or off-site, will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc.) Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Un-less approved for off-site reuse, non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-5 MATERIALS REUSE OFF-SITE

If reuse of soil/fill from this site is proposed for unregulated off-site reuse or disposal (e.g., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

A-6 MATERIALS REUSE ON-SITE

Based on the existing analytical laboratory test results of soil and historic fill, and on the remediation performed to date, soil and historic fill present at the site meet Restricted Residential SCOs, which are listed in Appendix C. These materials can be reused on-site in accordance with the provisions of the SMP and Environmental Easement. These materials can be re-used on-site.

A-7 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will be managed off-site, or appropriately treated and discharged on-site in accordance with applicable regulations.

A-8 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards for imported backfill at this Site is the lesser of Restricted Residential SCOs or Protection of Groundwater SCOs, which are included in Appendix C. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

A-9 STORMWATER POLLUTION PREVENTION

During excavations activities, barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Depending upon the size of the excavation, silt fencing or hay bales will be installed around the entire perimeter of the construction area in accordance with applicable regulations.

A-10 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-11 COMMUNITY AIR MONITORING PLAN

The CAMP is included in the HASP (refer to Appendix D). The CAMP will be implemented during excavation at the Site (generally at depths greater than two feet). The locations of air sampling stations that will be used based on generally prevailing wind conditions, and also on where site work is being performed, are shown on Figure 15. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

A-12 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. Specific odor control methods to be used on a routine basis may include limiting the extent of open excavations, the use of physical barriers or ventilation systems (i.e., in the event interior excavations are required), or other methods deemed appropriate at the time of the excavation. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner or its qualified environmental professional, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

A-13 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved though the use of a dedicated on-site water truck, or other available water source of sufficient volume, for road wetting. The equipment will be capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.

- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

APPENDIX B

Draft Environmental Easement

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this _______day of _____________, 20__, between Owner(s) Erie Harbor, LLC, having an office at 183 East Main Street, Suite 600, Rochester, New York 14604, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor is the owner of real property located at the address of 205-405 Mount Hope Avenue in the City of Rochester, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 121.55. Block 01 Lot 59.001, being the same as that property conveyed to Grantor by deed dated October 23, 2008 and recorded in the Monroe County Clerk's Office at Liber 10681 of Deeds in Instrument Control No. 200810240385, comprising of approximately 6.016 ± acres, and hereinafter more fully described in the Land Title Survey dated May 14, 2010, and revised on May 28, 2010 prepared by Passero Associates, which will be attached to the Site Management Plan. The property description (the "Controlled Property") is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of human health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Number: B8-0637-04-08S, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for: residential use.

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.

(4) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(6) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.

(8) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP.

(9) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for agricultural purposes or unrestricted residential purposes, and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Regional Remediation Engineer
NYSDEC – Region #8
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, New York 14414
Phone: (585) 226-2466

or

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C828125
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Erie Harbor, LLC
By: Conifer Realty, LLC

By: [signature]

Title: President & CEO Date: 6/1/10

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Monroe)

On the 1st day of June, in the year 20 10, before me, the undersigned, personally appeared Timothy D. Fournier personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Marlene E. Beswick
Notary Public - State of New York

MARLENE E. BESWICK
Notary Public, State of New York
No. 01BE6062083
Qualified in Ontario County
Commission Expires 07/30/2013

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: ______________________________

Dale A. Desnoyers, Director
Division of Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the _______ day of _________, in the year 20__, before me, the undersigned, personally appeared ________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

____
Notary Public - State of New York

SCHEDULE "A" PROPERTY DESCRIPTION

PARCEL I

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Rochester, County of Monroe, State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the westerly right-of-way of Mt. Hope Avenue (66 feet wide), said point being located north 28 41' 31" east, 142.00 feet from the northerly end of a 170.44 foot radius junction curve formed by the northerly right-of-way of Clarissa Street and the aforesaid right-of-way of Mt. Hope Avenue; thence

(1) north 60 38' 29" west a distance of 199.91 feet to a point; thence

(2) south 45 21' 31" west, a distance of 8.24 feet to a point; thence

(3) north 54 21' 30" west, a distance of 37.90 feet to a point; thence

(4) north 41 08" 15" east, a distance of 334.06 feet to a point; thence

(5) northeasterly, on a curve to the left, having a radius of 2,010.08 feet, a distance of 321.82 feet to a point; thence

(6) north 26 52' 15" east, a distance of 761.09 feet to a point; thence

(7) north 35 38' 30" east, a distance of 179.66 feet to a point; thence

(8) south 54 21' 30" east, a distance of 175.00 feet to a point; thence

(9) south 36 08' 10" west, a distance of 22.57 feet to a point; thence

(10) north 54 22' 20" west, a distance of 8.47 feet to a point; thence

(11) southwesterly on a curve to the right, having a radius of 6875.50 feet a distance of 181.92 feet to a point; thence

(12) southwesterly on a curve to the right, having a radius of 11,459.27 feet a distance of 174.00 feet to a point; thence

(13) south 54 21' 30" east a distance of 119.99 feet to a point; thence

(14) south 35 38' 30" west, along the aforesaid right of way of Mt. Hope Avenue, a distance of 234.46 feet to a point; thence

(15) south 30 00' 19" west along the aforesaid right of way of Mt. Hope Avenue, a distance of 628.07 feet to a point; thence

(16) south 28 41' 31" west along the aforesaid right of way of Mt. Hope Avenue, a distance of 321.80 feet to the first mentioned point or beginning.

PARCEL II

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Rochester, County of Monroe, State of New York being more particularly bounded and described as follows:

BEGINNING at a point on the westerly right-of-way of Mt. Hope Avenue (66 feet wide), said point being located north 28 41' 31" east, 463.80 feet; thence north 30 00' 19" east, 628.07 feet; thence north 35 38' 30" east, 234.46 feet from the northerly right-of-way of Clarissa Street and the aforesaid right-of-way of Mt. Hope Avenue; thence

(1) north 54 21' 30" west, a distance of 119.99 feet to a point; thence

(2) northeasterly, on a curve to the left, having a radius of 11,459.27 feet a distance of 174.00 feet to a point; thence

(3) northeasterly, on a curve to the left, having a radius of 6,875.50 feet, a distance of 181.92 feet to a point; thence

(4) south 54 22' 20" east, a distance of 8.47 feet to a point; thence

(5) north 36 08' 10" east, a distance of 22.57 feet to a point; thence

(6) north 54 21' 30" west, a distance of 175.00 feet to a point; thence

(7) south 35 38' 30" west, a distance of 179.66 feet to a point; thence

(8) north 26 52' 15" east, a distance of 32.79 feet to a point; thence

(9) north 35 38' 30" east, a 150.25 feet to a point; thence

(10) south 54 21' 30" east, a distance of 249.90 feet to a point; thence

(11) south 35 38' 30" west, along the westerly right-of–way line of Mt. Hope Avenue, a distance of 379.07 feet to the point of beginning.

PARCEL III

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Rochester., County of Monroe, State of New York and being more particularly bounded and described as follows:

BEGINNING at a point on the westerly right-of-way of Mt. Hope Avenue (66 feet wide), said point being located north 28 41' 31" east, 111.78 feet from the northerly end of a 170.44 foot radius junction curve formed by the northerly right-of-way of Clarissa Street and the aforesaid right-of-way of Mt. Hope Avenue; thence

(1) north 54 21' 30" west, a distance of 203.76 feet to a point; thence

(2) north 45 21' 31" east, a distance of 8.24 feet to a point; thence

(3) south 60 38' 29" east, a distance of 199.91 feet to a point; thence

(4) south 28 41' 31" west, along the aforesaid right-of-way of Mt. Hope Avenue, a distance of 30.22 feet to the first mentioned point or place of beginning.

EXCEPTING AND RESERVING ALL that tract or parcel of land, situated in the City of Rochester, County of Monroe, State of New York, and being more particularly described s follows:

BEGINNING on the westerly right-of-way of Mt. Hope Avenue, (66' row), at the Southeasterly property corner of Tax Account No. 121.55-01-058;

RUNNING THENCE south 34 degrees 59 minutes 13 seconds West, along said right-of-way, a distance of 196.00 feet to a point;

RUNNING THENCE North 55 degrees 00 minutes 47 seconds West, a distance of 242.84 feet to a point;

RUNNING THENCE North 34 degrees 59 minutes 13 seconds East, a distance of 150.25 feet to a point;

RUNNING THENCE South 55 degrees 00 minutes 47 seconds East, a distance of 249.90 feet to the point of beginning.

APPENDIX C

NYSDEC Part 375 Soil Cleanup Objectives

375-6.8 Soil cleanup objective tables.

(a) Unrestricted use soil cleanup objectives.

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 [c]
Barium	7440-39-3	350 [c]
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 [c]
Chromium, hexavalent [e]	18540-29-9	1[b]
Chromium, trivalent [e]	16065-83-1	30 [c]
Copper	7440-50-8	50
Total Cyanide [c, f]		27
Lead	7439-92-1	63 [c]
Manganese	7439-96-5	1600 [c]
Total Mercury		0.18 [c]
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9[c]
Silver	7440-22-4	2
Zinc	7440-66-6	109 [c]
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) [f]	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 [b]
4,4'-DDT	50-29-3	0.0033 [b]
4,4'-DDD	72-54-8	0.0033 [b]
Aldrin	309-00-2	0.005 [c]
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC [g]	319-86-8	0.04
Dibenzofuran [f]	132-64-9	7
Dieldrin	60-57-1	0.005 [c]
Endosulfan I [d, f]	959-98-8	2.4
Endosulfan II [d, f]	33213-65-9	2.4
Endosulfan sulfate [d, f]	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenapthylene [f]	208-96-8	100 [a]
Anthracene [f]	120-12-7	100 [a]
Benz(a)anthracene [f]	56-55-3	1 [c]
Benzo(a)pyrene	50-32-8	1 [c]
Benzo(b)fluoranthene [f]	205-99-2	1 [c]
Benzo(g,h,i)perylene [f]	191-24-2	100
Benzo(k)fluoranthene [f]	207-08-9	0.8 [c]
Chrysene [f]	218-01-9	1 [c]
Dibenz(a,h)anthracene [f]	53-70-3	0.33 [b]
Fluoranthene [f]	206-44-0	100 [a]
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene [f]	193-39-5	0.5 [c]
m-Cresol [f]	108-39-4	0.33 [b]
Naphthalene [f]	91-20-3	12
o-Cresol [f]	95-48-7	0.33 [b]

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol [f]	106-44-5	0.33 [b]
Pentachlorophenol	87-86-5	0.8 [b]
Phenanthrene [f]	85-01-8	100
Phenol	108-95-2	0.33 [b]
Pyrene [f]	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane [f]	71-55-6	0.68
1,1-Dichloroethane [f]	75-34-3	0.27
1,1-Dichloroethene [f]	75-35-4	0.33
1,2-Dichlorobenzene [f]	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 [c]
cis -1,2-Dichloroethene [f]	156-59-2	0.25
trans-1,2-Dichloroethene [f]	156-60-5	0.19
1,3-Dichlorobenzene [f]	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 [b]
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene [f]	104-51-8	12
Carbon tetrachloride [f]	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene [f]	100-41-4	1
Hexachlorobenzene [f]	118-74-1	0.33 [b]
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether [f]	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene [f]	103-65-1	3.9
sec-Butylbenzene [f]	135-98-8	11
tert-Butylbenzene [f]	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	3.6
1,3,5-Trimethylbenzene[f]	108-67-8	8.4
Vinyl chloride[f]	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

[a] The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.

[b] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

[c] For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

[d] SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

[e] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[f] Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

(b) Restricted use soil cleanup objectives.

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Metals							
Arsenic	7440-38-2	16[f]	16[f]	16[f]	16[f]	13[f]	16[f]
Barium	7440-39-3	350[f]	400	400	10,000 [d]	433	820
Beryllium	7440-41-7	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5[f]	4.3	9.3	60	4	7.5
Chromium, hexavalent [h]	18540-29-9	22	110	400	800	1[e]	19
Chromium, trivalent [h]	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50-8	270	270	270	10,000 [d]	50	1,720
Total Cyanide [h]		27	27	27	10,000 [d]	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63[f]	450
Manganese	7439-96-5	2,000[f]	2,000[f]	10,000 [d]	10,000 [d]	1600[f]	2,000[f]
Total Mercury		0.81[j]	0.81[j]	2.8[j]	5.7[j]	0.18[f]	0.73
Nickel	7440-02-0	140	310	310	10,000 [d]	30	130
Selenium	7782-49-2	36	180	1,500	6,800	3.9[f]	4[f]
Silver	7440-22-4	36	180	1,500	6,800	2	8.3
Zinc	7440-66-6	2200	10,000 [d]	10,000 [d]	10,000 [d]	109[f]	2,480
PCBs/Pesticides							
2,4,5-TP Acid (Silvex)	93-72-1	58	100[a]	500[b]	1,000[c]	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 [e]	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 [e]	136
4,4'- DDD	72-54-8	2.6	13	92	180	0.0033 [e]	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04[g]	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.91	4.2	24	47	1.3	2.9

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
delta-BHC	319-86-8	100[a]	100[a]	500[b]	1,000[c]	0.04[g]	0.25
Dibenzofuran	132-64-9	14	59	350	1,000[c]	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan II	33213-65-9	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan sulfate	1031-07-8	4.8[i]	24[i]	200[i]	920[i]	NS	1,000[c]
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
Acenaphthene	83-32-9	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenapthylene	208-96-8	100[a]	100[a]	500[b]	1,000[c]	NS	107
Anthracene	120-12-7	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benz(a)anthracene	56-55-3	1[f]	1[f]	5.6	11	NS	1[f]
Benzo(a)pyrene	50-32-8	1[f]	1[f]	1[f]	1.1	2.6	22
Benzo(b)fluoranthene	205-99-2	1[f]	1[f]	5.6	11	NS	1.7
Benzo(g,h,i)perylene	191-24-2	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(k)fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1[f]	3.9	56	110	NS	1[f]
Dibenz(a,h)anthracene	53-70-3	0.33[e]	0.33[e]	0.56	1.1	NS	1,000[c]
Fluoranthene	206-44-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Fluorene	86-73-7	100[a]	100[a]	500[b]	1,000[c]	30	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5[f]	0.5[f]	5.6	11	NS	8.2
m-Cresol	108-39-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
Naphthalene	91-20-3	100[a]	100[a]	500[b]	1,000[c]	NS	12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
o-Cresol	95-48-7	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
p-Cresol	106-44-5	34	100[a]	500[b]	1,000[c]	NS	0.33[e]
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8[e]	0.8[e]
Phenanthrene	85-01-8	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Phenol	108-95-2	100[a]	100[a]	500[b]	1,000[c]	30	0.33[e]
Pyrene	129-00-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Volatiles							
1,1,1-Trichloroethane	71-55-6	100[a]	100[a]	500[b]	1,000[c]	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33
1,2-Dichlorobenzene	95-50-1	100[a]	100[a]	500[b]	1,000[c]	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02[f]
cis-1,2-Dichloroethene	156-59-2	59	100[a]	500[b]	1,000[c]	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100[a]	100[a]	500[b]	1,000[c]	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1[e]	0.1[e]
Acetone	67-64-1	100[a]	100[b]	500[b]	1,000[c]	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100[a]	100[a]	500[b]	1,000[c]	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100[a]	100[a]	500[b]	1,000[c]	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33[e]	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100[a]	100[a]	500[b]	1,000[c]	100[a]	0.12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Methyl tert-butyl ether	1634-04-4	62	100[a]	500[b]	1,000[c]	NS	0.93
Methylene chloride	75-09-2	51	100[a]	500[b]	1,000[c]	12	0.05
n-Propylbenzene	103-65-1	100[a]	100[a]	500[b]	1,000[c]	NS	3.9
sec-Butylbenzene	135-98-8	100[a]	100[a]	500[b]	1,000[c]	NS	11
tert-Butylbenzene	98-06-6	100[a]	100[a]	500[b]	1,000[c]	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100[a]	100[a]	500[b]	1,000[c]	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5- Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	100[a]	100[a]	500[b]	1,000[c]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).
NS=Not specified. See Technical Support Document (TSD).

Footnotes

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

APPENDIX D

Health and Safety Plan, and Community Air Monitoring Plan

HEALTH AND SAFETY PLAN

BROWNFIELD CLEANUP PROGRAM
205 – 405 MOUNT HOPE AVENUE
ROCHESTER, NEW YORK
NYSDEC SITE ID C828125

Prepared For:	Erie Harbor, LLC. 183 East Main Street, 6th Floor Rochester, New York 14604
Prepared by:	Day Environmental, Inc. 40 Commercial Street Rochester, New York 14614-1008
Project No.:	4155R-09
Date:	May 2010

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ATTACHMENTS

Attachment 1 Figure 1- Route for Emergency Service

1.0 INTRODUCTION

This Health and Safety Plan (HASP) outlines the policies and procedures necessary to protect workers and the public from potential environmental hazards posed during remediation activities under the New York State Department of Environmental Protection (NYSDEC) Brownfield Cleanup Program (BCP). The subject property (Site) consists of approximately 6.016 acres of land improved with five four-story apartment buildings (i.e., Townhouses). The property is addressed 205-405 Mt. Hope Avenue, City of Rochester, County of Monroe, New York (NYSDEC Site ID C828125). Figure 1 included as Attachment 1 depicts the general location of the Site. As outlined in this HASP, the above activities shall be conducted in a manner to minimize the probability of injury, accident, or incident occurrence.

Although the HASP focuses on the specific work activities planned for this Site, it must remain flexible due to the nature of this work. Conditions may change and unforeseen situations can arise that require deviations from the original HASP.

1.1 Site History/Overview

The Site is currently vacant and will be developed with residential apartment and townhouse buildings. Five four-story apartment buildings (i.e. Townhouses) with an associated paved parking lot were demolished in 2009. Prior to residential development in about 1975, past uses/activities at the Site included commercial, warehouse, feeder canal, rail yards, a work shop, auto repair, car sales, a wagon shop, a junk-yard and iron cutting facility, a brick storage yard, a tannery, and a coal yard.

The Site is located in a mixed-use urban area. The Site is bounded to the north and east by commercial and residential properties, to the south by City of Rochester park property, and to the west by the Genesee Gateway Park and the Genesee River.

The Site is located in an urban area that is serviced by the public water system. The Monroe County Department of Public Health (MCDPH) has no records of public or private drinking water wells or process water wells within a 0.25-mile radius of the Site. A review of a document titled "Ground Water Resources of Monroe County" (1935) revealed no groundwater supply wells on, or in the immediate area of, the Site.

The Site and surrounding area are generally level. The Genesee River is located at least 90 feet west of the Site. Surface water appears to flow off the Site toward Mount Hope Avenue to the east, and into the City of Rochester sewer system. Groundwater over the majority of the Site generally flows toward the east away from the Genesee River. However, groundwater on the southern portion of the Site generally flows in a southerly direction. These flow directions may be modified locally due to buried utilities, seasonal conditions, or other factors.

Previous environmental work identified that various media (soil, groundwater, soil vapor, fill) on portions of the Site were contaminated with VOCs, SVOCs, metals, and/or PCBs. In 2009 and 2010, these contaminants were remediated to levels that allow restricted residential, commercial, or industrial use of the Site. However, some residual concentrations of these constituents remain on-site that exceed NYSDEC Part 375 Unrestricted Use soil cleanup objectives and/or NYSDEC groundwater standards/guidance values, which will be managed in accordance with institutional controls and engineering controls that have been developed for the Site.

1.2 Planned Activities Covered by HASP

This HASP is intended to be used as a component to the Site Management Plan (SMP) that is required to manage residual contamination at the Site. Currently, identified activities include:

- Intrusive activities during redevelopment and on-going property maintenance;
- Groundwater monitoring to evaluate the effectiveness of the remedy; and
- Miscellaneous tasks that may arise.

This HASP can be modified to cover other site activities as deemed appropriate. The owner of the property, its contractors, and other site workers will be responsible for the development and/or implementation of health and safety provisions associated with normal construction activities or site activities.

2.0 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM) and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the HASP on behalf of DAY employees.

2.1 Project Manager

The PM has the overall responsibility for the project and will coordinate with the SSO to ensure that the goals of the remediation program are attained in a manner consistent with the HASP requirements.

2.2 Site Safety Officer

The SSO has responsibility for administering the HASP relative to site activities, and will be in the field full-time while site activities are in progress. The SSO's operational responsibilities will be monitoring, including personal and environmental monitoring, ensuring personal protective equipment maintenance, and assignment of protection levels. The SSO will be the main contact in any on-site emergency situation. The SSO will direct field activities involved with safety and be responsible for stopping work when unacceptable health or safety risks exist. The SSO is responsible for ensuring that on-site personnel understand and comply with safety requirements.

2.3 Employee Safety Responsibility

Each employee is responsible for personal safety as well as the safety of others in the area. The employee will use the equipment provided in a safe and responsible manner as directed by the SSO.

2.4 Key Safety Personnel

The following DAY individuals are anticipated to share responsibility for health and safety of DAY employees at the site.

Project Manager	Jeffrey A. Danzinger
Site Safety Officer	Kelly A. Crandall or Charles A. Hampton

DAY's safety personnel will share environmental monitoring information, etc. with other on-site entities (e.g., contractors, regulators). However, these other on-site entities are responsible for their own health and safety and should provide their own safety personnel (e.g., SSO) as deemed necessary depending upon the activities they are performing at the Site (refer to Section 3.0).

3.0 SAFETY RESPONSIBILITY

Contractors, consultants, state or local agencies, or other parties, and their employees, involved with intrusive activities at this Site, will be responsible for their own safety while on-site. Their employees will be required to understand the information contained in this HASP, and must follow the recommendations that are made in this document. As an alternative, contractors, consultants, state or local agencies, or other parties, and their employees, involved with this project can utilize their own health and safety plan for this project as long as it is found acceptable to the New York State Department of Health (NYSDOH), MCDPH and/or NYSDEC.

4.0 JOB HAZARD ANALYSIS

There are many hazards associated with intrusive work on a site, and this HASP discusses some of the anticipated hazards for this Site. The hazards listed below deal specifically with those hazards associated with the disturbance of potentially contaminated media (e.g., soil, groundwater, fill, etc.).

4.1 Chemical Hazards

Chemical substances can enter the unprotected body and can cause damage to the point of contact or can act systemically, causing a toxic effect at a part of the body distant from the point of initial contact.

Although the Site has been remediated to meet regulatory criteria for restricted residential, commercial, or industrial use, a list of selected VOCs, SVOCs, and metals that are have been historically detected at the Site are provided below. The remedial work performed to date was successful in reducing/addressing these contaminants to allow redevelopment. This list also presents the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs), National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs), and NIOSH immediately dangerous to life or health (IDLH) levels.

CONSTITUENT	OSHA PEL	NIOSH REL	NIOSH IDLH
Dichlorodifluoromethane	1,000 ppm	1,000 ppm	15,000 ppm
Benzene	1 ppm	0.1 ppm	500 ppm
Trichloroethene	100 ppm	25 ppm	1000 ppm
Isopropylbenzene	50 ppm	50 ppm	900 ppm
Toluene	200 ppm	100 ppm	500 ppm
Ethylbenzene	100 ppm	100 ppm	800 ppm
Mixed xylenes	100 ppm	100 ppm	900 ppm
Phenol	5 ppm	5 ppm	250 ppm
Benzo(a)pyrene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
Chrysene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
Bis(2-ethylhexyl)phthalate	5 mg/m^3	NA	5,000 mg/m^3
Benzo(b)fluoranthene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
Benzo(k)fluoranthene	0.2 mg/m^3	NA	80 mg/m^3
1,2,4-Trimethylbenzene	25 ppm	25 ppm	NA
1,3,5-Trimethylbenzene	25 ppm	25 ppm	NA
Naphthalene	10 ppm	10 ppm	250 ppm
Anthracene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
Pyrene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
Antimony	0.5 mg/m^3	0.5 mg/m^3	50 mg/m^3
Arsenic	0.01 mg/m^3	0.002 mg/m^3	5 mg/m^3
Barium	0.5 mg/m^3	0.5 mg/m^3	50 mg/m^3
Beryllium	0.002 mg/m^3	0.0005 mg/m^3	4 mg/m^3
Cadmium	0.005 mg/m^3	NA	9 mg/m^3
Chromium	0.5 mg/m^3	0.5 mg/m^3	250 mg/m^3
Lead	0.05 mg/m^3	0.05 mg/m^3	100 mg/m^3
Mercury	0.1 mg/m^3	0.05 mg/m^3	10 mg/m^3
Nickel	1 mg/m^3	0.015 mg/m^3	10 mg/m^3
Selenium	0.2 mg/m^3	0.2 mg/m^3	1.0 mg/m^3
Thallium	0.1 mg/m^3	0.1 mg/m^3	15 mg/m^3

NA = Not Available

The potential routes of exposure for these analytes and chemicals include inhalation, ingestion, skin absorption and skin/eye contact. The potential for exposure through any one of these routes will depend on the activity conducted. The most likely routes of exposure for intrusive activities that include inhalation and skin contact.

4.2 Physical Hazards

There are physical hazards that might compound the chemical hazards. Hazard identification, training, adherence to the planned Site measures, and careful housekeeping can prevent many problems or accidents arising from physical hazards. Potential physical hazards associated with this Site and suggested preventative measures include:

- Slip/Trip/Fall Hazards - Some areas may have wet surfaces that will greatly increase the possibility of inadvertent slips. Caution must be exercised when using steps and stairs due to slippery surfaces in conjunction with the fall hazard. Good housekeeping practices are essential to minimize the trip hazards.

- Small Quantity Flammable Liquids - Small quantities of flammable liquids may be stored in "safety" cans and labeled according to contents.

- Electrical Hazards - Electrical devices and equipment shall be de-energized prior to working near them. All extension cords will be kept out of water, protected from crushing, and inspected regularly to ensure structural integrity. Temporary electrical circuits will be protected with ground fault circuit interrupters. Only qualified electricians are authorized to work on electrical circuits. Heavy equipment (e.g., backhoe, drill rig) shall not be operated within 10 feet of high voltage lines, unless proper protection from the high voltage lines is provided by the appropriate utility company.

- Noise - Work around large equipment often creates excessive noise. The effects of noise can include:

  - Workers being startled, annoyed, or distracted.

  - Physical damage to the ear resulting in pain, or temporary and/or permanent hearing loss.

  - Communication interference that may increase potential hazards due to the inability to warn of danger and proper safety precautions to be taken.

  Proper hearing protection will be worn as deemed necessary. In general, feasible administrative or engineering controls shall be utilized when on-site personnel are subjected to noise exceeding an 8-hour time weighted average (TWA) sound level of 90 dBA (decibels on the A-weighted scale). In addition, whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 dBA, employers shall administer a continuing, effective hearing conservation program as described in the OSHA Regulation 29 CFR Part 1910.95.

- Heavy Equipment - Each morning before start-up, heavy equipment will be inspected to ensure safety equipment and devices are operational and ready for immediate use.

- Subsurface and Overhead Hazards - Before any excavation activity, efforts will be made to determine whether underground utilities and potential overhead hazards will be encountered. Notiy Underground Facilities Protective Organization (UFPO) 2 business days prior to excavating or drilling at 811 or (800) 96207962 for utility stakeout.

4.3 Environmental Hazards

Environmental factors such as weather, wild animals, insects, and irritant plants can pose a hazard when performing outdoor tasks. The SSO shall make every reasonable effort to alleviate these hazards should they arise.

4.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Site workers will be encouraged to increase consumption of water or electrolyte-containing beverages such as Gatorade® when the potential for heat stress exists. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO.

4.3.2 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

5.0 SITE CONTROLS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas, and personal protective equipment staging/decontamination areas will be specified prior to beginning operations.

5.1 Site Zones

In the area where contaminated materials present the potential for worker exposure (work zone), personnel entering the area must wear the mandated level of protection for the area. A "transition zone" shall be established where personnel can begin and complete personal and equipment decontamination procedures. This can reduce potential off-site migration of contaminated media. Contaminated equipment or clothing will not be allowed outside the transition zone (e.g., on clean portions of the Site) unless properly containerized for disposal. Operational support facilities will be located outside the transition zone (i.e., in a "support zone"), and normal work clothing and support equipment are appropriate in this area. If possible, the support zone should be located upwind of the work zone and transition zone.

5.2 General

The following items will be requirements to protect the health and safety of workers during implementation of activities that disturb contaminated material.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination shall not occur in the work zone and/or transition zone during disturbance of contaminated material.
- Personnel admitted in the work zone shall be properly trained in health and safety techniques and equipment usage.
- No personnel shall be admitted in the work zone without the proper safety equipment.
- Proper decontamination procedures shall be followed before leaving the Site.

6.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of personal protective equipment (PPE) which are or may be required at this job site. Personnel entering the work zone and transition zone shall be trained in the use of the anticipated PPE to be utilized.

6.1 Anticipated Protection Levels

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Site mobilization	D	
Site prep/construction of engineering controls	D	
Extrusive work (e.g., surveying, etc.)	D	
Intrusive work (e.g., excavation work, groundwater monitoring, etc.)	C/Modified D/D	Based on air monitoring, and SSO discretion
Support zone	D	
Site breakdown and demobilization	D	

It is anticipated that work conducted, when there is the potential for encountering residual contaminants, will be performed in Level D or modified Level D PPE. If conditions are encountered that require higher levels of PPE (e.g., Level C, B, or A), the work will immediately be stopped. The appropriate government agencies (e.g., NYSDEC, NYSDOH, etc.) will be notified and the proper health and safety measures will be implemented (e.g., develop and implement engineering controls, upgrade in PPE, etc.).

6.2 Protection Level Descriptions

This section lists the minimum requirements for each protection level. Modifications to these requirements can be made upon approval of the SSO. If Level A, Level B, and/or Level C PPE is required, Site personnel that enter the work zone and/or transition zone must be properly trained and certified in the use of those levels of PPE.

6.2.1 Level D

Level D consists of the following:

- Safety glasses
- Hard hat when working with heavy equipment

- Steel-toed or composite-toed work boots
- Protective gloves during sampling or handling of potentially contaminated media
- Work clothing as prescribed by weather

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Work gloves
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and polyvinyl chloride (PVC) acid gear will be required when workers have a potential to be exposed to impacted liquids or impacted particulates].

6.2.3 Level C

Level C consists of the following:

- Air-purifying respirator with appropriate cartridges
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and PVC acid gear will be required when workers have a potential to be exposed to impacted liquids or particulates].
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Nitrile, neoprene, or PVC overboots, if appropriate
- Nitrile, neoprene, or PVC gloves, if appropriate
- Face shield (when projectiles or splashes pose a hazard)

6.2.4 Level B

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator. Level B PPE is not anticipated to be required for this Site. If the need for level B PPE becomes evident, site activities will be ceased until site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM and SSO. Subsequently, the appropriate safety measures (including Level B PPE) must be implemented prior to commencing site activities.

6.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully-encapsulating, vapor-proof suit capable of maintaining positive pressure. Level A PPE is not anticipated to be required for this Site. If the need for level A PPE becomes evident, site activities will be ceased until site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM and SSO. Subsequently, the appropriate safety measures (including Level A PPE) must be implemented prior to commencing site activities.

6.3 Respiratory Protection

Any respirator used during activities associated with residual Site contaminants will meet the requirements of the OSHA 29 CFR 1910.134. Both the respirator and cartridges specified shall be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910). Air purifying respirators shall not be worn if contaminant levels exceed designated use concentrations. The workers will wear respirators with approval for: organic vapors <1,000 ppm; and dusts, fumes and mists with a TWA < 0.05 mg/m^3.

No personnel who have facial hair, which interferes with respirator sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use due to residual Site contaminants.

Only workers who have been certified by a physician as being physically capable of respirator usage shall be issued a respirator for work associated with residual Site contaminants. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas that require respirator protection in relation to residual Site contaminants.

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 Personnel Decontamination

Personnel involved with activities that involve disturbing contaminated media will follow the decontamination procedures described herein to ensure that material which workers may have contacted in the work zone and/or transition zone does not result in personal exposure and is not spread to clean areas of the Site. This sequence describes the general decontamination procedure. The specific stages can vary depending on the Site, the task, and the protection level, etc.

1. Leave work zone and go to transition zone
2. Remove soil/debris from boots and gloves
3. Remove boots
4. Remove gloves
5. Remove Tyvek suit and discard, if applicable
6. Remove and wash respirator, if applicable
7. Go to support zone

7.2 Equipment Decontamination

Contaminated equipment shall be decontaminated in the transition zone before leaving the Site. Decontamination procedures can vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steam cleaning the exterior of the equipment. Personnel performing this task will wear the proper PPE.

7.3 Disposal

Disposable clothing will be treated as contaminated waste and be disposed of properly. Liquids (e.g., decontamination water, etc.) generated by activities involving residual Site contaminants will be disposed of in accordance with applicable regulations.

8.0 AIR MONITORING

During activities that involve potential exposure to residual Site contaminants, air monitoring will be conducted in order to determine airborne particulate and contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered and that chemical contaminants are not migrating off-site. Additional air monitoring may be conducted at the discretion of the SSO. Readings will be recorded and available for review.

The following chart describes the direct reading instrumentation that will be utilized and appropriate action levels.

Monitoring Device	Action level	Response/Level of PPE
Photoionization Detector (PID) Volatile Organic Compound Meter	< 1 ppm in breathing zone, sustained 5 minutes	Level D
	1-25 ppm in breathing zone, sustained 5 minutes	Level C
	26-250 ppm in breathing zone, sustained 5 minutes	Level B, Stop work, evaluate the use of engineering controls
	>250 ppm in breathing zone	Level A, Stop work, evaluate the use of engineering controls
Real Time Aerosol Monitor (RTAM) Particulate Meter	<150 micrograms per meter cubed ($\mu g/m^3$) over an integrated period not to exceed 15 minutes.	Continue working
	>150 $\mu g/m^3$	Cease work, implement dust suppression, change in way work performed, etc. If levels can not be brought below 150 $\mu g/m^3$, then upgrade PPE to Level C.

8.1 Particulate Monitoring

During intrusive activities where contaminated materials may be disturbed on a large scale (e.g., during excavation through contaminated soil or fill), air monitoring will include real-time monitoring for particulates using a Real Time Aerosol Monitor (RTAM) particulate meter at the perimeter of the work zone in accordance with the 1989 NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031 entitled, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites." The TAGM uses an action level of 150 $\mu g/m^3$ (0.15 mg/m^3) over an integrated period not to exceed 15 minutes. If the action level is exceeded, or if visible dust is encountered, then work shall be discontinued until corrective actions are implemented. Corrective actions may include dust suppression, change in the way work is performed, and/or upgrade of personal protective equipment.

8.2 Volatile Organic Compound Monitoring

During activities where contaminated materials may be disturbed, a PID will be used to monitor total VOCs in the ambient air. The PID will prove useful as a direct reading instrument to aid in determining if current respiratory protection is adequate or needs to be upgraded. The SSO will take measurements before operations begin in an area to determine the amount of VOCs naturally occurring in the air. This is referred to as a background level. Levels of VOCs will periodically be measured in the air at active work sites, and at the transition zone when levels are detected above background in the work zone.

8.3 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) includes real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when activities with the potential to release VOCs or residual Site contaminants on dust are in progress at the Site. This CAMP is based on the NYSDOH Generic CAMP included as Appendix 1A of the NYSDEC document titled *"Draft DER-10, Technical Guidance for Site Investigation and Remediation"* dated December 2002. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of the remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air. Reliance on the CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Continuous monitoring will be conducted during ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, installation of monitoring wells, etc.

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of groundwater samples from monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

8.3.1 VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the work zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring must be continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source or vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

The 15-minute readings must be recorded and made available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

8.3.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-l0) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level (i.e., particulate matter less than 10 micrometers in diameter) is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

Readings must be recorded and made available for NYSDEC, NYSDOH, and MCDPH personnel to review.

9.0 EMERGENCY RESPONSE

To provide first-line assistance to field personnel in the case of illness or injury, the following items will be made immediately available on the Site:

- First-aid kit;
- Portable emergency eye wash; and
- Supply of clean water.

9.1 Emergency Telephone Numbers

The following telephone numbers are listed in case there is an emergency at the Site:

Fire/Police Department:	911
Poison Control Center:	(800) 222-1222
NYSDEC	
Kelly Cloyd	(585) 226-5351
Spills	(585) 226-2466
NYSDOH	
Debbie McNaughton	(585) 423-8069
MCDPH	
Jeffrey Kosmala, P.E.	(585) 753-5470
ERIE HARBOR, LLC	
Allen Handelman	(585) 324-0512
DAY ENVIRONMENTAL, INC.	
Jeff Danzinger	(585) 454-0210 x114
Ray Kampff	(585) 454-0210 x108
Nearest Hospital	Highland Hospital 1000 South Avenue Rochester, NY 14620 (585) 473-2200 (Main) (585) 341-6880 (Emergency Department)
Directions to the Hospital:	From Mt. Hope Avenue (NY-15), turn left (east) onto Averill Street and travel approximately 0.3 miles. Turn right (south) onto South Avenue and travel approximately 0.9 miles. Turn left (east) into Highland Hospital and follow signs to the Emergency Department. (refer to Figure 1 in Attachment 1)

9.2 Evacuation

A log of each individual entering and leaving the Site should be kept for emergency accounting practices. Although unlikely, it is possible that a site emergency could require evacuating all personnel from the site. If required, the SSO will give the appropriate signal for site evacuation (i.e., hand signals, alarms, etc.).

All personnel shall exit the site and shall congregate in an area designated by the SSO. The SSO shall ensure that all personnel are accounted for. If someone is missing, the SSO will alert emergency personnel. The appropriate government agencies will be notified as soon as possible regarding the evacuation, and any necessary measures that may be required to mitigate the reason for the evacuation.

9.3 Medical Emergency

In the event of a medical emergency involving illness or injury to one of the on-site personnel, the site should be shut-down and immediately secured. The appropriate government agencies should be notified immediately. The area in which the injury or illness occurred shall not be entered until the cause of the illness or injury is known. The nature of injury or illness shall be assessed. If the victim appears to be critically injured, administer first aid and/or cardio-pulmonary resuscitation (CPR) as needed. Instantaneous real-time air monitoring shall be done in accordance with air monitoring outlined in Section 8.0 of this HASP.

9.4 Contamination Emergency

It is unlikely that a contamination emergency will occur; however, if such a emergency does occur, the Site shall be shut-down and immediately secured. If an emergency rescue is needed, notify Police, Fire Department and Emergency Medical Service (EMS) Units immediately. Advise them of the situation and request an expedient response. The appropriate government agencies shall be notified immediately. The area in which the contamination occurred shall not be entered until the arrival of trained personnel who are properly equipped with the appropriate PPE and monitoring instrumentation as outlined in Section 8.0 of this HASP.

9.5 Fire Emergency

In the event of a fire on-site, the Site shall be shut-down and immediately secured. The area in which the fire occurred shall not be entered until the cause can be determined. All non-essential site personnel shall be evacuated from the site to a safe, secure area. Notify the Fire Department immediately. Advise the Fire Department of the situation and the identification of any hazardous materials involved. The appropriate government agencies shall be notified as soon as possible.

The four classes of fire along with their constituents are as follows:

Class A: Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.

Class B: Flammable liquids, gases and greases.

Class C: Energized electrical equipment.

Class D: Combustible metals such as magnesium, titanium, sodium, potassium.

Small fires on-site may be actively extinguished; however, extreme care shall be taken while in this operation. All approaches to the fire shall be done from the upwind side if possible. Distance from on-site personnel to the fire shall be close enough to ensure proper application of the extinguishing material, but far enough away to ensure that the personnel are safe. The proper extinguisher shall be utilized for the Class(s) of fire present on the site. If possible, the fuel source shall be cut off or separated from the fire. Care must be taken when performing operations involving the shut-off values and manifolds, if present.

Examples of proper extinguishing agent as follows:

Class A:	Water Water with 1% AFFF Foam (Wet Water) Water with 6% AFFF or Fluorprotein Foam ABC Dry Chemical
Class B:	ABC Dry Chemical Purple K Carbon Dioxide Water with 6% AFFF Foam
Class C:	ABC Dry Chemical Carbon Dioxide
Class D:	Metal-X Dry Powder

No attempt shall be made against large fires. These shall be handled by the Fire Department.

9.6 Spill or Air Release

In the event of spills or air releases of hazardous materials on-site, the Site shall be shut-down and immediately secured. The area in which the spills or releases occurred shall not be entered until the cause can be determined and site safety can be evaluated. All non-essential site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The spilled or released materials shall be immediately identified and appropriate containment measures shall be implemented, if possible. Real-time air monitoring shall be implemented as outlined in Section 8.0 of this HASP. If the materials are unknown, Level B protection is mandatory. Samples of the materials shall be acquired to facilitate identification.

9.7 Containerized Waste and/or Underground Storage Tanks

In the event that unanticipated containerized waste (e.g., drums) and/or underground storage tanks (USTs) are located during intrusive activities, the Site shall be shutdown and immediately secured. The area where unanticipated containerized wastes and/or tanks are discovered shall not be entered until site safety can be evaluated. Non-essential Site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The SSO shall monitor the area as outlined in Section 8.0 of this HASP.

Prior to any handling, unanticipated containers will be visually assessed by the SSO to gain as much information as possible about their contents. As a precautionary measure, personnel shall assume that unlabelled containers and/or tanks contain hazardous materials until their contents are characterized. To the extent possible based upon the nature of the containers encountered, actions may be taken to stabilize the area and prevent migration (e.g., placement of berms, etc.). Subsequent to initial visual assessment and any required stabilization, properly trained personnel will sample, test, remove, and dispose of any containers and/or tanks, and their contents. After visual assessment and air monitoring, if the material remains unknown, Level B protection is mandatory.

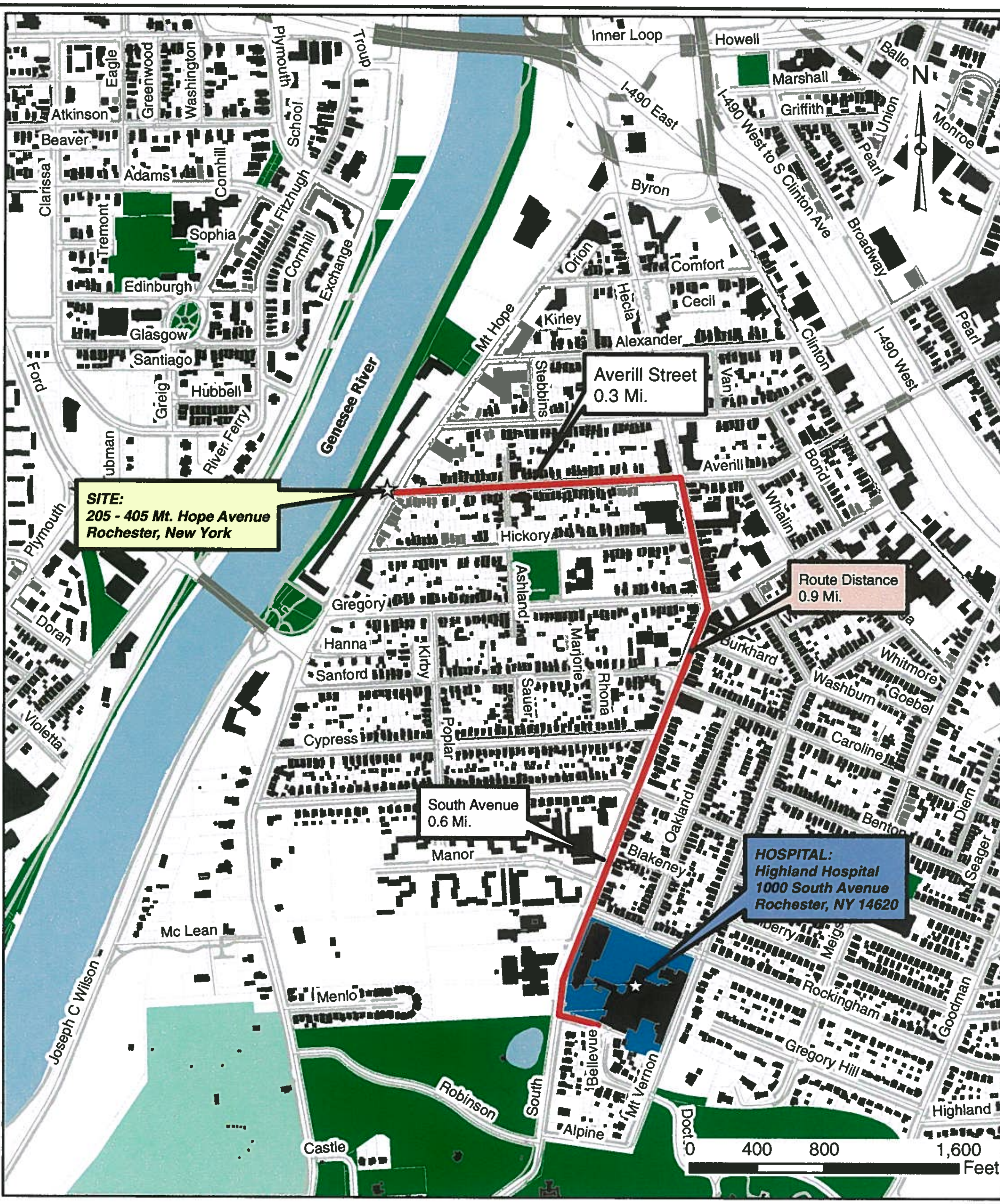
10.0 ABBREVIATIONS

BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Program
CPR	Cardio-Pulmonary Resuscitation
DAY	Day Environmental, Inc.
dBA	Decibels on the A-Weighted Scale
EMS	Emergency Medical Service
HASP	Health and Safety Plan
IDLH	Immediately Dangerous to Life or Heath
MCDPH	Monroe County Department of Public Health
mg/kg	Milligram per Kilogram
mg/m^3	Milligram per Meter Cubed
MSDS	Material Safety Data Sheet
NIOSH	National Institute of Occupational Safety and Health
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PM-10	Particulate matter less than 10 micrometers in diameter
PPE	Personal Protection Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
REL	Recommended Exposure Limit
RTAM	Real-Time Aerosol Monitor
SCG	Standard, Criteria and Guidance
SSO	Site Safety Officer
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TCE	Trichloroethene
TWA	Time-Weighted Average
$\mu g/m^3$	Micrograms Per Meter Cubed
UST	Underground Storage Tank
VOC	Volatile Organic Compound

ATTACHMENT 1

Figure 1- Route for Emergency Services

C:\GIS\Aerial Locus Maps\4155R-09\ErieHa - Health and Safety Plan.mxd



Drawing produced from GIS data provided by Monroe County dated 2007.

Date 02-03-2009	day **DAY ENVIRONMENTAL, INC.** Environmental Consultants Rochester, New York 14614-1008 New York, New York 10165-1617	Project Title 205-405 MT HOPE AVENUE ROCHESTER, NEW YORK HEALTH AND SAFETY PLAN	Project No. 4155R-09
Drawn By CPS		Drawing Title ROUTE FOR EMERGENCY SERVICES	FIGURE 1
Scale AS NOTED			

APPENDIX E

Monitoring Well Boring Logs and Construction Diagrams

DAY ENVIRONMENTAL, INC.

ENVIRONMENTAL CONSULTANTS

AN AFFILIATE OF DAY ENGINEERING, P.C.

Project #:	3801S-06		
Project Address:	205-405 Mt. Hope Ave. Rochester, NY		
DAY Representative:	T. DiNardo		
Drilling Contractor:	Nothnagle Drilling		
Sampling Method:	Direct-Push		

TEST BORING DAYMW-01

Ground Elevation:	100.53'	Datum:	100.00'
Date Started:	8/15/2006	Date Ended:	8/15/2006
Borehole Depth:	18.0'	Borehole Diameter:	2.25"

Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings

Water Level (Date): Dry (09/05/06)

Depth (ft)	Sample Number	Sample Depth (ft)	% Recovery	Headspace FID (ppm)	FID Reading (ppm)	Sample Description	Notes
						Dark Brown Sandy TOPSOIL, moist (6 inches)	
					0.0	Brown Sand and Gravel, Brick, Cinders, moist (FILL)	
1							
2	S-1	0-4	95	0.0	0.0		
3					0.0		
4					0.0		
5					0.0		
6	S-2	4-8	80	7.1	0.0		
7					0.0	Gray/Brown Silty SAND with black streaks	
8					0.0	...Brown/Red, moist	
9					0.0		
10	S-3	8-12	90	3.4	2.2	...black organic layer	
11					2.3		
12					5.1	Brown, Sandy SILT, wet	
13					0.0		
14	S-4	12-16	90	6.9	0.0		
15					0.0		
16					3.2	Brown/Red CLAY, moist	
17	S-5	16-18	50	0.0	0.0		
18						Complete @ 18'	
19							
20							

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) FID meter calibrated per manufacturer's specifications.
4) NA = Not Available or Not Applicable

TEST BORING DAYMW-01

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(585) 454-0210
FAX (585) 454-0825

www.dayenvironmental.com

NEW YORK, NEW YORK 10165-1617
(212) 986-8645
FAX (212) 986-8657

DAY ENVIRONMENTAL, INC.

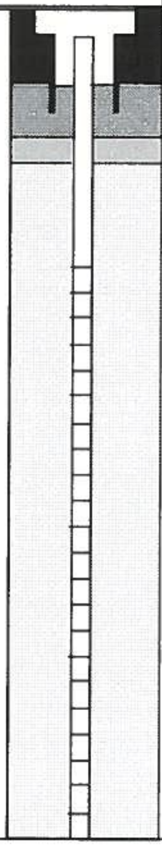
ENVIRONMENTAL CONSULTANTS
AN AFFILIATE OF DAY ENGINEERING, P.C

MONITORING WELL INSTALLATION LOG

MONITORING WELL DAYMW-01

Project #:	3801S-06	Ground Elevation:	100.53'	Datum:	100.00'
Project Address:	205-405 Mt. Hope Ave. Rochester, NY	Date Started:	8/15/2006	Date Ended:	8/15/2006
DAY Representative:	T. DiNardo	Water Level (Date):	Dry (09/05/06)		
Drilling Contractor:	Nothnagle Drilling				

Refer to Test Boring Log DAYMW-01 for Soil Description



Flush Mounted Roadbox
3 Depth to Top of Riser Pipe (in)
1 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Bentonite Grout

1 Depth to Top of Bentonite Seal (ft)
5 Depth to Bottom of Bentonite Seal (ft)

7 Depth to Top of Well Screen (ft)

2.25 Diameter of Borehole (in)

Backfill Type Sand

1 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 0.10

17 Depth to Bottom of Well Screen (ft)

18 Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL DAYMW-01

TEST BORING DAYSB-06 (DAYMW-04)

Project #: 3801S-06
Project Address: 205-405 Mt. Hope Ave.
Rochester, NY
DAY Representative: T. DiNardo
Drilling Contractor: Nothnagle Drilling
Sampling Method: Direct-Push

Ground Elevation: 97.71' Datum: 100.00'
Date Started: 8/14/2006 Date Ended: 8/14/2006
Borehole Depth: 17.0' Borehole Diameter: 2.25"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 9.91' (09/05/06)

Depth (ft)	Sample Number	Sample Depth (ft)	% Recovery	Headspace PID (ppm)	PID Reading (ppm)	Sample Description	Notes
						Asphalt (2 inches)	
1	S-1	0-4	85	1.1	NA	Brown Sand and Gravel, Cinders, trace Brick, moist (FILL)	
2					NA		
3					NA		
4					NA		
5	S-2	4-8	85	0.8	NA	...Brown, Sand and Gravel, moist (FILL)	
6					NA		
7					NA	...0.5' thick layer of Rock (FILL)	
8					NA		
9	S-3	8-12	85	1.9	NA	Brown Sand and Cinders, moist (FILL)	
10					NA		
11					NA	Clayey SAND, moist	
12					NA		
13	S-4	12-15	90	1.6	NA	Brown Clayey SILT and SAND, trace Gravel, wet	
14					NA		
15					NA		
16	S-5	15-17	90	1.6	NA	Brown, Sandy CLAY, wet	
17					NA	Brown Silty SAND, trace Gravel, wet	
18						Refusal @ 17'	
19							
20							

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable

TEST BORING DAYSB-06 (DAYMW-04)

day

DAY ENVIRONMENTAL, INC.

ENVIRONMENTAL CONSULTANTS

AN AFFILIATE OF DAY ENGINEERING, P.C

MONITORING WELL INSTALLATION LOG

MONITORING WELL DAYMW-04

Page 1 of 1

Project #: 3801S-06

Project Address: 205-405 Mt. Hope Ave.
Rochester, NY

DAY Representative: T. DiNardo

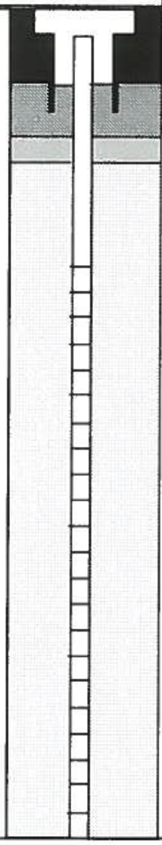
Drilling Contractor: Nothnagle Drilling

Ground Elevation: 97.71'   Datum: 100.00'

Date Started: 8/14/2006   Date Ended: 8/14/2006

Water Level (Date): 9.91' (09/05/06)

Refer to Test Boring Log DAYSB-06 for Soil Description



Flush Mounted Roadbox

3 Depth to Top of Riser Pipe (in)

1 Depth to Bottom of Cement Surface Patch (ft)

Backfill Type Bentonite Grout

1 Depth to Top of Bentonite Seal (ft)

9 Depth to Bottom of Bentonite Seal (ft)

12 Depth to Top of Well Screen (ft)

2.25 Diameter of Borehole (in)

Backfill Type Sand

1 Inside Diameter of Well (in)

Type of Pipe PVC

Screen slot size 0.10

17 Depth to Bottom of Well Screen (ft)

17 Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL DAYMW-04

day

DAY ENVIRONMENTAL, INC.

ENVIRONMENTAL CONSULTANTS

AN AFFILIATE OF DAY ENGINEERING, P.C.

TEST BORING DAYSB-13 (DAYMW-05)

Project #:	3801S-06
Project Address:	205-405 Mt. Hope Ave. Rochester, NY
DAY Representative:	T. DiNardo
Drilling Contractor:	Nothnagle Drilling
Sampling Method:	Direct-Push

Ground Elevation:	96.83'	Datum:	100.00'
Date Started:	8/14/2006	Date Ended:	8/14/2006
Borehole Depth:	17.0'	Borehole Diameter:	2.25"

Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings

Water Level (Date/Time): 8.13' (09/05/06)

Depth (ft)	Sample Number	Sample Depth (ft)	% Recovery	Headspace PID (ppm)	PID Reading (ppm)	Sample Description	Notes
						Cinders, trace Sand, Gravel (FILL)	
1					1.2		
2	S-1	0-4	60	0.6	0.3		
3					1.8		
4						Red/Brown, Silty CLAY, some Sand and Gravel, moist	
5							
6	S-2	4-8	100	8.5	0.0		
7							
8						Brown SAND and GRAVEL	
9					1.3		
10	S-3	8-12	90	1.6			
11					0.3	Reddish/Brown SAND and GRAVEL	
12						Brown, Silty SAND, wet	
13					0.9		
14	S-4	12-15	50	0.8	1.0		
15						Brown, Silty Clayey SAND, wet	
16	S-5	15-17	50	3.0	0.0		
17						Refusal @ 17'	
18							
19							
20							

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measure in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp
4) NA = Not Available or Not Applicable

TEST BORING DAYSB-13 (DAYMW-05)

day
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AN AFFILIATE OF DAY ENGINEERING, P.C

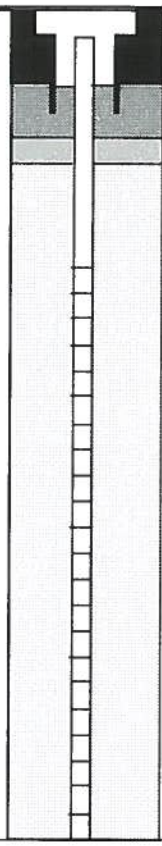
MONITORING WELL INSTALLATION LOG

MONITORING WELL DAYMW-05

Project #: 3801S-06
Project Address: 205-405 Mt. Hope Ave.
Rochester, NY
DAY Representative: T. DiNardo
Drilling Contractor: Nothnagle Drilling

Ground Elevation: 96.83'
Datum: 100.00'
Date Started: 8/14/2006
Date Ended: 8/14/2006
Water Level (Date): 8.13' (09/05/06)

Refer to Test Boring Log DAYSB-13 for Soil Description



Flush Mounted Roadbox
3 Depth to Top of Riser Pipe (in)
1 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Bentonite Grout

1 Depth to Top of Bentonite Seal (ft)
4 Depth to Bottom of Bentonite Seal (ft)

6 Depth to Top of Well Screen (ft)

2.25 Diameter of Borehole (in)

Backfill Type Sand

1 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 0.10

16 Depth to Bottom of Well Screen (ft)

17 Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL DAYMW-05

40 COMMERCIAL STREET
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FAX (585) 454-0825

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NEW YORK, NEW YORK 10165-1617
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FAX (212) 986-8657

TEST BORING DAYSB-12 (DAYMW-06)

Page 1 of 1

Project #:	3801S-06
Project Address:	205-405 Mt. Hope Ave. Rochester, NY
DAY Representative:	T. DiNardo
Drilling Contractor:	Nothnagle Drilling
Sampling Method:	Direct-Push

Ground Elevation:	100.58'	Datum:	100.00'
Date Started:	8/16/2006	Date Ended:	8/16/2006
Borehole Depth:	14.0'	Borehole Diameter:	2.25"

Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings

Water Level (Date): Dry (09/05/06)

Depth (ft)	Sample Number	Sample Depth (ft)	% Recovery	Headspace FID (ppm)	FID Reading (ppm)	Sample Description	Notes
					0.0	Dark Brown Sandy TOPSOIL, moist (6 inches)	
1						Dark brown, Silt, Gravel, Cinders, some Brick, moist (FILL)	
					0.0		
2	S-1	0-4	75	0.0			
					0.0		
3						...lense with slag	
					0.0		
4							
					0.0	...moist to very moist	
5							
					0.0		
6	S-2	4-8	80	0.0		...trace coal and slag	
					0.0		
7							
					0.0		
8							
					0.0	Brown, fine Sandy SILT, some Clay and Gravel, wet	
9							
					0.0		
10	S-3	8-12	50	0.0			
					0.1		
11							
					0.0	...Black Gravel	...Organic-type odor
12							
					0.0	Gray/Brown, Black fine SAND, some Silt, some rounded small Gravel, moist to very moist	
13	S-4	12-14	50	0.0			
					0.0		
14						Refusal @ 14'	
15							
16							
17							
18							
19							
20							

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) FID meter calibrated per manufacturer's specifications.
4) NA = Not Available or Not Applicable

TEST BORING DAYSB-12 (DAYMW-06)

DAY ENVIRONMENTAL, INC.

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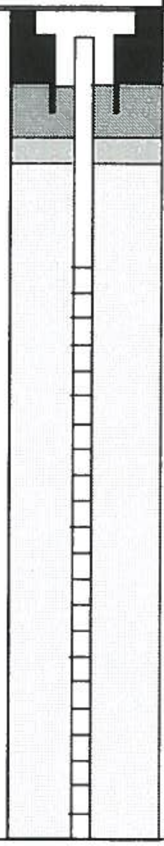
MONITORING WELL INSTALLATION LOG

MONITORING WELL DAYMW-06

Project #: 3801S-06
Project Address: 205-405 Mt. Hope Ave.
Rochester, NY
DAY Representative: T. DiNardo
Drilling Contractor: Nothnagle Drilling

Ground Elevation: 100.58' Datum: 100.00'
Date Started: 8/16/2006 Date Ended: 8/16/2006
Water Level (Date): Dry (09/05/06)

Refer to Test Boring Log DAYSB-12 for Soil Description



Flush Mounted Roadbox
3 Depth to Top of Riser Pipe (in)
1 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Bentonite Grout

1 Depth to Top of Bentonite Seal (ft)
4 Depth to Bottom of Bentonite Seal (ft)

8 Depth to Top of Well Screen (ft)

2.25 Diameter of Borehole (in)

Backfill Type Sand

1 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 0.10

13 Depth to Bottom of Well Screen (ft)

14 Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL DAYMW-06

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day

DAY ENVIRONMENTAL, INC.

ENVIRONMENTAL CONSULTANTS

AN AFFILIATE OF DAY ENGINEERING, P.C.

TEST BORING DAYMW-09

Project #: 4155R-09
Project Address: 225-405 Mt. Hope Avenue, Rochester, New York
DAY Representative: W. Batiste
Drilling Contractor: TREC Environmental, Inc.
Sampling Method: Direct-Push Geoprobe Macro Core

Ground Elevation: NA
Datum: Assumed 100.00'
Date Started: 7/21/2010
Date Ended: 7/21/2010
Borehole Depth: 17.4'
Borehole Diameter: 2.25 inch
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): SWL = 10.5' bgs (7/21/10)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace PID (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	NA	NA	NA	NA	NA	NA	Samples not collected - Augered through backfill to approximate top of bedrock	-
2									-
3									-
4									-
5									-
6									-
7									-
8									-
9									-
10									
11									-
12									
13									-
14									-
15									-
16									-
17									-
18								Equipment refusal at 17.4' bgs	-

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING DAYMW-09

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
AN AFFILIATE OF DAY ENGINEERING, P.C

MONITORING WELL INSTALLATION LOG

MONITORING WELL DAYMW-09

Project #:	4155R-09
Project Address:	205-405 Mt. Hope Ave. Rochester, NY
DAY Representative:	W. Batiste
Drilling Contractor:	TREC Env.

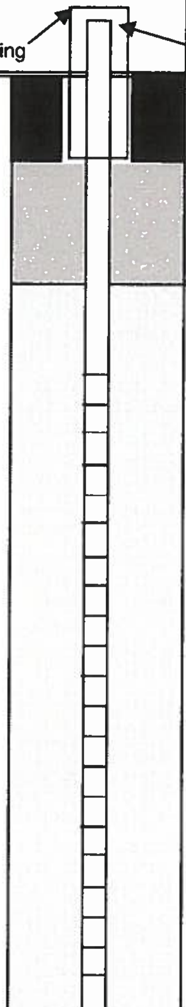
Ground Elevation:	NA	Datum:	100.00'
Date Started:	7/21/2010	Date Ended:	7/21/2010

Water Level (Date): 10.5' (7/21/2010)

~4' Protective Casing

~3.8 = Height of Top of Riser Pipe (ft)

Refer to Test Boring Log DAYMW-09 for Additional Information



0.5 Depth to Bottom of Cement Surface Patch (ft)
0.5 Depth to Top of Bentonite Seal (ft)

5.2 Depth to Bottom of Bentonite Seal (ft)

7.2 Depth to Top of Well Screen (ft)

8 Diameter of Borehole (in)

Backfill Type Sand

2 Inside Diameter of Well (in)

Type of Pipe PVC

Screen slot size 0.10

17.2 Depth to Bottom of Well Screen (ft)
17.4 Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL DAYMW-06

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DRILLING SUMMARY

Geologist:
Kevin J. McGovern, P.G.

Drilling Company:
Nothnagle Drilling, Inc.

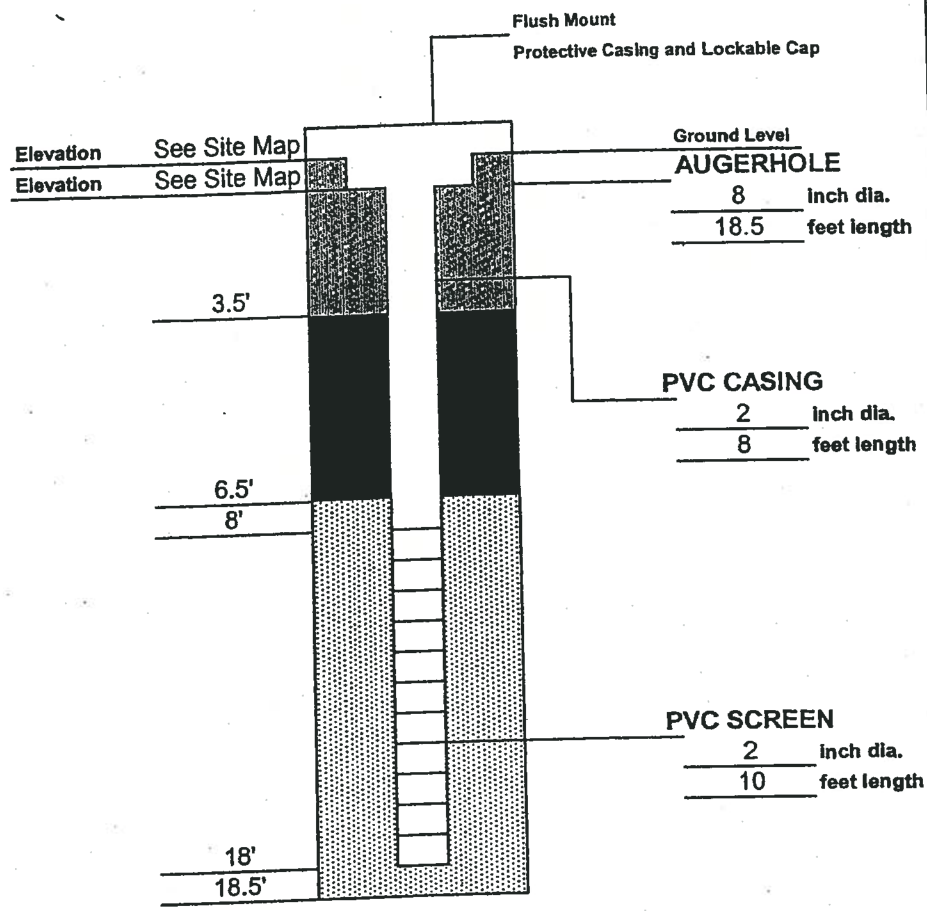
Driller:
Steve Loranty

Rig Make/Model:
CME-85 / 4.25" ID HSA

Date:
5/28/03

GEOLOGIC LOG

Depth(ft.)	Description
0'-9.5'	FILL
9.5'-10'	mf SAND, some silt & mf gravel, little-trace c sand (Till)
10'-13'	SILT, little f gravel & c sand trace f sand & clay
13'-18'	SILT & cmf SAND & GRAVEL (Till)
18'-18.5'	Weathered BEDROCK



WELL DESIGN

CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: 8" Dia Flush Mount Roadbox	**Type:** 2" SCH 40 PVC	**Type:** 00N Sand **Setting:** 18.5'-6.5'
Monitor: 2" SCH 40 PVC	**Slot Size:** 0.010"	**SEAL MATERIAL** **Type:** Bentonite **Setting:** 6.5'-3.5' **Type:** Concrete/ Bentonite Grout **Setting:** 3.5'-0'

COMMENTS:

A detailed geologic profile is included in the boring log for URS-2

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: Winn Development	**Location:** Rochester, New York	**Project No.:** 11172966.20000
URS Corporation	MONITORING WELL CONSTRUCTION DETAILS	**Well Number:** URS-2

URS Corporation

TEST BORING LOG

PROJECT:	River Park Commons, Supp. PH II ESA
CLIENT:	Winn Development
BORING CONTRACTOR:	Nothnagle Drilling, Inc.
GROUNDWATER:	11' BGS

BORING NO:	URS-2
SHEET:	1 of 1
JOB NO.:	11172966.20000
BORING LOCATION:	See Site Plan
GROUND ELEVATION:	See Site Plan
DATE STARTED:	05/28/03
DATE FINISHED:	05/28/03
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern, P.G.
REVIEWED BY:	

DATE	TIME	LEVEL	TYPE		CAS.	SAMPLER	CORE	TUBE
				TYPE	HSA	Split spoon		
				DIA.	4.25"	2"		
				WT.		140#		
				FALL		30"		

* Headspace Analysis via PID (PPM)

DEPTH FEET	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	PPM*	REMARKS
1	1	10	2, 3, 7, 3	70%	Dk. Brown	Loose to Very Loose	0'-1': TOPSOIL		0.2	Damp/Moist No Odor
					Reddish to Yellow Brown		1'-9.5': FILL, Fine to coarse sand some fine to medium angular gravel, little-some silt			
	2	4	1, 2, 2, 2	65%			- silt, some fine sand, little fine gravel		0.1	
5	3	5	1, 2, 3, 3	70%			- some clay, no gravel		0.0	
	4**	3	1, 1, 2, 6	50%					0.1	
	5	3	1, 1, 2, 7	55%					0.1	
10							9.5'-10': Medium to fine SAND, some silt & med to fine angular gravel, little-trace coarse sand	SW		
	6	16	1, 7, 9, 9	65%	Reddish to Grayish Brown	Medium Dense to Dense	10'-13': SILT, little fine angular gravel & coarse sand, trace fine sand & clay (Till)	ML	0.1	Wet No Odor
13	7	26	7, 9, 17, 22	75%			13'-18': SILT & fine to coarse SAND & angular GRAVEL	SW/ML	0.2	
15	8	29	11, 12, 17, 22	55%	Medium Brown				0.1	
	9	52	14, 21, 31, 46	75%					0.1	
18							18'-18.5': Weathered BEDROCK		NA	
19	10	NA	22, 100/1	10%	Gray	Hard	Top of Rock @ 18.5' BGS, End of Boring			
20										
25										
30										
35										

Comments: Boring advanced with a truck mounted CME 85
** Sample taken for the following analyses: VOCs (8260B TCL + STARS) and SVOCs (8270 Full B/N + Acids & STARS + 20 TICS)

PROJECT NO.	11172966.20000
BORING NO.	URS-2

Day Environmental, Inc.
2144 Brighton-Henrietta T.L. Rd.
Rochester, New York 14623
(716) 292-1090

BORING NUMBER: MW-5

Project: Mt. Hope Avenue, Rochester, New York
Project No: 2395S-00
DAY Representative: Dennis M. Peck
Boring Location: See Site Plan
Drilling Contractor: Nothnagle Drilling
Ground Surface Elevation: NA
Datum: NA
Drilling Rig: CME-75
Start Date: 8/30/00
Completion Date: 8/30/00
Sampling Method: Split Spoon
Borehole Diameter: 8"
Borehole Depth: 18 feet
Completion Method: 2" PVC Well
Water Level:

Depth (feet)	Blows per 0.5'	Number	Depth (feet)	% Recovery	N-Value or RQD %	Peak PID Reading (ppm)	Well Installation Log	Sample Description
0–2	2 4 7 18	S-1	0-2	30	11	1.1		Grass and topsoil. / Brown Silt, trace roots, moist.
2–4	20 12 9 9	S-2	2-4	50	21	2.1		... Tan SILT, little fine Sand, moist.
4–6	3 17 18 26	S-3	4-6	40	35	1.1		... SILT, some Gravel, moist.
6–8	27 29 30 23	S-4	6-8	40	59	1.2		... some Rock Fragments.
8–10	5 5 5 5	S-5	8-10	40	10	0.6		... Gray fine SAND, trace Silt, trace Gravel, (GLACIAL TILL), wet.
10–12	6 15 15 17	S-6	10-12	80	30	0.5		... fine SAND and SILT, trace Gravel, very compact.
12–14	9 13 21 22	S-7	12-14	50	34	0.5		Reddish Brown Silty CLAY, damp.
14–16	11 22 24 22	S-8	14-16	50	46	0.7		... Gray SILT, damp.
16–18	24 26 36 40	S-9	16-18	80	62			... fine SAND and SILT, trace Clay, wet. / Auger Refusal.
18–20								BOH at 18'.

File: 2395SMW5.log

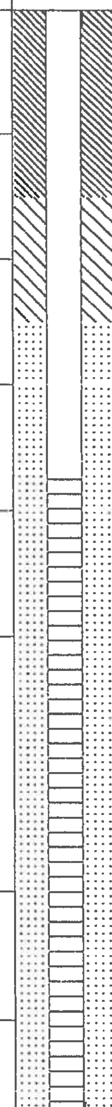
Day Environmental, Inc.
2144 Brighton-Henrietta T.L. Rd.
Rochester, New York 14623
(716) 292-1090

BORING NUMBER: MW-6

Project: Mt. Hope Avenue, Rochester, New York
DAY Representative: Dennis M. Peck
Drilling Contractor: Nothnagle Drilling
Drilling Rig: CME-75
Sampling Method: Split Spoon
Completion Method: 2" PVC Monitoring Well

Project No: 2395S-00
Boring Location: See Site Plan
Ground Surface Elevation: NA **Datum:** NA
Start Date: 8/30/00 **Completion Date:** 8/30/00
Borehole Diameter: 8" **Borehole Depth:** 18 feet
Water Level:

Depth (feet)	Blows per 0.5'	Number	Depth (feet)	% Recovery	N-Value or RQD %	Peak PID Reading (ppm)	Well Installation Log	Sample Description
0-2	16 13 14 18	S-1	0-2	20	27	2.0		Asphalt and Stone Road Base. Silt and Gravel (FILL).
2-4	18 10 7 12	S-2	2-4	0	17	NA		Note: No Recovery.
4-6	24 19 11 9	S-3	4-6	20	30	6.2		... slight petroleum odor (oily).
6-8	5 3 5 15	S-4	6-8	20	8	11.0		... Silt, Sand and Gravel, moist (FILL).
8-10	16 22 29 33	S-5	8-10		51	10.1		... Sand, some Gravel.
10-14								Note: Driller broke split spoon down hole. No samples 10'-14'.
14-16	7 24 27 17	S-6	14-16	70	51	1.1		Gray fine to medium SAND, trace Gravel, wet.
16-18	17 17 18 20	S-7	16-18	70	35	0.9		Medium to Coarse SAND, some Gravel, wet. Auger Refusal.
18-20								BOH at 18'.



Day Environmental, Inc.
2144 Brighton-Henrietta T.L. Rd.
Rochester, New York 14623
(716) 292-1090

BORING NUMBER: MW-8

Project: Mt. Hope Avenue, Rochester, New York
DAY Representative: Dennis M. Peck
Drilling Contractor: Nothnagle Drilling
Drilling Rig: CME-75
Sampling Method: Split Spoon
Completion Method: 2" PVC Monitoring Well

Project No: 2395S-00
Boring Location: See Site Plan
Ground Surface Elevation: NA **Datum:** NA
Start Date: 8/31/00 **Completion Date:** 8/31/00
Borehole Diameter: 8" **Borehole Depth:** 18.9 feet
Water Level:

Depth (feet)	Blows per 0.5'	Number	Depth (feet)	% Recovery	N-Value or RQD %	Peak PID Reading (ppm)	Well Installation Log	Sample Description
1	2 9 13 1	S-1	0-2	60	22	0.7		Grass and topsoil. Silt and Gravel, little Cinders, trace Bricks, moist.
2								
3	11 11 13	S-2	2-4	60	24	1.1		
4								
5	5 6 6 7	S-3	4-6	50	12	0.8		Tan SILT, little Clay, moist.
6								
7	7 5 5 3	S-4	6-8	50	10	0.5		
8								
9	2 2 4 4	S-5	8-10	20	6	0.9		
10								
11	2 4 4 7	S-6	10-12	60	8	0.4		Gray fine SAND and SILT, little Clay, trace Gravel (GLACIAL TILL), wet.
12								
13	11 22 15 19	S-7	12-14	70	37	0.4		... medium Sand lenses.
14								
15	3 7 12 20	S-8	14-16	60	19	0.5		... Reddish Gray SILT, some Clay.
16								
17	18 20 22 100-.4	S-9	16-18	60	42	0.4		Gray Silty SAND and GRAVEL, wet.
18	33 100-.4	S-10	18-18.9					Auger Refusal.
19								BOH at 18.9'.
20								

File: 2395SMW8.log

APPENDIX F

Low-Flow Groundwater Purging and Sampling Log

DAY ENVIRONMENTAL, INC.

LOW-FLOW GROUNDWATER PURGING AND SAMPLING LOG

WELL ~

SECTION 1 - SITE AND WELL INFORMATION

SITE LOCATION 205-405 Mt. Hope Avenue, Rochester, NY **JOB #** NYSDEC Site Number C828125

PROJECT NAME: Erie Harbor **DATE:** ______

SAMPLE COLLECTOR(S): ______ **WEATHER:** ______

PID READING IN WELL HEADSPACE (PPM): ______ **MEASURING POINT:** ______

CASING TYPE: PVC **WELL DIAMETER (INCHES):** ______

SCREENED INTERVAL [FT]: ______ **INITIAL WATER LEVEL (SWL) [FT]:** SWL / Date Measured ______ / ______

WELL DEPTH [FT]: ______ **DEPTH OF PUMP INTAKE [FT]:** ______
(Do NOT Measure Well depth Prior To Purging And Sampling)

LNAPL: ______ **DNAPL:** ______ **OTHER OBSERVATIONS:** ______

SECTION 2 – SAMPLING EQUIPMENT

CONTROL BOX: QED ~ **TUBING TYPE:** 1/4" Water , 1/8" Air

WATER QUALITY METER: Horiba U-22 **WATER LEVEL METER:** ______

PUMP TYPE: ¾" Bladder **PURGE GAS:** Air

CONTROL BOX DISCHARGE RATE: ______ **CONTROL BOX REFILL RATE:** ______

STABILIZED PUMP RATE (ml/min): ______ **STABILIZED DRAWDOWN WATER LEVEL [FT]:** ______

SECTION 3 – WATER QUALITY DATA MONITORING

Time	Pumping Rate (ml/min)	Water Level (ft)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Conductivity (mS/cm)	pH	Temp. (C^0)	Total Vol. Pumped (ml)

SAMPLE OBSERVATIONS: ~

SECTION 4 - SAMPLE IDENTIFICATION AND ANALYTICAL LABORATORY PARAMETERS

SAMPLE ID #	DATE / TIME	SAMPLING METHOD	ANALYTICAL SCAN(S)
		Bladder Pump	

APPENDIX G

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

This project-specific Quality Assurance Project Plan (QAPP) was prepared in accordance with Section 2.2 of the New York State Department of Environmental Conservation (NYSDEC) draft DER-10 document for NYSDEC Site ID C828125 (Site). The QAPP provides quality assurance/quality control (QA/QC) protocols and guidance that are to be followed when implementing the Site Management Plan (SMP) for the Site to ensure that data of a known and acceptable precision and accuracy are generated. The QAPP also provides a summary of the remedial project, identifies personnel responsibilities, and provides procedures to be used during sampling of environmental media, other field activities, and the analytical laboratory testing of samples. The components of the QAPP are provided herein.

1.0 Project Scope and Project Goals

The QAPP applies to the aspects of the project associated with the collection of field data, the collection and analytical laboratory testing of field samples and QA/QC samples, and the evaluation of the quality of the data that is generated. Groundwater monitoring will be conducted for an anticipated period of up to five years that involves analytical laboratory testing of groundwater samples and the collection of groundwater quality measurements.

2.0 Project/Task Organization

Project organization and tentative personnel to implement the work are outlined in this section of the QAPP.

<u>Principal in Charge</u>

The Principal in Charge is responsible for review of project documents and ensuring the project is completed in accordance with relative work plans. Mr. David D. Day, P.E., a Day Environmental, Inc. (DAY) representative, will serve as the Principle-in-Charge on this project

<u>Project Manager</u>

The Project Manager has the overall responsibility for implementing the project and ensuring that the project meets the objectives and quality standards as presented in this QAPP. Mr. Jeffrey A. Danzinger, a DAY representative, will serve as the Project Manager on this project, and will serve as the primary point of contact and control for the project.

<u>Quality Assurance Officer</u>

The Quality Assurance Officer is responsible for QA/QC on this project. The Quality Assurance Officer's responsibilities on this project are not as a project manager or task manager involved with project productivity or profitability as job performance criteria. Mr. Bart Kline, P.E., a DAY representative, will serve as the Quality Assurance Officer on this project. The Quality Assurance Officer may conduct audits of the operations at the site to ensure that work is being performed in accordance with the QAPP.

Technical Staff, Subconsultants and Subcontractors

DAY's technical staff for this project consist of experienced professionals (e.g., professional engineers, engineers-in-training, scientists, technicians, etc.) that possess the qualifications necessary to effectively and efficiently complete the project tasks. The technical staff will be used to gather and analyze data, prepare various project documentation, etc. Subconsultants and subcontractors used on this project will consist of firms and companies with experience in the services to be provided.

Analytical Laboratory

It is anticipated that Mitkem Laboratories, a Division of Spectrum Analytical, Inc., with facilities at 175 Metro Center Boulevard, Warwick, Rhode Island will be retained to complete the required analytical laboratory testing of samples as part of this project. Mitkem is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory (ELAP ID11522).

Dr. Kin S. Chiu is the Laboratory Director for Mitkem. The laboratory director is responsible for analytical work and works in conjunction with the Laboratory Manager and QA unit regarding QA and chain-of-custody requirements.

Ms. Agnes Huntley of Mitkem will act as the Laboratory Manager on this remediation project. The Laboratory Manager will report to the laboratory director and work in conjunction with the laboratory QA unit regarding QA elements of specific sample analyses tasks.

3.0 Sampling Procedures

This section of the QAPP provides the protocols for installation of monitoring wells, well development, and collection of groundwater samples.

Installation of Groundwater Monitoring Wells

A subcontractor will be retained to provide vehicle-mounted Geoprobe Systems Model 6000 series or equivalent direct-push soil sampling equipment to advance test borings for the subsequent installation of groundwater monitoring wells. However, if it is determined in the field that such equipment cannot adequately be advanced through the existing overburden soils/fill, then the NYSDEC will be consulted to approve any modifications to the drilling program and installation of associated wells.

Based on the results of the previous remedial investigation, it is anticipated that the test borings for the wells will be advanced to depths up to approximately 20 feet below the ground surface. Sampling equipment will be used to collect soil samples in two-foot or four-foot intervals throughout the entire depth of the test borings. The soil samples will be collected in new disposable plastic liners. The soil samples will be collected ahead of 4.25-inch inner diameter hollow stem augers. The soil sampling equipment and hollow stem auger equipment will be advanced to equipment refusal (i.e., inferred top of bedrock).

The recovered soil/fill samples will be visually examined by a DAY representative for evidence of suspect contamination (e.g., staining, unusual odors) and screened with a PID. Portions of the samples will be placed in containers for possible analytical laboratory testing. Different portions of the soil samples will be placed in sealable Ziploc®-type plastic baggies, and will be field screened the same day the samples are collected. The sample will be agitated and homogenized for at least 30 seconds and allowed to equilibrate for at least three minutes. The ambient headspace air inside the baggie above the soil sample will be screened for total VOC vapors with a RAE Systems MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent). The sampling port for the PID will be placed in the ambient air headspace inside the bag by opening a corner of the "locked" portion of the bag. The PID will monitor air inside the baggie for a period of at least 15 seconds and the peak readings measured will be recorded on a log sheet or log book.

Following the completion of drilling, a Schedule 40 polyvinyl chloride (PVC) monitoring well will be constructed within each completed test boring. Each monitoring well will consist of a pre-cleaned two-inch inner diameter, threaded, flush-jointed, five-foot to ten-foot long No. 10 slot screen that is attached to solid riser casing that will extend from the top of the screened section to the ground surface. Each well screen will be installed to intercept the top of the uppermost water-bearing unit. A washed and graded sand pack surrounding the screen and extending up to one foot below it and about one to two feet above it will be placed in the annulus. A minimum two-foot bentonite seal will be placed above the sand pack and the remaining annulus will be filled with cement/bentonite grout. A steel protective casing with locking cap, or flush-mounted curb box with bolted cover will be placed over each well and cemented in place, and a concrete seal will be installed at the ground surface.

Pertinent information will be recorded on test boring logs and well construction diagrams, which will include:

- Date, boring/well identification, and project identification;
- Name of individual developing the log;
- Name of drilling contractor;
- Drill make and model, auger size, and sampling method;
- Identification of alternative drilling methods used;
- Depths recorded in feet and fractions thereof (tenths of inches) referenced to ground surface.
- The length of the sample interval and the percentage of the sample recovered.
- The depth of the first encountered water table, along with the method of determination, referenced to ground surface.
- Drilling and borehole characteristics;
- Sequential stratigraphic boundaries;
- Well specifications (materials; screened interval; amount of Portland cement, bentonite and water used to mix grout; etc.);

- Initial PID screening results of soil/fill samples, and/or PID screening results of ambient headspace air above selected samples; and
- Well elevation surveyed using the same datum as existing wells.

Soil/fill cuttings, disposable materials, and decontamination water will be placed in New York State Department of Transportation (NYSDOT)-approved drums that will be characterized and disposed off-site in accordance with applicable regulations.

Well Development

At least one week following installation, new groundwater monitoring wells will be developed by utilizing either a new dedicated disposable bailer with dedicated cord and/or a pump and new dedicated disposable tubing. No fluids will be added to the wells during development, and non-dedicated well development equipment will be decontaminated prior to development of each well. The development procedure will be as follows:

- Obtain pre-development static water level readings with a static water level indicator or oil/water interface meter;
- Calculate water/sediment volume in the well;
- Obtain initial field water quality measurements (e.g., pH, conductance, turbidity, temperature) using a Horiba U-22 water quality meter (or similar);
- Select development method and set up equipment depending on method used;
- Alternate water agitation methods (e.g., moving a bailer or pump tubing up and down inside the screened interval) and water removal methods (e.g., pumping or bailing) in order to suspend and remove solids from the well;
- Obtain field water quality measurements using a Horiba U-22 water quality meter (or similar) for every one to five gallons of water removed. Record water quantities and rates removed;
- Stop development when water quality criteria listed below have been met;
- Obtain post-development water level readings using a Horiba U-22 water quality meter (or similar); and
- Document development procedures, measurements, quantities, etc.

To the extent feasible, development will continue until the following criteria are achieved:

- Water is clear and free of sediment and turbidity is less than 50 nephelometric turbidity units (NTUs);
- Monitoring parameters have stabilized (i.e., parameters are $\pm$10%); and/or
- A minimum of five well volumes has been removed.

The field measurement data will be presented on Monitoring Well Development Logs.

Collection of Groundwater Samples from Monitoring Wells

Static water level measurements will be obtained from each well using an oil/water interface meter. DAY will also look for light non-aqueous phase liquid (LNAPL) by using visual observations and the oil/water interface meter at each well location. DAY will document the results of this work in the field.

Subsequent to obtaining static water level measurements and monitoring the wells for free LNAPL, the following low-flow purge and sample techniques will be used to collect a groundwater sample from each well:

- A portable bladder pump connected to new disposable polyethylene tubing will be lowered and positioned at or slightly above the mid-point of the water column within the well screen when the screened interval is set in relatively homogeneous material. When the screened interval is set in heterogeneous materials, the pump will be positioned adjacent to the zone of highest hydraulic conductivity (as defined by geologic samples). Care will be taken to install and lower the bladder pump slowly in order to minimize disturbance of the water column.

- The pump will be connected to a control box that is operated on compressed gas (nitrogen, air, etc.) and is capable of varying pumping rates. An in-line flow-through cell attached to a Horiba U-22 water quality meter (or similar equipment) will be connected to the bladder pump effluent tubing to measure water quality data.

- The pump will be started at a pumping rate of 100 ml/min or less (for pumps that can not achieve a flow rate this low, the pump will be started at the lowest pump rate possible). The water level in the well will be measured and the pump rate will be adjusted (i.e., increased or decreased) until the drawdown is stabilized. In order to establish the optimum flow-rate for purging and sampling, the water level in the well will be measured on a periodic basis (i.e., every one or two minutes) using an electronic water level meter or an oil/water interface meter. When the water level in the well has stabilized (i.e., use goal of <0.33 ft of constant drawdown), the water level measurements will be collected less frequently.

- While purging the well at the stabilized water level, water quality indicator parameters will be monitored on a three to five minute basis with the Horiba U-22 water quality meter (or similar equipment). Water quality indicator parameters will be considered stabilized when the parameter readings listed below are generally achieved after three consecutive readings:

  - pH (± 0.1);
  - specific conductance (± 3%);
  - dissolved oxygen (± 10 %);
  - oxidation-reduction potential (± 10 mV);
  - temperature (± 10%); and
  - turbidity [± 10%, when turbidity is greater than 10 nephelometric turbidity units (NTUs)]

- Following stabilization of the water quality parameters, the flow-through cell will be disconnected and a groundwater sample will be collected from the bladder pump effluent tubing. The pumping rate during sampling will remain at the established purging rate or it may be adjusted downward to minimize aeration, bubble formation, or turbulent filling of sample containers. A pumping rate below 100 ml/min will be used when collecting VOC samples.

- The procedures and equipment used during the purging and groundwater sampling, and the field measurement data obtained, will be documented in the field and recorded on Monitoring Well Sampling Logs.

During sampling, the following parameters will be measured using a water quality meter(s) and will later be presented on Monitoring Well Sampling Logs:

- Dissolved Oxygen
- Conductivity
- Oxidation/Reduction Potential (redox)
- pH
- Temperature
- Turbidity

4.0 Decontamination Procedures

In order to reduce the potential for cross-contamination of samples collected during this project, the following procedures will be implemented to ensure that the data collected (primarily the laboratory data and groundwater quality measurement) is acceptable.

It is anticipated that most of the materials used to assist in obtaining samples will be disposable one-use materials (e.g., sampling containers, bailers, rope, pump tubing, latex gloves, etc.). When equipment must be re-used (e.g., static water level indicator, oil/water interface meter, drilling equipment, etc.), it will be decontaminated by at least one of the following methods:

- Steam clean the equipment; or
- Rough wash in tap water; wash in mixture of tap water and alconox-type soap; double rinse with deionized or distilled water; and air dry and/or dry with clean paper towel.

Split-spoon samplers used during rotary drilling, Macrocore cutting shoes used during direct-push drilling, and other re-usable equipment, will be decontaminated between each use.

When deemed necessary, a temporary decontamination pad will be constructed for decontamination of equipment. Any decontamination pad will be removed following completion of associated activities. Decontamination liquids and disposable equipment and personal protective equipment will be containerized in NYSDOT-approved 55-gallon drums and left on-site until the disposal method is determined.

5.0 Operation and Calibration of On-Site Monitoring Equipment

The field personnel will be familiar with the equipment being used. Volatile vapor monitoring will be conducted using a PID. It is anticipated that a RAE Systems MiniRAE 2000 PID equipped with a 10.6 eV lamp, or equivalent, will be used during this project. The PID will be calibrated in accordance with the manufacturer's specifications using an isobutylene gas standard prior to use and as necessary during fieldwork. Measurements will be collected in accordance with the protocols outlined in the Health and Safety Plan (HASP).

Other miscellaneous field instruments that may be used during this project include:

- An electronic static water level indicator;
- A low-flow bladder pump system;
- A global positioning system (GPS);
- Survey equipment;
- An oil/water interface meter; and
- A Horiba U-22 water quality meter, or similar.

These meters will be calibrated, operated, and maintained in accordance with the manufacturer's recommendations.

Mitkem's preventative maintenance procedures and calibration procedures for laboratory equipment are provided in its Quality Assurance Plan (QAP) included in Attachment 1.

6.0 Sample Handling and Custody Requirements

During sampling activities, personnel will wear disposable latex or nitrile gloves. Between collection of samples, personnel performing the sampling will discard used latex gloves and put on new gloves to preclude cross-contamination between samples. As few personnel as possible will handle samples or be in charge of their custody prior to shipment to the analytical laboratory.

New laboratory-grade sample containers will be used to collect soil and groundwater samples. Sufficient volume (i.e., as specified by the analytical laboratory and on Tables 7.1 and 7.2 of Mitkem's QAP included in Attachment 1) will be collected to ensure that the laboratory has adequate sample to perform the specified analyses.

Samples will be preserved as specified by the analytical laboratory for the type of parameters and matrices being tested. Tables 7.1 and 7.2 of Mitkem's QAP included in Attachment 1 provides sample preservation requirements. Sample holding times and preservation protocols will be adhered to during this project in accordance with the requirements that are also presented on Mitkem's Tables 7.1 and 7.2.

Chain-Of-Custody

Samples that are collected for subsequent testing as part of this project will be handled using chain-of-custody control. Chain-of-custody documentation will accompany samples from their inception to their analysis, and copies of chain-of-custody documentation will be included with the laboratory's report. The chain-of-custody will include the date and time the sample was collected, the sample identity and sampling location, the requested analysis, and any request for accelerated turnaround time.

Sample Labels

Sample labels for field samples and QC samples with adhesive backing will be placed on sample containers in order to identify the sample. Sample information will be clearly written on the sample labels using waterproof ink. Sufficient sample information will be provided on the label to allow for cross-reference with the field sampling records or sample logbook.

The following information will be provided on each sample label:

Name of company;

Initials of sampler;

Date and time of collection;

Sample identification;

Intended analyses; and

Preservation required.

Custody Seals

Custody seals are preprinted adhesive-backed seals that are designed to break if disturbed. Seals will be signed and dated before being placed on the shipping cooler. Seals will be placed on one or more location on each shipping cooler as necessary to ensure security. Shipping tape will be placed over the seals on the coolers to ensure that the seals are not accidentally broken during shipment. Sample receipt personnel at the laboratory will check and document whether the seals on the shipping coolers are intact when received.

Sample Identification

The following format will be used on the labels affixed to sample containers to identify samples:

Each sample will be numbered starting at 001, and continue in succession (i.e., 001, 002, 003, etc.). The sample test location will also be provided after the sample number using the following test location designations:

DAYMW-	Existing or new monitoring well location
MW-	Existing monitoring well location
MW-URS-	Existing monitoring well location
TBxx/xx/xx-	Trip Blank with day/month/year

FBxx/xx/xx- Field Blank (equipment rinsate) with day/month/year

As an example, assuming the first project sample is a groundwater sample collected from monitoring well DAWMW-01, the sample will be designated as 001/DAYMW-01.

Transportation of Samples

Samples will be handled, packaged and shipped in accordance with applicable regulations, and in a manner that does not diminish their quality or integrity. Samples will be delivered to the laboratory no later than 48 hours from the day of collection.

7.0 Analytical Quality Assurance/Quality Control

Analytical laboratory testing will be completed by Mitkem (NYSDOH ELAP ID #11522). The analytical laboratory test results for post-excavation soil/fill samples and groundwater samples will be reported in NYSDEC Analytical Services Protocol (ASP) Category B deliverable reports. Analytical laboratory test results for soil samples will be reported on a dry-weight basis. Mitkem will analyze the samples using the lowest practical quantitation limits (PQLs) possible.

Mitkem will provide internal QA/QC checks that are required by NYSDEC ASP and/or United States Environmental Protection Agency (USEPA) Contract Laboratory Protocol (CLP) protocol, such as analyses performed, spike blanks, internal standards, surrogate samples, calibration standards, and reference standards. Laboratory reports will be reviewed by Mitkem as outlined in its 2008 QAP that is included in Attachment 1, and also by the Quality Assurance Officer.

Laboratory results will be compared to data quality indicators in accordance with Mitkem's QAP included in Attachment 1 and NYSDEC ASP. Data quality indicators include: precision, accuracy, representation, completeness, and comparability.

The analytical methods to be used for each type of sample and sample matrix are identified on Table 1 included in Attachment 2. These exclude analytical methods required by regulated landfill facilities or Monroe County Pure Waters (MCPW) for the purposes of waste disposal. As shown, sample methods include the following:

- Target compound list (TCL) VOCs including tentatively identified compounds (TICs) using NYSDEC ASP Method OLM04.3; and
- TCL semi-volatile organic compounds (SVOCs) including TICs using NYSDEC ASP Method OLM04.3.
- Target analyte list (TAL) metals using NYSDEC ASP Method ILM04.1.
- Chemical Oxygen Demand (COD) using Standard Method 5220
- Alkalinity (calcium carbonate) using Standard Method 2320 W
- Major Anions using EPA Methods E300IC W, SW7470A, and SW6010B W
- Major Cations using EPA Methods E300IC W, SW7470A, and SW6010B W

In order to provide control over the collection, analysis, review, and interpretation of analytical laboratory data, the following QA/QC samples will be included as part of this project (refer to Table 1 in Attachment 2):

- During the groundwater monitoring, one trip blank will be included per 20 liquid samples, or per shipment if less than 20 samples, when the shipment contains liquid field samples (i.e., groundwater samples) that are to be analyzed by Mitkem for VOCs. These trip blanks will be analyzed for VOCs.

- One matrix spike/matrix spike duplicate (MS/MSD) will be analyzed during each performance groundwater sampling event for each 20 samples of each matrix that are shipped within a seven-day period. Specific parameters that MS/MSD samples will be tested for by Mitkem will be dependent upon the test parameters of the samples that are being analyzed.

- One field blank (i.e., rinsate sample) will be collected from reusable groundwater sampling equipment for each sampling event of 20 samples, or per shipment if less than 20 samples. The field blanks will be tested for the test parameters of the samples that are being analyzed by Mitkem. It is anticipated that a field blank will be collected during at least one performance groundwater sampling event from up to 12 monitoring wells.

Data Usability Summary Report

Data usability summary reports (DUSRs) will be completed on some of the analytical laboratory data that is generated as part of the scope of work in SMP, to the extent required by the NYSDEC (e.g., analytical laboratory results for one or more groundwater monitoring event). The DUSR will be conducted in accordance with the provisions set forth in Appendix 2B of the Draft DER-10 Technical Guidance for Site Investigation and Remediation dated December 25, 2002. The findings of the DUSR will be incorporated in the corresponding Periodic Review Report (PRR). DUSRs will be completed by a qualified entity or individual that is approved by the NYSDEC.

Reporting

Analytical and QC data will be included in the PRR. The PRR will summarize the remedial work and provide evaluation of the data that is generated, including the validity of the results in the context of QA/QC procedures.

8.0 Record Keeping and Data Management

DAY will document project activities in a bound field book on a daily basis. Information that will be recorded in the field book will include:

- Dates and time work is performed;
- Details on work being performed;
- Details on field equipment being used;

- Visual and olfactory observations during field activities;
- Field meter measurements collected during monitoring activities;
- Sampling locations and depths;
- Measurements of sample locations, and test locations, excavations, etc.;
- Personnel and equipment on-site;
- Weather conditions; and
- Other pertinent information as warranted.

Additionally, DAY will record information from test locations on designated logs (e.g., boring logs, well construction diagrams, etc.). Well development data and well sampling data will also be presented on designated logs.

The analytical data will be reported as electronic data deliverables (EDDs) and as hard copies. A differential GPS, swing ties from existing surveyed site structures, and/or a licensed surveyor will be used to collect spatial data. The spatial data will be plotted using integrated geographic information system (GIS) and/or computer-aided design (CAD) mapping. Electronic and hard copy files will be maintained by DAY.

ATTACHMENT 1

Mitkem Quality Assurance Plan (QAP)

MITKEM LABORATORIES

A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

Mitkem Laboratories,
A Division of Spectrum Analytical, Inc.

QUALITY ASSURANCE PLAN
2008

Approved By:

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QA/QC Director

2/26/08
Date

Kin Chiu
Laboratory Technical Director

3/5/08
Date

Yihai Ding
Operations Manager

3/10/08
Date

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3.0 INTRODUCTION

Mitkem Laboratories (MITKEM) is an environmental testing laboratory dedicated to providing high quality analytical data and exceptional customer service. MITKEM's senior managers have over 60 years combined experience in the industry and the company's highly qualified laboratory staff includes some of the most accomplished business and technical people in the field. These include our laboratory director Dr. Kin Chiu. Dr. Chiu is a MIT-trained mass spectroscopist with over 25 years experience using GC/MS, HPLC and GC technology. Dr. Chiu is involved in daily lab operations and shares his expertise with the MITKEM staff and our customers.

MITKEM's offices and laboratories are located in Warwick, Rhode Island. The laboratories occupy approximately 12,500 square feet.

MITKEM specializes in performing laboratory analyses using the newest US EPA Contract Laboratory Program (CLP) methods, as well as providing CLP-format data reports for virtually any test we perform. MITKEM provides CLP-format reporting for EPA CLP, SW-846, MCAWW and Standard Methods analyses. Much of this work is performed by the laboratory under Department of Defense Quality Systems Manual guidelines. MITKEM has the flexibility to provide project-specific custom method modifications to meet the needs of a unique client or analytical requirement.

MITKEM has participated in numerous environmental laboratory programs for both state and federal agencies including: the United States Navy, the United States Army Corps of Engineers, and the Air Force Center for Environmental Excellence. In addition, MITKEM is currently providing laboratory services under the United States Environmental Protection Agency Contract Laboratory Program. MITKEM has been a contractor to the EPA under the CLP program continuously for over 12 years.

MITKEM is a Division of Spectrum Analytical, Inc. of Agawam, Massachusetts. Spectrum is an environmental laboratory company providing analyses of soil, water and air samples for a wide variety of private and government clients. Spectrum specializes in providing rapid turnaround data reports meeting the specific requirements of several Northeastern States, particularly for large volume programs.

This Quality Assurance Plan (QAP) describes the policies, organization, objectives, quality control activities. It also specifies quality assurance functions employed at MITKEM and demonstrates MITKEM's dedication to the production of accurate, consistent data of known quality. This QAP is developed by following the guidelines discussed in the EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, EPA QA/R-5, Final, March 2001 and the National Environmental Laboratory Accreditation Conference (NELAC) standards, June 5, 2003 (Effective July 1, 2003).

4.0 QUALITY ASSURANCE POLICY STATEMENT

MITKEM is firmly committed to the production of valid data of known quality through the use of analytical measurements that are accurate, reproducible and complete. To ensure the production of such data, MITKEM has developed a comprehensive Quality Assurance/Quality Control Program that operates throughout the entire organization.

MITKEM Management considers Quality Assurance/Quality Control to be of the highest importance in the success of its Analytical Testing Laboratory and therefore fully supports the staff in the implementation and maintenance of a sound and thorough Quality Assurance Program.

MITKEM's corporate success is based on its participation in the most rigorous and quality-focused environmental testing programs, such as the EPA Contract Laboratory Program, US Department of Defense programs, NELAC, and other nationwide and state-specific certification and approval programs. These programs require consistent application of the QA/QC procedures described in this document. MITKEM's ability to demonstrate and document that analyses were performed in this manner is one of the foundations of its business. The other foundation of its business is to provide superior levels of customer service, above and beyond the norm for laboratories performing at this level of quality.

MITKEM's approach to customer service is to aggressively meet or exceed customer expectations, particularly in terms of turnaround time for results. While the production of rapid turnaround time data may require MITKEM employees to "go the extra mile" for the customer, without quality, the data are useless. MITKEM constantly strives to manage its business to rapidly provide data to meet all the requirements of its quality program.

- MITKEM management works to insure: that employees understand the primary importance of quality in its day to day operations,
- that employees will not be subjected to pressure to sacrifice quality for turnaround, financial or other considerations,
- that employees understand the importance of their ethical responsibilities in terms of data manipulation, falsification or other illegal or improper actions,
- that the company avoids involvement in activities that diminish its competence, impartiality, judgment or operational integrity.
- that employees maintain all client information in a confidential manner, and
- that employees understand that any short-term gain realized by disregarding the QA/QC program will be more than wasted by the serious penalties for these actions.
- That the laboratory has the technical personnel to identify occurrences of departure from the quality system and to initiate actions to prevent or minimize such departures.

All employees receive training in these issues as part of the initial orientation process, and are required to acknowledge that they understand their responsibilities in these areas.

These issues are also discussed among all laboratory staff at company meetings and re-training sessions. The QA Officer, Technical Director and other senior company management are readily available to all staff through their daily presence, "open door" policy and approachable manner. This allows any employee to readily discuss any questions, concerns or issues that may occur.

Quality Control is defined as an organized system of activities whose purpose is to demonstrate that quality data are being produced through documentation. Quality Assurance is more broadly defined as a system of activities designed to ensure that the quality control program is actually effective in producing data of the desired quality.

Quality Control is included as part of Quality Assurance. In supporting government regulatory and enforcement proceedings, a high degree of attention to quality is essential. Thorough application of quality control principles and routine quality assurance audits is required.

The basic components of the MITKEM QA/QC Program are control, evaluation and correction.

Control ensures the proper functioning of analytical systems through the implementation of an orderly and well-planned series of positive measures taken prior to and during the course of analysis including quality control practices, routine maintenance and calibration of instruments, and frequent validation of standards.

Evaluation involves the assessment of data generated during the control process. For example, precision and accuracy are determined from the results of duplicates and spikes, and other check samples. Long-term evaluation measures include performance and systems audit conducted by regulatory agencies, as well as the MITKEM quality assurance group.

Correction includes the investigation, diagnosis and resolution of any problems detected in an analytical system. Proper functioning of the system may be restored through method re-evaluation, analysis of additional check samples, trouble-shooting and repair of instrumentation or examination and comparison with historical data. Corrective actions are documented and reviewed to make sure they are implemented.

Certain situations may occur when there are occasional departures or exceptions from documented policies and procedures or standard specifications due to client or project specific protocols, unusual sample matrix, or special non-target analyte or non-routine analyses. MITKEM's policy is to fully document all such procedures and their associated QC, and notify the client or regulatory agency. If the situation is to continue, a Standard Operating Procedure will be written and implemented.

5.0 QUALITY ASSURANCE MANAGEMENT, ORGANIZATION AND RESPONSIBILITY

Quality Assurance at MITKEM is a company-wide function that depend on:

(1) cooperative working relationships at all levels within the laboratory and

(2) multi-level review through all working levels of responsibility.

Responsibilities for QA/QC functions begin with the bench scientist and extend to the chief executive officer.

The primary level of quality assurance resides with the bench scientist. After completion of the documented training program, his/her responsibilities include:

- complying with all aspects of formally approved analytical methods and SOPs,
- carefully documenting each step of the analytical process,
- conscientiously obtaining peer review as required,
- promptly alerting laboratory supervisors and/or QA staff members to problems or anomalies that may adversely impact data quality, and
- participation in corrective actions as directed by the laboratory supervisor or QA Director.

The supervisor of each laboratory is responsible for ensuring thorough oversight of the quality of the data generated by the bench scientists. The laboratory supervisor implements and monitors the specific QC protocols and QA programs with the laboratory to ensure a continuous flow of data meeting all control protocols and MITKEM QA requirements. The laboratory supervisor's responsibilities include providing the bench chemist with adequate resources to achieve the desired quality of performance.

The MITKEM organizational structure is shown in the Organization Chart (Figure 5.1).

MITKEM's lines of communication flow upward on the Organizational Chart. MITKEM's open door policy allows all employees access to anyone on the organization chart. If an employee has an issue with his/her immediate supervisor, he or she may, at any time, speak with someone in management higher up in the Organizational Chart.

Implementation of the entire Quality Assurance Program is the responsibility of the QA Director. While interacting on a daily basis with laboratory staff members, the QA Director remains independent of the laboratories and reports directly to the Laboratory Technical Director. The QA Director evaluates laboratory compliance with respect to the QA program through informal and formal systems and performance audits as described in Section 13.0. Remedial action, to alleviate any detected problems, is suggested and/or discussed with the appropriate parties and implemented when necessary.

With input from the appropriate staff members, the QA Director writes, edits and archives QA Plans, QC protocols, and Standard Operating Procedures (SOPs) in accordance with US EPA approved methodologies, and GLP procedures. If site-specific or project-specific QA Plans and/or QC protocols are required, these will be generated as needed.

An essential element of the QA program is record keeping and archiving all information pertaining to quality assurance including QA/QC data, pre-award check sample results, performance test sample results, scores, and follow-up; state certifications of the laboratory; external and internal audits with resolution of EPA and other audit team comments, recommendations and reports. The QA Director also plays an important role in the corrective action mechanism described in Section 16.

In addition, the QA Director works with scientists and management to continuously upgrade procedures and systems to improve the laboratory's efficiency and data quality.

Ultimately, the success of the QA program depends on the cooperation and support of the entire organization. MITKEM's most valuable resource is its staff of dedicated professionals who take personal pride in the quality of their performance.

Laboratory management works to ensure the competence of all who operate equipment, perform tests and calibrations, evaluate data and sign reports. When employees are in training, appropriate supervision will be provided until the employee has demonstrated the appropriate level of understanding, training, and skill.

<u>MITKEM's personnel job descriptions:</u>

Responsibilities of each staff area in the laboratory include:

Bench Scientist / Preparation Laboratory Areas:

- Analysis of samples through compliance with all aspects of formally approved analytical methods and laboratory SOPs.
- Carefully documenting each step of the analytical process.
- Noting in the appropriate logbook area any unusual occurrences or sample matrix problems.
- Conscientiously obtaining peer review as required.
- Promptly alerting laboratory supervisors and/or QA staff members to problems or anomalies. that may adversely impact data quality.
- Routine housekeeping duties for their laboratory area.

Bench Scientist / Instrument Laboratory Areas:

- Analysis of samples through compliance with all aspects of formally approved analytical methods and laboratory SOPs.
- Routine maintenance of instrumentation.
- Preparation of analytical standards and spiking solutions which are documented and traceable to their original source.
- Carefully documenting each step of the analytical process.
- Noting in the appropriate logbook area any unusual occurrences or sample matrix problems.
- Conscientiously obtaining peer and supervisor review as required.
- Promptly alerting laboratory supervisors and/or QA staff members to problems or anomalies that may adversely impact data quality.
- Documenting the initial review of analysis data to determine compliance with established company QA/QC protocols and any project-specific QA criteria, and noting any unusual occurrences or discrepancies on the data review checklist.
- Routine housekeeping duties for their laboratory area.

Data Reporting Staff:

- Assemble CLP-format data reports by organizing data report forms and raw data in proper order to allow for technical data review.
- Enter data into LIMS or other data reporting computer programs.
- Provide non-technical typographical review of data entered into computer systems by other individuals.
- Deliver data reports to customers by FAX or electronic mail.
- Paginate, photocopy, scan, archive MITKEM's copies of customer reports or other documentation to be retained by the laboratory.
- Ship, or organize for courier delivery, final data reports to customers.
- Assist the QA Director in management of the document control system.

Supervisor:

- Oversight of bench scientists in their laboratory areas.
- Monitors the status of all work in their laboratory area to insure compliance with holding time and turnaround time requirements.
- Training new scientists in the appropriate procedures and methods in the laboratory.
- Works with Operation Manager and the QA staff to review, revise and implement SOPs.
- Insures adequate resources to perform the needed tasks by working with administrative personnel to order needed supplies.

- Insures all supplies and reagents meet the QC requirements of their intended task prior to their use in the laboratory.
- Insures all staff are using proper safety protocols.
- Works with Operation Manager on the annual review of personnel performance.
- Interviews prospective new employees to insure they have the minimal level of qualifications, experience, education and skills necessary to perform their tasks, as well as the appropriate work ethic and social skills necessary for proper teamwork and productivity.
- Review of analytical data to insure compliance with method/SOP requirements prior to release to the client.
- Documents any non-compliance or other unusual occurrences noted during sample analysis and data review such that these can be included in the report narrative and explained to the client.

Senior Scientists:

- Review of analytical data to insure compliance with method/SOP requirements prior to release to the client.
- Documents any non-compliance or other unusual occurrences noted during sample analysis and data review such that these can be included in the report narrative and explained to the client.
- Assist Laboratory Technical Director, Operation Manager and Supervisors in other tasks as required.

Operations Manager:

- Works with Laboratory Supervisors to coordinate laboratory areas in the completion of analytical projects.
- Review of analytical data to insure compliance with method/SOP requirements prior to release to the client.
- Works with QA Director to implement new SOPs and to annually review and revise existing SOPs.
- Works with the Laboratory Technical Director ,QA Director and Laboratory Supervisors to develop and implement corrective action when needed.
- Works with management and supervisory staff to continuously improve the quality and efficiency of all company procedures.
- Assists Laboratory Supervisors in the annual review of personnel performance.
- Supervises Laboratory Supervisors to insure compliance with company QA policies and other company procedures.

Business Development Manager:

- Works with Operations Manager and Supervisors to prioritize and coordinate laboratory areas in the timely completion of analytical projects.

- Review of analytical data to insure compliance with method/SOP requirements prior to release to the client.
- Writes project report narratives to document any unusual occurrences noted during sample analysis.
- Works with management and supervisory staff to continuously improve the quality and efficiency of all company procedures.
- Works with Project Management and Data Reporting staff to continuously improve the quality and efficiency of all company procedures.
- Works with clients to insure all questions and concerns are addressed and answered.
- Assists Operation Manager and Supervisors in the annual review of personnel performance.

Project Manager:

- Works with the client to completely understand the requirements of all incoming work.
- To evaluate the client's requirements as compared to the abilities of the laboratory as stated in Mitkem's Standard Operating Procedure (SOP); Project Management, SOP 110.0023.
- Works with the Data Reporting staff to continuously improve the quality and efficiency of all company procedures.
- To communicate the customer's requirements to all laboratory staff working on the project.
- Works with the customer to determine the number and type of sample containers required for the project.
- Works with the Sample Custodian to resolve and communicate to the client any problem or discrepancies with incoming samples.
- Maintains open, responsive and continuous communication with the customer.
- Follows up with the client to assess level of satisfaction, and insure all project goals have been accomplished.

Quality Assurance Director:

- Implements the entire QA program.
- Interact on a daily basis with laboratory staff.
- Evaluates compliance with the QA program through formal and informal reviews of data and processes.
- Implements the corrective action system.
- Works with Operation Manager and Supervisors to implement new SOPs and to annually review and revise existing SOPs.
- Interfaces with certification authorities and agencies to maintain existing certifications and obtain new certifications.
- Maintains records of employee training and certification.

- Instructs laboratory personnel on ethics in the workplace.
- Oversees analytical trends that need to be evaluated and corrected.
- Oversees the implementation of MDLs and control limit studies.
- Directs both the internal and external audit programs.

Laboratory Technical Director:

- Review of analytical data to insure compliance with method/SOP requirements prior to release to the client.
- Supervises all Management, QA and Supervisory staff to insure compliance with company QA policies and other company procedures.
- Provides technical assistance to all areas of the laboratory staff.
- Works with clients to insure their understanding of complex technical issues.
- Performs final review of select analytical data to ensure compliance with method/SOP requirements prior to release to the client.
- Acts as technical consultant for chemistry related issues that arise in the lab.
- Provides assistance with instrument optimization or performance issues as needed.
- Offers input on the purchase and operation of new instrumentation.
- Trains other analysts in procedures and methodologies.

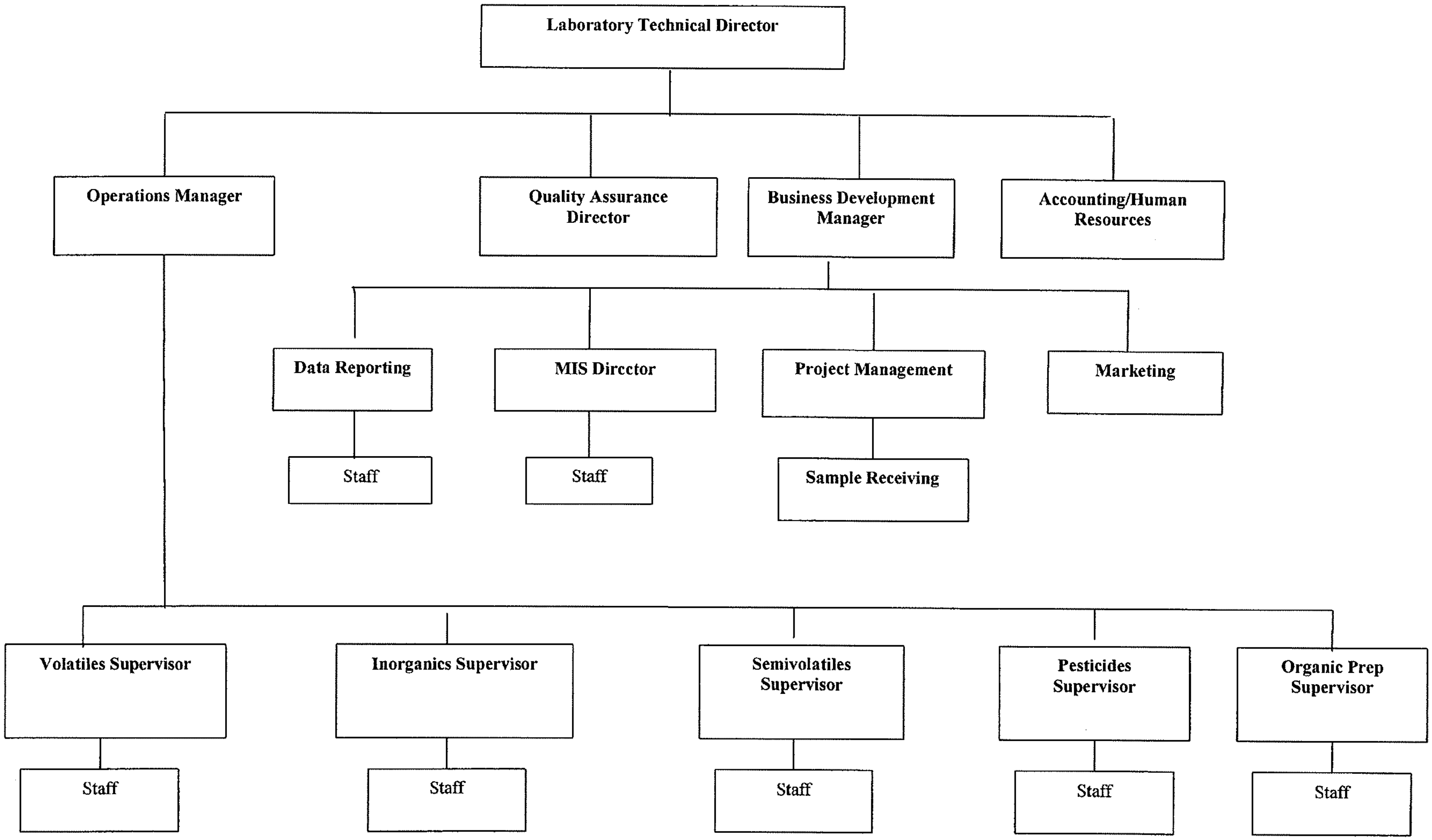
In MITKEM's organizational structure, the Laboratory Technical Director is one of the former principal owners and founders of the company. He is the ultimate authority for all chemistry-related aspects of the company. The QA Director reports directly to the Laboratory Technical Director. She has the authority within the management system to bring any issue to the highest levels of the company management and ownership, as well as to halt the release of data she believes to be questionable or suspend the performance of an analysis she believes to be unreliable. The Business Development Manager is a Vice President of the company, and works with the project management and marketing staff and with the laboratory Supervisors to prioritize and coordinate work within the laboratories.

The personnel training records are located in the QA department. All individual training is documented including new employee training, individual training, annual retraining procedures, and Health and Safety training.

Figure 5-1
MITKEM's Organizational Chart

MITKEM Laboratories

Organizational Chart



6.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA IN TERMS OF PRECISION, ACCURACY, REPRESENTATION, COMPLETENESS AND COMPARABILITY AND QA REPORTING

As part of the evaluation component of the overall QA Program, laboratory results are compared with the data quality indicators defined as follows:

- Precision: the agreement of reproducibility among individual measurements of the same property usually made under identical conditions.
- Accuracy: the degree of agreement of a measurement with the true or accepted value.
- Representation: the degree to which data accurately and precisely represent a characteristic of a population, parameter variations of a sample of a finite process condition, or of a finite environmental condition.
- Completeness: a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions.
- Comparability: an expression of the confidence with which one laboratory data set can be compared with another laboratory data set in regard to the same property and laboratory sample population.

Quality Assurance objectives may vary by project and requested parameters. The accuracy, precision, and representation of data will be functions of the origins of the sample material, the procedures used to analyze sample and generate data, and the specific sample matrices involved in each project. Quality control practices utilized in the evaluation of these data quality indicators include blanks, replicates, spikes, standards, check samples, calibrations and surrogates. The process for quantifying or assessing the above indicators for data quality is addressed in Section 15.

6.1 Precision and Accuracy:

For each parameter analyzed, the QA objectives for precision and accuracy will be determined from:

- Published historical data;
- Method validation studies;
- MITKEM experience with similar samples and/or;
- Project-specific requirements, such as those stipulated by the USEPA in the CLP protocols and control documents.

6.2 Representation:

Analytical data should represent the sample analyzed regardless of the heterogeneity of the original sample matrix. In most cases, representation is achieved by mixing the laboratory sample well before removing a portion for analysis. On occasion, multi-phase laboratory samples may require that each phase be analyzed individually and reported in relation to its proportion in the whole sample.

6.3 Completeness:

The completeness goal is 100% in all cases and includes:

- Analysis of all samples;
- Generation and analysis of all required QC samples;
- Sufficient documentation of associated calibration, tuning and standardization;
- Records of data reduction processes, including manual calculations.

While the laboratory staff is responsible for achieving the completeness objective stated above, assigning each project a specific project manager whose functions include sample management and tracking ensures completeness.

6.4 Comparability:

To assure comparability, MITKEM employs established and approved analytical methods (e.g. USEPA protocols), consistent analytical bases (dry weight, volume, etc.) and consistent reporting units (mg/Kg, µg/L, etc.). Where data from different samples must be comparable, the same sample preparation and analysis protocols are used for all of the samples of interest.

6.5 QA Reporting

General QA procedures require that an MS/MSD or DUPLICATE/MS be reported with each sample batch up to 20 samples. In addition, each batch requires a method blank (MB) and laboratory control sample (LCS).

An acceptance criterion for the MB depends upon the method criteria. In-house control limits dictate the acceptability of the LCS. A high bias LCS is considered acceptable if the analyte is not present in the samples above the reporting limit. A low bias LCS will require re-extraction (if sample volume allows) and re-analysis.

DUP, MS, and MSD recoveries and calculated RSD's are specified in the methods of analyses. Recoveries outside the limits require some form of corrective action, whether that includes a post-digestion/distillation/extraction spike, re-extraction, re-analysis and/or notification to the client in the project narrative.

Omega LIMS will flag any QA samples outside method criteria on the reporting forms. Formal written corrective action reports are required for any incident that does not meet method criteria and cannot be remedied at the laboratory. The QA Officer signs off on any corrective actions and can also track QA trends in this manner.

7.0 SAMPLING PROCEDURES

For most projects, outside sampling teams deliver or send samples to the MITKEM laboratory. When sampling by MITKEM personnel is required, the sampling team follows the sampling procedures outlined in the EPA *Test Methods for Evaluating Solid Wastes*, SW-846, 3rd Edition, or procedures found in the EPA "Handbook for Sampling and Sample Preservation of Water and Wastewater".

Appropriately prepared sample containers are supplied by MITKEM at clients' request. When required, preservatives are added to the sample containers. Tables 7-1 through 7-3 provide the MITKEM Recommended Container, Preservation Techniques and Holding Times. Additional sample volumes may be required if additional QC functions are to be performed.

Holding times for SW846, CLP Methods, Standard Methods and certain USEPA methods are different and are presented in Tables 7-1 to 7-3. Holding times for most methods are calculated from the date of sample collection. Holding times for CLP methods are calculated from the Validated Time of Sample Receipt (VTSR). It should be noted that the CLP analysis program combines chemical analyses and contract compliance procedures in one document. For laboratory analysis and contract compliance purposes, holding times are calculated from VTSR, while post-analysis data usability and validation (generally performed by the client or a third party) compares holding times to the SW-846 method holding times calculated from date of sample collection.

Representative portions of samples are taken for analysis by following Mitkem SOP 110.0039, Standard Operating Procedure for Sub-Sampling.

Table 7-1
Recommended Container, Preservation Techniques and Holding Times for SW-846 Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Volatile Organics					
Solid	8260, 5030	Amber glass jar with Teflon lining	Minimal head-space in jar	4°C	14 days
Solid [a]	8260, 5035	40mL vial or Encore with Teflon lining	5.0gram ± 0.5	4°C, unpreserved	48 hours
				DI Water -10 to –20°C	14 days
				Sodium bisulfate -10 to –20°C, 4°C	14 days
				Methanol 4°C	14 days
Aqueous	8260, 5030	40mL VOA Vials with Teflon septum	40mL	4°C HCl, pH<2	14 days
Semivolatile Organics					
Solid	3540, 3550 8270	Amber glass jar with Teflon lining	30gram	4°C	Extraction within 14 days Analysis within 40 days
Aqueous	3510, 3520 8270	Amber glass bottles with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days
Polychlorinated Biphenyls					
Solid	3540, 3550 8082	Amber glass jar with Teflon lining	30gram	4°C	Extraction within 14 days Analysis within 40 days
Aqueous	3510, 3520 8082	Amber glass bottle with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days
Organochlorine Pesticides					
Solid	3540, 3550 8081	Amber glass jar with Teflon lining	30gram	4°C	Extraction within 14 days Analysis within 40 days
Aqueous	3510, 3520 8081	Amber glass bottle with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days
Chlorinated Herbicides					
Solid	8151	Amber glass jar with Teflon lining	30gram	4°C	Extraction within 14 days Analysis within 40 days
Aqueous	8151	Amber glass bottle with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days

Table 7-1 (cont'd)

Recommended Containers, Preservation Techniques and Holding Times for SW846 Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Total Petroleum Hydrocarbons					
Gasoline Range Organics, including Maine-GRO**					
Solid	8015, 5030 ME 4.1.17	Amber glass jar With Teflon lining	Minimal head-space in jar	4°C	14 days
Solid [a]	8015, 5035	40mL vial or Encore with Teflon lining	5.0gram ± 0.5	4°C, unpreserved	48 hours
				4°C, Methanol	14days
Aqueous	8015, 5030 ME 4.1.17	40mL VOA vials With Teflon septum	40mL	4°C HCl, pH<2	14 days
Diesel Range Organics, including Maine-DRO					
Solid	3540, 3550 8015 ME 4.1.25	Amber glass jar with Teflon lining	30gram	4°C	Extraction within 14 days Analysis within 40 days
Aqueous	3510, 3520 8015 ME 4.1.25	Amber glass bottle with Teflon lining	1L	4°C H_2SO_4, pH<2	Extraction within 7 days Analysis within 40 days
Total Metals except Mercury and Chromium (VI)					
Solid	3050 6010	Amber glass jar with Teflon lining	10g	4°C	180 days
Aqueous	3005, 3010	Polyethylene bottle	100mL	HNO_3, pH<2	180 days
Chromium (VI)					
Solid	7196	Amber glass jar with Teflon lining	10g	4°C	Digestion within 30 days Analysis within 96 hours
Aqueous	7196	Polyethylene bottle	25mL	4°C	24 hours
Mercury					
Solid	7471	Amber glass jar	10g	4°C	28 days
Aqueous	7470	Polyethylene bottle	100mL	4°C HNO_3, pH<2	28 days
Cyanide					
Solid	9012	Amber glass jar with Teflon lining	10g	4°C	14 days
Aqueous	9012	Polyethylene bottle	50mL	4°C NaOH, pH≥12	14 days
Flashpoint					
Aqueous	1010	Amber glass bottle	30mL	4°C	28 days

Table 7-2

Recommended Container, Preservation Techniques and Holding Times For CLP/ASP Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Volatile Organics					
Solid	CLP/ASP	Amber glass jar with Teflon lining	Minimal head-space in jar	4°C	10 days from VTSR
Aqueous	CLP/ASP	40mL VOA vials with Teflon septum	40mL	4°C HCl, pH<2	10 days from VTSR
	CLP Low	40mL VOA vials with Teflon septum	40mL	4°C HCl, pH<2	10 days from VTSR
Semivolatile Organics					
Solid	CLP/ASP	Amber glass jar with Teflon lining	30gram	4°C	10 days from VTSR Analysis within 40 days
Aqueous	CLP/ASP	Amber glass bottle with Teflon lining	1L	4°C	5 days from VTSR Analysis within 40 days
	CLP Low	Amber glass bottle with Teflon lining	1L	4°C	5 days from VTSR Analysis within 40 days
Organochlorine Pesticide/PCB					
Solid	CLP/ASP	Amber glass jar with Teflon lining	30gram	4°C	10 days from VTSR Analysis with 40 days
Aqueous	CLP/ASP	Amber glass bottle with Teflon lining	1L	4°C	5 days from VTSR Analysis within 40 days
	CLP Low	Amber glass bottle with Teflon lining	1L	4°C	5 days from VTSR Analysis within 40 days
Cyanide					
Solid	CLP/ASP	Amber glass jar	10gram	4°C	12 days from VTSR
Aqueous	CLP/ASP	Polyethylene bottle	50mL	4°C NaOH, pH>12	12 days from VTSR
Total Metals except Mercury					
Solid	CLP/ASP	Amber glass jar	10gram	4°C	180 days from VTSR
Aqueous	CLP/ASP	Polyethylene bottle	100mL	HNO_3, pH<2	180 days from VTSR

Table 7-2 (con't)

Recommended Container, Preservation Techniques and Holding Times
For
CLP/ASP Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Mercury					
Solid	CLP/ASP	Amber glass jar	10gram	4°C	26 days from VTSR
Aqueous	CLP/ASP	Polyethylene bottle	100mL	4°C HNO_3, pH<2	26 days from VTSR

Table 7-3

Recommended Containers, Preservation Techniques and Holding Times for Other Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Volatile Organics					
Aqueous	624	40mL VOA vials with Teflon septum	40mL	4°C HCl, pH<2	14 days
Semivolatile Organics					
Aqueous	3510, 3520 625	Amber glass bottle with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days
Organochlorine Pesticide/PCB					
Aqueous	3510, 3520 608	Amber glass bottle with Teflon lining	1L	4°C	Extraction within 7 days Analysis within 40 days
EDB/DBCP					
Aqueous	504.1	40mL VOA vials with Teflon septum	35mL	4°C HCl, pH<2	28 days
MA Extractable Petroleum Hydrocarbons (EPH)					
Solid	3540, 3550 MADEP	Amber glass jar with Teflon lining	10gram	4°C	Extraction within 7 days Analysis within 40 days
Aqueous	3510, 3520 MADEP	Amber glass bottle with Teflon lining	1L	4°C HCl, pH<2	Extraction within 14 days Analysis withinn 40 days
MA Volatile Petroleum Hydrocarbons (VPH)					
Solid	MADEP	Amber glass jar with Teflon lining	10gram	4°C 10mL Methanol	14 days
Aqueous	MADEP	40mL VOA vial with Teflon lining	40mL	4°C HCl, pH<2	14 days
Oil & Grease					
Aqueous	1664	Amber glass bottle with Teflon lining	1L	4°C HCl, pH<2	28 days
Alkalinity					
Aqueous	SM2320B	Polyethylene bottle	100mL	4°C	14 days
Ammonia					
Aqueous	SM4500NH3B	Polyethylene bottle	100mL	4°C H_2SO_4, pH<2	28 days
Chloride					
Aqueous	SM4500 CL E	Polyethylene bottle	100mL	4°C	28 days

Table 7-3 (cont'd)

Recommended Containers, Preservation Techniques and Holding Times for Other Analyses

Analytes		Method	Containers	Required Volume	Preservation	Holding Times
Chloride		E300.0	Polyethylene bottle	50mL	4°C	28 days
COD	Aqueous	SM5220D	Amber VOA vial	40mL	4°C H2SO4, pH<2	28 days
Color	Aqueous	SM2120B	Polyethylene bottle	50mL	4°C	Immediate
Nitrate/Nitrite	Aqueous	E353.2	Polyethylene bottle	50mL	4°C H_2SO_4, pH<2	28 days
Nitrate/Nitrite	Aqueous	E300.0	Polyethylene bottle	50mL	4°C	48 hours
Nitrite	Aqueous	SM4500NO2B E300.0	Polyethylene bottle	50mL	4C	48 hours
Orthophosphate	Aqueous	SM4500-P, E E300.0	Polyethylene bottle	50mL	4°C	48 hours
Total phosphate	Aqueous	SM4500-P B,E	Polyethylene bottle	50mL 50mL	4°C H_2SO_4, pH<2	28 days
Phenols	Aqueous	SM5530B	glass	250mL	4°C H_2SO_4, pH<2	28 days
Sulfates	Aqueous	SM4500SO4 E E300.0	Polyethylene bottle	50mL	4°C	28 days
Sulfide Total	Aqueous	SM4500-S-D	Polyethylene bottle	50mL	4°C NaOH, pH>12 ZnAc	28 days
Reactivity	Solid	Chapter 7 SW846	Amber glass jar	10gram	4°C	28 days
	Aqueous	Chapter 7	Polyethylene bottle	250mL	4°C	28 days
Total Organic Carbon (TOC)	Solid	Lloyd Kahn Walkley-Black	Amber glass jar	10g	4°C	14 days

Table 7-3 (cont'd)

Recommended Containers, Preservation Techniques and Holding Times For Other Analyses

Analytes	Method	Containers	Required* Volume	Preservation	Holding Times
Total Organic Carbon					
Aqueous	SM5310B	40mL VOA vials	40mL	4°C HCl, pH<2	28 days
TKN					
Aqueous	SM4500Norg C	Polyethylene bottle or Amber glass bottle	50mL	4°C H_2SO_4, pH<2	28 days
Total Solids (TS)					
Aqueous	SM2540B	Polyethylene bottle	200mL	4°C	7 days
Total Dissolved Solids (TDS)					
Aqueous	SM2540C	Polyethylene bottle	200mL	4°C	7 days
Total Suspended Solids (TSS)					
Aqueous	SM2540D	Polyethylene bottle	200mL	4°C	7 days
Settleable Solids					
Aqueous	SM2540F	Polyethylene bottle	200mL	4°C	48 hours

* These represent minimum required volume. Additional sample volumes should be collected to minimize headspace loss for volatile analysis. Additional sample aliquot are also required to perform QA/QC functions (e.g. spikes, duplicates), % moisture for solid samples and sample re-analysis (if needed).

[a] For Massachusetts analyses, the Volatile Organics soil samples are preserved in Methanol in the field.

EPA SW-846 Method 5035 provides several options for preservation of soil samples for volatile organics. Certain state jurisdictions (NY for example) have not adopted these options to-date, and continue to recommend the collection of unpreserved soil sample aliquots for volatiles analysis. Mitkem's preference for low-level analysis is to collect approximately 5 grams of soil into 5mL of organic-free DI water and to preserve by freezing within 48hours of collection. A separate container with approximately 5 grams of soil into 5mL of methanol is also collected for potential medium-level analysis. A separate container of unpreserved soil also must be collected to perform percent moisture analysis.

** Maine GRO soil analysis requires a medium level methanol extraction. A 10 gram sample and 10mL methanol volume is used.

8.0 SAMPLE CUSTODY

8.1 Chain of Custody:

Samples are physical evidence collected from a facility or the environment. In hazardous waste investigations, sample data may be used as evidence in (EPA) enforcement proceedings. In support of potential litigation, laboratory chain-of-custody procedures have been established to ensure sample traceability from time of receipt through the disposal of the sample.

A sample is considered to be in the custody under the following conditions:

- It is in an authorized person's actual possession, or
- It is in an authorized person's view, after being in that person's physical possession, or
- It was in an authorized person's possession and then was locked or sealed to prevent tampering, or
- It is in a secure area.

Chain-of-custody originates as samples are collected. Chain-of-custody documentation accompanies the samples as they are moved from the field to the laboratory with shipping information and appropriate signatures indicating custody changes along the way.

Laboratory chain-of-custody is initiated as samples are received and signed for by the Sample Custodian or his/her designated representative at MITKEM. Documentation of sample location continues as samples are signed in and out of the central storage facility for analysis in the several MITKEM departments, using the Sample Tracking Forms (Fig 8.4-1). After analysis, any remaining sample is held in the central storage area to await disposal. Mitkem's policy is to hold spent samples for a period of at least thirty days from submittal of final report, unless other arrangements are agreed upon with the client.

8.2 Laboratory Security:

Samples and all data generated from the analyses of samples at MITKEM are kept within secure areas during all stages of residence, including the periods of time spent in preparation for analysis, while undergoing analysis, and while in storage.

The entire laboratory is designated as a secure area. The doors to the laboratory are under continuous surveillance, are kept locked after regular business hours and may only be accessed by key or keypad entry. Only authorized personnel are allowed to enter the secure areas. The central laboratory facility and IT office are only accessed through keypad entry. A MITKEM staff member must accompany visitors to the laboratory.

8.3 Duties and Responsibilities of Sample Custodian:

Duties and responsibilities of the Sample Custodian include:

8.3.1 Receiving samples.

8.3.2 Inspecting and documenting sample shipping containers for presence/absence and condition of:

8.3.2.1 Custody seals, locks, "evidence tape", etc.;

8.3.2.2 Container breakage and/or container integrity, including air space in aqueous samples, or proper preservation for soil samples for Volatiles analysis.

8.3.3 Recording condition of both shipping containers and sample containers (cooler temperature, bottles, jars, cans, etc.).

8.3.4 Signing documents shipped with samples (i.e. air bills, chain-of-custody record(s), Sample Management Office (SMO) Traffic Reports, etc.)

8.3.5 Verifying and recording agreement or non-agreement of information on sample documents (i.e. sample tags, chain-of-custody records, traffic reports, air bills, etc.). If there is non-agreement, recording the problems, contacting the project manager for direction, and notifying appropriate laboratory personnel. (Client's corrective action directions shall be documented in the case file.)

8.3.6 Initiating the paper work for sample analyses on laboratory documents (including establishing sample workorder files) as required for analysis or according to laboratory standard operating procedures.

8.3.7 Label samples with laboratory sample identification numbers and cross-referencing laboratory numbers to client numbers and sample tag numbers.

8.3.8 Placing samples and spent samples into appropriate storage and/or secure areas.

8.3.9 Where applicable, making sure that sample tags are removed from the sample containers and included in the workorder file.

8.3.10 Where applicable, accounting for missing tags in a memo to the file or documenting that the sample tags are actually labels attached to sample containers or were disposed of, due to suspected contamination.

8.3.11 Monitoring storage conditions for proper sample preservation such as refrigeration temperature and prevention of cross-contamination.

8.3.12 Sending shipping containers with prepared sample bottles and sample instructions to clients who request them.

8.3.13 Recording temperatures of freezers and refrigerators in the laboratories.

8.3.14 Calibrating the non-contact infrared temperature gun quarterly.

8.3.15 Disposal of samples after a specified time period determined by contract or client request.

8.4 Sample Receipt:

The Sample Custodian or his/her designated representative receives sample shipments at MITKEM. Unless the shipment is a continuation of a previous workorder, a new workorder file is started for the sample. The information is logged into the Sample Receipt Logbook (Figure 8.4-1).

The cooler is inspected for the following (if applicable) and findings are documented on the Sample Login Form (Figure 8.4-2) for USEPA CLP samples, and on the Sample Condition Form (Figure 8.4-3) for all other samples:

- Custody seal (conditions and custody number)
- Air bill (courier and air bill #)

The cooler is then opened and the following items are checked (in order). Make sure the hood is turned on when the cooler is opened.

- Chain of custody (COC) records (or traffic report). These are usually taped to the inside of the cooler cover.
- Radioactivity using the Geiger counter, which continuously monitors the receiving area for radiation
- Cooler temperature using the non-contact infrared temperature gun. Record the temperature of a temperature blank if available, using a calibrated thermometer. Record each temperature on the COC.

The Sample Custodian will perform the following:

- Remove the sample containers and arrange them in the same order as documented in the chain of custody report.
- Inspect condition of the sample containers.
- Assign laboratory sample ID and cross-reference the laboratory ID to the client ID.
- Remove tags and place in the workorder file.
- Check preservative and document in the Sample Condition Form (Figure 8.4-3) if needed. If additional preservative is needed, it is added at this time.
- Check for air bubbles in aqueous samples and for proper preservation and immersion of soil samples designated for volatile organic analysis.
- Ensure peer review occurs for proper cross-referencing and labeling of sample containers.

Any discrepancies or problems are noted in the Sample Condition Notification Form (Figure 8.4-4).

The sample custodian conveys the information to the project manager who will in turn inform the client, or may directly inform the client of the discrepancies.

Samples can be rejected at Mitkem for any of the following reasons:

1. Complete and proper documentation was not sent with the samples.
2. Sample labels cannot be identified because indelible ink was not used during the sampling procedure.
3. Hold times had already been exceeded when samples arrived at the laboratory.
4. Inadequate sample volume.
5. Potential cross-contamination has occurred among samples.
6. Samples are inadequately preserved.
7. The samples or shipping container is badly destroyed during shipping.
8. The samples are potentially radioactive.
9. The samples represent untreated fecal waste for which Mitkem employees are currently not inoculated against.

In all instances, the client is contacted initially before any action is taken at Mitkem.

The Sample Custodian signs the Sample Receipt Form and originates a file folder for the set of samples. The following forms are included in the file: the Sample Receipt Form, chain of custody records, shipping information, and an orange Sample Condition Notification Form if any problems or discrepancies need to be addressed.

When the Sample Custodian is not available to receive samples, another MITKEM staff member signs for the sample container. The time, date and name of the person receiving the container are recorded on the custody records. In addition, the cooler temperature is measured and recorded on the Sample Condition Form. The samples are then stored in the centralized walk-in refrigerator in the sample receipt area. The sample receipt area is located in the secure central storage facility of the laboratory. VOA samples are stored in the VOA analysis laboratory. The samples are officially received and documented by the Sample Custodian or designee before the next business day.

At times, samples will be sent to another lab for analysis not performed at MITKEM. These subcontracted analyses are performed by laboratories certified to perform the analyses. The use of a subcontractor laboratory is discussed with the client prior to sending samples, per Mitkem's Project Management Standard Operating Procedure.

These samples are packed to prevent breakage and stored in a cooler in the walk-in or stored in the small refrigerator in the central storage facility. The samples are either hand delivered to a local sub-contract lab, or shipped with sufficient coolant to maintain a 4 degree temperature by air courier under MITKEM's chain-of-custody (Figure 8.4-5).

8.5 Sample Log-in Identification:

8.5.1 Sample Identification:

To maintain sample identity, each sample received at MITKEM is assigned a unique sample identification (Sample ID) number. Samples are logged into MITKEM via the Omega Laboratory Information Management System (LIMS).

After inspecting the samples, the Sample Custodian logs each sample into the Omega LIMS, which assigns a MITKEM Sample ID Number. These Numbers are assigned sequentially in chronological order. MITKEM Sample Identification Numbers appear in the following format:
YXXXX-NNF

In which: Y – represents the current year with A for 2002, B for 2003, C for 2004, etc.
XXXX – represents a four-digit work order number that is assigned sequentially to each submittal of samples
NN – represents the sample number within the group or workorder.
F – represents the fraction. All sample portions that are received in identical bottles with identical preservatives are grouped into one fraction.

For example, the first fraction of the fifth sample of the 20^{th} workorder of 2003 would have the number: B0020-05A

The MITKEM Sample ID Numbers are recorded on the Sample Login Form (Figure 8.4-2) for USEPA CLP samples, and on the Sample Condition Form (Figure 8.4-3) for all other samples. Information on these forms cross-reference the Sample ID Numbers with SDG numbers, sample tag numbers and/or other client identifiers. Each sample is clearly labeled with its MITKEM Sample ID Number by the Sample Custodian. The same sample ID Number appears on the LIMS status report, on each sample preparation container and extract vial associated with the sample.

8.5.1.1 Sample Extract Identification:

As described in Section 8.5.1, a sample extract is identified with the same unique sample identification number as the sample from which it derives

8.5.2 Sample Login:

Sample login system at MITKEM consists of computerized entry using Omega LIMS (Figure 8.5-1). The information recorded onto the Workorder Report includes:

- Workorder number
- Client name
- Project name and location
- Final data report format
- Date of receipt
- Date sample collected
- Due date, fax and/or hardcopy
- EDD requirements
- Comments or notes on the workorder
- MITKEM Sample Identification numbers
- Client Sample Identification numbers
- Sample matrix
- Analyses required
- Case number, where used by the client
- SDG number, where used by the client

8.5.3 Sample Information:

After sample information is properly recorded (Sample Receipt Logbook, Sample Receipt Forms) and the samples have been properly logged into the LIMS, bottle labels are generated and applied to the sample containers. The Sample Custodian notifies the Project Manager or peer or supervisor to review the sample bottle labeling. This person reviews all the information associated with the samples. He/she verifies (by initialing) the correctness of the information on the Sample Condition Form or Sample Log-In Form. Sample login information is available through the Omega LIMS to all appropriate laboratory staff.

The Sample Custodian initiates a red workorder file. This file contains the original Sample Log-In Form or Sample Condition Form, air bills, SMO traffic reports, sample tags, workorder reports and all correspondence with the Client or SMO or others. The red workorder file is forwarded to the Project Manager for review of the login paperwork, and for updating status of the workorder in the LIMS. Once the login information is thoroughly reviewed for correctness, the red workorder file is stored in the data reporting area. Analytical data are placed in this as analyses are completed and data are reviewed.

8.6 Sample Storage and Disposal:

Samples at MITKEM are stored in a central storage facility. After sample receipt and login procedures are completed, the Sample Custodian places the samples in the centralized walk-in refrigerator. Volatile Organic sample aliquots are released to the volatile organic lab with documentation (Figure 8.6-1).

The central storage facility is for samples only; no standards or reagents are to be stored there. Access to the centralized sample storage facility is limited by keypad entry at all times.

All sample/extract refrigerators are maintained at 4°C ± 2°C. Standards are kept in freezers maintained at -10 to -20°C. They are monitored twice every working day and once daily on the weekends. Temperatures are recorded in the Temperature Log (Figure 8.6-2).

When analysis is complete, any remaining sample is retained in the central storage facility until it may be removed for disposal (see SOP 30.0024 for Sample Disposal). Broken and damaged samples are promptly disposed in a safe manner. Unless there is a specific request by the client, excess, unused sample aliquots are stored for at least 30 days after the submission of compliant data. The samples are then disposed after such period. USEPA and NYS ASP extracts are stored under refrigeration for at least one year. Other extracts are stored under refrigeration for up to three months, unless there is a specific agreement with the client. After such time, the extracts are disposed. All disposals are performed in a manner compliant with federal and state regulations.

8.6.1 Extract Transfer:

The extracts generated during the preparation for the organic analyses are transferred from the Organic Prep Lab to the Analysis Labs. The extracts, for Semivolatiles, TPH, Pesticides and PCBs, are checked in the Analysis Lab by entries in the appropriate Extract Transfer Logbook (Figures 8.6-3 and 8.6-4).

Metals analysis samples that are transferred from the prep area to the analysis room are signed for by the metals analyst. This entry occurs in the Metals Preparation Logbooks at the time of the transfer (Figures 8.6-5).

There is no extract transfer that occurs with either Wet Chemistry or VOA samples.

8.6.2 Extract Storage:

Semivolatile, Pesticide/PCB, and TPH extracts, which are contained in crimp top vials or screw cap vials with Teflon lined septa, are stored at 4°C ± 2°C. Semivolatile and Pesticide/PCB extracts are stored in refrigerators in the Organic Analysis room. They are catalogued numerically by workorder number that approximates chronological order, according to date of receipt. USEPA CLP extracts are stored separately within the refrigerator from sample extracts of other clients.

Excess Pesticide extracts, not analyzed, are stored in screw cap vials with Teflon lined septa in the Organic Prep Lab. In most instances, they consist of the remaining 8 mL portions of aqueous and soil sample extracts and are stored chronologically by workorder.

8.7 Sample Tracking:

When a sample is removed from storage, the analyst who has custody signs the Sample Receipt Log. The Sample Receipt Log records the initials of the sample custodian or other authorized lab personnel who relinquishes custody of the sample(s) to the analyst, as well as the initials of the analyst who receives the sample. When the sample(s) are returned to the central storage facility, the analyst relinquishes the sample to the sample custodian or other authorized lab personnel. In addition to the individual's initials, the date is recorded. This information indicates the location of the sample at any point in time.

Chain-of-custody of a sample ensures that the sample is traceable from the field, where it was taken, through laboratory receipt, preparation, analysis and finally disposal. The primary chain-of-custody documents are used to locate a sample at any point in time.

1. The chain-of-custody form from the field describes the origin and transportation of a sample;

2. The MITKEM Sample Receipt Logbook and supporting login records document acceptance of a sample by the Mitkem laboratory; and

3. The MITKEM Sample Receipt Logbook documents which analyst has custody of the sample after removal from storage.

4. The sample preparation logs and/or extract transfer logs document when the extracts or digestates were received by the analytical labs and where they are stored..

Figure 8.4-1
Sample Receipt Tracking Logbook Form

MITKEM LABORATORIES, A Division of Spectrum Analytical, Inc.

Sample Receiving Logbook

Workorder No. ________________

Client Name: ______________________________

Date Recv'd__________ **Sample #s**__________________ **Storage Locations:**__________________

Date Recv'd__________ **Sample #s**__________________ **Storage Locations:**__________________

Date Recv'd__________ **Sample #s**__________________ **Storage Locations:**__________________

Date Recv'd__________ **Sample #s**__________________ **Storage Locations:**__________________

Date Recv'd__________ **Sample #s**__________________ **Storage Locations:**__________________

OUT		IN	
Relinquished By	**Received By**	**Relinquished By**	**Received By**
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			
Date: Init:	Date: Init:	Date: Init:	Date: Init:
Samp. #s			

Comments: ____

____

Please record analyst's initials, date, and sample #s removed. Add any comments if necessary (broken bottles, empty jars, etc.)
Include the abbreviated name of the test to be performed., ie: SVOA, PCB...near the "samp. #s".
Include bottle or jar number when more than one.

Reviewed:____________

Logbook ID: 30.0287-01/08

Figure 8.4-2
USEPA CLP Sample Login Form

SAMPLE LOG-IN SHEET
FORM DC-1

Lab Name				Page __ of __
Received By (Print Name)				Log-in Date
Received By (Signature)				
Case Number	Sample Delivery Group No.			Mod. Ref. No.

Remarks:			Corresponding		
		EPA Sample #	Sample Tag #	Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s)	Present/Absent* Intact/Broken				
2. Custody Seal Nos.	______ ______				
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present/Absent*				
4. Airbill	Airbill/Sticker Present/Absent*				
5. Airbill No.	______ ______				
6. Sample Tags	Present/Absent*				
Sample Tag Numbers	Listed/Not Listed on Chain-of-Custody				
7. Sample Condition	Intact/Broken*/ Leaking				
8. Cooler Temperature Indicator Bottle	Present/Absent				
9. Cooler Temperature	______				
10. Does information on TR/COCs and sample tags agree?	Yes/No*				
11. Date Received at Laboratory	______				
12. Time Received	______				
Sample Transfer					
Fraction	Fraction				
Area #	Area #				
By	By				
On	On				

* Contact SMO and attach record of resolution.

Reviewed By	Logbook No.
Date	Logbook Page No.

Figure 8.4-3
Sample Condition Form

MITKEM LABORATORIES

Sample Condition Form

Received By:	Reviewed By:	Date:	MITKEM Workorder #:
Client Project:		Client:	

1) Cooler Sealed Yes / No

2) Custody Seal(s) Present / Absent
Coolers / Bottles
Intact / Broken

3) Custody Seal Number(s) ____________

4) Chain-of-Custody Present / Absent

5) Cooler Temperature ____________
Coolant Condition ____________

6) Airbill(s) Present / Absent
Airbill Number(s) ____________

7) Sample Bottles Intact/Broken/Leaking

8) Date Received ____________

9) Time Received ____________

Preservative Name/Lot No:
____
____
____

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"

VOA Matrix Key:

US = Unpreserved Soil **A** = Air
UA = Unpreserved Aqu. **H** = HCl
M= MeOH **E** = Encore
N = $NaHSO_4$ **F** = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

Figure 8.4-4
Sample Condition Notification Form

Sample Condition Notification

Mitkem Project#:______________ **Date of Receipt:**______________
Client:________________________ **Received By:**________________
Client project #/name:_________________________

Unusual Occurance Description:

____

____

____

____

____

____

Client Contacted:

Contacted via: Phone/Fax/E-mail
Date:___________ **Time:**____________
Contacted By:__________________________
Name of person contacted:_________________________

Client Response:

Responded via: Phone/Fax/E-mail
Date:_____________
Name of person responding:___________________________
Responding to:__________________________

____

____

____

____

____

Mitkem Action Taken: ____

____

____

____

____

Figure 8.4-5
MITKEM Chain-of-custody Form

CHAIN OF CUSTODY RECORD

MITKEM LABORATORIES

A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

Page ______ of ______

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed:__________
- · All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- · Samples disposed of after 60 days unless otherwise instructed.

Report To: ______________________________

____

____

____

Project Mgr.: ______________________________

Invoice To: ______________________________

____

____

____

P.O. No.: ____________ RQN: ____________

Project No.: ______________________________

Site Name: ______________________________

Location: ______________________ State: ________

Sampler(s): ______________________________

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8= $NaHSO_4$ 9=______________ 10=______________

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1=____________ X2=____________ X3=____________

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses:								QA Reporting Notes: (check if needed)
																				☐ Provide MA DEP MCP CAM Report ☐ Provide CT DEP RCP Report **QA/QC Reporting Level** ☐ Standard ☐ No QC ☐ Other__________ State specific reporting standards: __________

☐ Fax results when available to (_____) ______________

☐ E-mail to ______________________

EDD Format ______________________

Condition upon receipt: ☐ Iced ☐ Ambient ☐ °C ________

Relinquished by:	Received by:	Date:	Time:

175 Metro Center Boulevard • Warwick, RI 02886-1755 • 401-732-3400 • Fax 401-732-3499 • www.mitkem.com

Figure 8.5-1
Workorder Information Form

Mitkem Laboratories *15/Feb/08 14:47* **WorkOrder: F1940**

Client ID: MITKEM_WARWICK
Project: INTERNAL TESTING
Location:
Comments: Internal test

Case:
SDG:
PO: --

Report Level: LEVEL 2
EDD:
HC Due: 01/10/08
Fax Due:

Sample ID	HS Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Lab Test Comments	Hold	MS	SEL	Storage
F1940-01A	PTMT	12/27/2007 0:00	12/27/2007	Aqueous	E624		☐	☐	☐	VOA
F1940-02A	BET-P	12/27/2007 0:00	12/27/2007	Aqueous	E624		☐	☐	☐	VOA

Client Rep: Edward A Lawler

Figure 8.6-1
Volatiles Receiving Logbook Form

MITKEM LABORATORIES: VOLATILE SAMPLES RECEIVING LOGBOOK

VOA Log-In Date	Workorder	Client	Sample Numbers	Relinquished by:	Received by:	Pres. Used	F/R#	Returned to R1

Logbook ID 90.0191-11/07

Reviewed By:

"Preservative Used" Key

UA = Unpreserved Aqu. **H** = HCL **A** = Air **M**= MeOH **E =** Encore

US = Unpreserved Soil **N** = $NaHSO_4$ **F** = Freeze **T**= Trace, HCL

Figure 8.6-2
Temperature Logbook Form

MITKEM LABORATORIES: Refrigerator/Freezer Temperature Logbook

Date: ____________ Analyst ______________

		Time1 :		Time 2 :		Time 3 :		Comments
Refrigerator ID	Freezer ID	R-Temp	F-Temp	R-Temp	F-Temp	R-Temp	F-Temp	
R-1-Front	N/A							
R-1- Back	N/A							
R2	F2							
R3	F3							
R4	F4							
R5	F5							
R7	F7							
R8	F8							
R9	F9							
R10	F10							
R11	N/A							
R12	N/A							
R13	F13							
R14	N/A							
N/A	F15							
N/A	F16							
R17	F17							
N/A	F18							
R19	N/A							
R20	N/A							

Temperature Requirements

Freezers between -10 and -20 degree C
Refrigerators between 2 and 6 degree C

Logbook ID: 30.0108-12/07 **Reviewed by:** ____________________

Figure 8.6-3
Extracts Transfer Logbook Form – Semivolatile Analysis

MITKEM LABORATORIES: SEMIVOLATILE EXTRACT TRANSFER LOGBOOK

Date Transferred from Prep Lab	Lab ID		Transferred By	Received By	Storage Location	Disposal Date	Comments

Logbook ID 70.0141-02/08

Reviewed By: ____________________

Figure 8.6-4
Extracts Transfer Logbook Form – Pesticide/PCB Analysis

MITKEM LABORATORIES EXTRACT TRANSFER LOGBOOK: PESTICIDE/PCB ANALYSIS

Date Transferred from Prep Lab	Lab ID		Transferred by	Received by	Storage Location	Comments

Logbook ID: 60.0132 - 02/08 **Reviewed by**________________

Figure 8.6-5
Preparation Logbook Form – Metals Analysis

MITKEM LABORATORIES: Aqueous Metals Preparation Logbook

Date	Sample ID		Client ID	Sample Vol (ml)	pH	Sample Color Before	Clarity Before	Conc. HNO_3 (ml)	Conc. HCl (ml)	1:1 HCl (ml)	Sample Color After	Sample Clarity After	Final Volume (ml)	Comments	Analyst

HCl Lot# ______________________

HNO3 Lot# ______________________

Method: ____________

Digestion Temp: ____________ **oC**

LCSS/Spike ID: ______________________

____

____

SOP#: ____________

Digestate Relinquished to: ______________________

Logbook ID 100.0125 -01/08

REVIEWED BY: ______________________

9.0 CALIBRATION PROCEDURES AND FREQUENCIES

9.1 Instruments:

Specific calibration and check procedures are given in the analytical methods referenced in Section 10. The frequencies of calibration and the concentrations of calibration standards are determined by the cited methods and any special project or contract-specific requirements. Standard calibration curves of signal response versus concentration are generated on each analytical instrument used for a project, prior to analysis of samples. A calibration curve of the appropriate linear range is established for each parameter that is included in the analytical procedure employed and is verified on a regular basis with check standards as specified in the appropriate CLP Protocols. For non-CLP work, MITKEM adheres to the calibration criteria specified by SW-846 and/or Standard Methods for both organic and inorganic analyses. Where requested, other method specific calibration criteria are used.

For organic analyses whenever possible, unless otherwise specified in the individual methods, the initial calibration standards (ICAL), continuing calibration verification standards (CCV), laboratory control sample spike (LCS) and matrix spike (MS) will all be from the same source. The initial calibration verification (ICV) standards are prepared from a separate source. The following are examples of calibration procedures for various instrumental systems. Refer to the Standard Operating Procedures for the specific calibration requirements.

GC/ECD and GC/FID – An initial calibration is performed using five different concentration levels for each parameter of interest for SW-846 analyses. The initial calibration is done on each column and each instrument, and is repeated each time a new column is installed or whenever a major change is made to the chromatographic system.

An initial calibration verification (ICV), near mid level concentration for all analytes, is performed immediately after the calibration. If the ICV does not meet method specific criteria, a new calibration curve is generated and an ICV is analyzed. If repeated ICV failures are encountered, the system is checked to find the cause of these failures, and the problem is corrected. For certain GC/FID analyses (i.e. GRO or DRO), the instrument is calibrated using individual compounds while the laboratory control sample or ICV uses a petroleum product (diesel or gasoline).

A continuing calibration verification (CCV), near a mid-level concentration for all analytes, is run at ten (10) sample intervals. If CCV values are determined outside the upper limit of the method specified range and if no analytes were detected in the samples, the run will be accepted as valid and 'No Detects' reported for the sample. If an analyte is detected and the CCV is out at the high end, the problem will be identified and corrected and the affected samples will be re-analyzed with a compliant CCV.

If a CCV value is out of the method specified limits at the lower limit, the cause of the problem will be identified and corrected, and all samples affected by the out of control CCV will be rerun with a compliant CCV.

For CLP-type analyses, the continuing calibration takes place at the beginning of the analytical sequence and once every twelve (12) hours throughout the analytical sequence. The percent difference in calibration factors for each standard must not exceed the criteria specified by the method.

If a CCV fails to meet criteria limits, a new calibration curve will be generated and all samples affected will be re-analyzed.

GC/MS – For CLP methods, a minimum of five-level calibration (four-level for selected semivolatile compounds) is carried out for each analyte per system before analysis of samples take place.

Continuing calibrations, near midpoint levels, are analyzed every twelve hours of instrument analysis time for CLP analyses.

Re-calibration takes place whenever a major change occurs in the system, such as a column change in the GC or a source cleaning of the mass spectrometer or when the continuing calibration fails to meet method specific requirements.

Tunes are performed once every twelve (12) hours. The GC/MS system is tuned to USEPA specifications for bromofluorobenzene (BFB) or decafluorotriphenylphosphine (DFTPP) for volatile and semivolatile analyses, respectively. Verification of tuning criteria occurs every twelve hours of instrument run time for all CLP-type and SW846 analyses.

More detailed instrument and method-specific calibration procedures and criteria are described in the individual analysis SOPs.

ICAP – Instrument calibration, for each wavelength used, occurs at the start of each analysis. The calibration curve is constructed per method specification.

An initial calibration verification and initial calibration blank (ICB) are analyzed before analysis of samples. If the ICV and ICB do not meet method specific criteria for an analyte, the analyte is re-analyzed with a new calibration.

During the analysis, a continuing calibration verification (CCV) and continuing calibration blank (CCB) is analyzed at least every ten (10) samples. If either the CCV or CCB fails to meet method specific criteria for an analyte, the source of the problem is investigated. If it can be determined that the failed CCV and/or

CCB is not representative (such as for instrument carryover from previous sample or from an empty autosampler tube), the CCV and/or CCB are re-analyzed and the reason for the failure documented. If a failure still occurs, further corrective action is performed, and the analyte is re-analyzed with a new calibration.

The CCV is obtained from a source independent from that of the standards. The CCV concentration for the different analytes are at method specified levels.

The Flow Injection Mercury System (FIMS) - Instrument calibration occurs at the start of each analysis. The calibration curve is constructed per method specification.

An initial calibration verification (ICV) and initial calibration blank (ICB) are analyzed before analysis of samples. If the ICV and ICB do not meet method specific criteria for Mercury, re-calibration and reanalysis are required.

During the analysis, a continuing calibration verification (CCV) and continuing calibration blank (CCB) is analyzed at least every ten (10) samples. If either the CCV or CCB fails to meet method specific criteria for Mercury, the source of the problem is investigated. If it can be determined that the failed CCV and/or CCB is not representative (such as for instrument carryover from previous sample or from an empty autosampler tube), the CCV and/or CCB are re-analyzed and the reason for the failure documented. If a failure still occurs, further corrective action is performed, and the analyte is re-analyzed with a new calibration.

The CCV is obtained from a source independent from that of the standards. The CCV concentration for Mercury is at method specified levels.

Other instrumentation:

pH- the meter is calibrated at two pH levels (4.0 and 10.0) before analyses of samples. The pH 7.0 buffer is analyzed as an LCS and recovery is calculated.

Lachat 8000- automated flow-through spectrophotometer is calibrated per method specification before the analyses of samples.

An initial calibration verification and initial calibration blank (if required) are analyzed before analysis of samples. If the ICV and/or ICB do not meet method specific criteria for an analyte, re-calibration must occur.

During the analyses, a continuing calibration verification and continuing calibration blank is analyzed at least every ten (10) samples. If either the CCV or CCB fails to meet specified criteria for an analyte, the source of the problem is investigated. If it can be determined that the failed CCV and/or CCB is not representative (such as for instrument carryover from previous sample or from an empty autosampler tube), the CCV and/or CCB are re-analyzed and the reason for the failure documented. If a failure still occurs, further corrective action is performed, and the analyte is re-analyzed with a new calibration.

The CCV is obtained from a source independent from that of the standards. The CCV concentration for the different analytes are at method specified levels.

SpecGenesys- manual spectrophotometer is calibrated per method specification.

A calibration curve calibration verification is analyzed at the beginning, end, and at least every 10 samples. The verification standard is from an independent source. If the calibration verification does not meet method specific criteria for an analyte, it is re-analyzed once. If failure still occurs, a new calibration curve is established and any affected samples are reanalyzed. Calibration curves are established at least quarterly.

Balances: are calibrated by an outside source on an annual basis. The balances are calibrated with Class "S" weights each day of use. A calibration check is performed with NIST Class "1" traceable weights monthly. The Class "1" weights are NIST certified by an outside certified service on a regular basis.

Thermometers are calibrated once a year against a NIST-verified thermometer or as they are replaced. The NIST-verified thermometers are certified by an outside certified service annually.

Gel Permeation Chromatography is used to clean samples according to CLP and client requirements. GPCs are calibrated using a calibration standard provided by Ultra Scientific, Cat. # CLP-340. Once a successful calibration is achieved it is valid for a period of seven days.

9.2 Standards and Reagents:

Standard reference materials used for routine calibration, calibration checks, and accuracy are obtained from commercial manufacturers. These reference materials are traceable to the source and readily compared to EPA references. Most standards are traceable to NIST; however, certain projects, especially those involving pesticide registration, may necessitate the use of reference standards supplied by the client. New standards are also routinely validated against known standards that are traceable to EPA or NBS reference materials.

Standards are purchased from valid vendors with proven expertise in their field. All standards come with a Certificate of Analysis which is kept on record in the appropriate laboratories. Intermediate standards, if necessary, are prepared in the labs and then QA'd by spiking reagent water with the standard. The spike sample is then carried through the normal extraction and analysis procedures. Criteria for the intermediate spike must meet the method or in-house criteria. If acceptable, the spike is able to be used. If unacceptable, another intermediate standard is prepared and the same steps repeated.

Intermediate and working standards are prepared in the same solvent or solution as the samples that the standard will be spiked.

Primary, intermediate and working standards are all named with specific nomenclature as designated in the QA Department SOP No. 80.0013, Reagent Purchasing and Tracking.

Standards are dated and labeled upon arrival. Any material exceeding its shelf life as described by the methods in QAP Section 10 is discarded and replaced. Standards are periodically analyzed for concentration changes/degradation and inspected for signs of deterioration such as color change and precipitate formation. Standards Receiving and Preparation Logbooks, which contain all pertinent information regarding the source and preparation of each analytical standard, are maintained by each of the MITKEM laboratory departments (Examples, Figures 9.2-1 to 9.2-4).

See Mitkem individual analytical SOPs, sections 7 and 8 for standards preparation procedures.

Solvents are examined for purity prior to use to ensure there is no external source of contamination. For organic solvents, each lot number of solvent is QC'd prior to use. This is accomplished by concentrating or extracting an aliquot of solvent or reagent media in the same manner as the samples and analyzing it for contamination. Any detectable analyte could render the solvent or reagent unsuitable for use. Supervisors make the final decision as to the suitability of the solvent or reagent.

Reagents are stored in the respective laboratories during use. Backup supplies are stored in Mitkem's stockroom. All chemicals and reagents are given a 3-year expiration period unless designated otherwise by the manufacturer. Sometimes the viability of the reagent does not remain throughout the entire 3-year period. In this case, the chemical or reagent is readily discarded.

Chemicals and reagents are logged into the laboratory and each bottle is given a unique ID. The ID is based upon the date of its arrival at Mitkem. The only exceptions include cases/cycletainers of solvents and cases of acids.

Any applicable certificates of analysis (COA) are stored in the individual laboratories or in the QA Department. When a bottle is opened in the laboratory, it is inspected to ensure it meets the requirements of the method. The analyst records his or her initials on the bottle along with the date opened and the ID.

9.3. Lab Pure Water:

For wet chemistry, most standards are prepared in DI reagent water. For inorganic analyses Mitkem uses a US Filter mixed-bed deionization system followed by particle and carbon filters. This is followed by a polishing system using Barnstead E-Pure cartridges optimized for removal of inorganic constituents. Purity is monitored each day of use, using an on-line electrical resistivity meter while drawing water through the DI system, as well as reading the conductivity of the water with a hand-held conductivity meter.

Mitkem uses several systems to generate analyte-free water for use in the Organics laboratory. These systems generate high quality, analyte free water dedicated to the needs of specific analyses. The extractable organics laboratory uses a Barnstead E-Pure system optimized for removal of organic constituents. The volatile organics laboratory uses an in-house activated carbon filtration system to provide analyte free water. As organic contaminants are not measured by a resistivity meter, this is not relied-upon to monitor the quality of organic analyte-free water. Instead laboratory method blanks are used, typically several per working day, to monitor the acceptability of the water for its intended use. Any analyte detected above (half of) the reporting limit is investigated. If this can be traced to the water purification system as its source, maintenance is performed on the water purification system.

9.4. All purchased equipment, materials, and services must meet either specific method requirements, standard requirements, or project specific requirements. These requirements are documented in the individual analytical or project SOPs. Reagents requirements are specified in the Mitkem SOP, SOP 80.0013 Reagent Purchasing and Tracking. The equipment requirements are specified in the individual methods and SOPs.

Figure 9.2-1
Metals Primary Standard Receipt Logbook – Instrument Laboratory

MITKEM LABORATORIES **METALS PRIMARY STD RECEIPT LOGBOOK:INSTRUMENT LAB**

DATE REC	PRIMARY STD ID	VENDOR	CATALOG#	LOT #	ANALYTE(S)	REC BY	DATE OPENED	EXPIR. DATE	MITKEM ID

Figure 9.2-2
Semivolatile Primary Standard Logbook – Preparation Laboratory

MITKEM LABORATORIES: SEMIVOLATILES PRIMARY STD RECEIPT LOGBOOK: INSTRUMENT LAB

DATE REC	PRIMARY STD ID	VENDOR	CATALOG #	LOT #	CONC. (ug/ml)	ANALYTE(S)	REC. BY	EXP. DATE

Logbook ID: 70.0024-01/08

Reviewed by:____________________

Figure 9.2-3
Pesticide/PCB Primary Receipt Logbook

MITKEM LABORATORIES PESTICIDE/PCB PRIMARY STD RECEIPT LOGBOOK

DATE REC	PRIMARY STD ID	VENDOR	CATALOG#	LOT #	CONC.	ANALYTE(S)	REC BY	DATE OPENED	DATE EXPIR.

Lab ID: 60.0019-12/07

Reviewed By: ______________________

Figure 9.2-4
Reagent Preparation Logbook – Inorganic Preparation Laboratory

Mitkem Laboratories, A Division of Spectrum Analytical Inc.

Inorganic Laboratory

Reagent Preparation Logbook

Date:____________

Reagent/Analysis	Chemical ID	Chemical Lot#	g/mL	Final Volume (ml)	Diluent	Final Conc.	Reagent ID	Exp. Date	Analyst

Reviewed By:____________

10.0 ANALYTICAL PROCEDURES

MITKEM uses the methods specified in Tables 10-1 through 10-6 unless otherwise specified by the client.

Table 10-1
Potable Water Analytical Methods

Parameter	Method Description	Method Reference
1,2-Dibromo-3-chloropropane 1,2-Dibromomethane	Micro extraction GC\ECD Analysis	504.1

Table 10-2
Non-potable Water Priority Pollutant Analytical Methods

Parameter	Method Description	Method Reference
Metals Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Silver, Thallium, Potassium Vanadium, Zinc, Sodium	ICP	200.7
Mercury	Cold Vapor	245.1
Cyanide		
Aqueous	Midi-distillation Automated	EPA 335.4
Alkalinity	Titration	SM2320B
Anions Chloride Sulfate Nitrate Nitrite OrthoPhosphate Bromide	Ion Chromatography	EPA 300.0
Chloride	Colorimetric	SM4500 CL E
pH	Electrode	SM4500 H+ B
Sulfate	Turbidimetric	426C SM 15th Ed.
Ammonia	Distillation/Nesslerization	SM4500-NH3 B
Nitrate	Autoanalyzer	EPA 353.2
Nitrite	Colorimetric	SM4500-NO2 B
Orthophosphate	Ascorbic, Manual	SM4500-P E
Total phosphate	Persulfate, Manual	SM4500-P B3 & E

Table 10-2
Non-potable Water Priority Pollutant Analytical Methods (cont.)

Parameter	Method description	Method Reference
Chemical Oxygen Demand	Spectrophotometric(Closed Reflux)	SM5220-D
Total Organic Carbon	Combustion	SM5310B
Phenols	Distillation, Color, Automated	SM5530 B
Total Dissolved Solids	Gravimetric	SM2540 C
Total Solids	Gravimetric	SM2540 B
Total Suspended Solids	Gravimetric	SM2540 D
Total Settleable Solids	Imhoff cones	SM2540 F
Volatile Organics		
Halocarbons	Purge & Trap, GC/MS	624
Aromatics	Purge & Trap, GC/MS	624
Semivolatile Organics	Extraction, GC/MS	625
Organochlorine Pesticides/ PCBs	Extraction, GC/ECD	608
Oil & Grease	Extraction, Gravimetric	1664

Table 10-3
SW-846 Inorganic Analytical Methods

Parameter	Method Description	Method Reference
Metals		
Aqueous	Acid digestion ICAP analysis	Method 3005A/3010A Method 6010C
Solid	Acid digestion ICAP analysis	Method 3050B Method 6010C
Mercury		
Aqueous	Permanganate digestion Cold Vapor analysis	Method 7470A
Solid	Permanganate digestion Cold Vapor analysis	Method 7471A
Hexavalent Chromium		
Aqueous	Diphenyl Carbazide Colorimetric	SM 3500Cr D
Solid	Acid Digestion colorimetric	Method 3060A/7196A
Cyanide		
Aqueous	Midi-distillation Automated	Method 9012B
Solid	Midi-distillation Automated	Method 9012B
pH		
Solid	Electrode	Method 9045C
Ignitability (Flashpoint)		
Aqueous	Pensky-Martens closed cup	Method 1010
Solid	Pensky-Martens closed cup	Method 1010 Mod.
Reactive Cyanide		
Solid & Aqueous	Distillation Automated	SW 846 7.3.3.2
Reactive Sulfide Solid & Aqueous	Distillation Colorimetric	SW 846 7.3.4.2

Table 10-3
SW-846 Inorganic Analytical Methods (cont.)

Parameter	Method Description	Method Reference
Toxicity Characteristic Leaching Procedure (TCLP)		
Aqueous	Leachate by Filtration	Method 1311
Solid	Leachate Generation	Method 1311
Synthetic Precipitation Leaching Procedure (SPLP)		
Aqueous	Leachate by Filtration	Method 1312
Solid	Leachate Generation	Method 1312

Table 10-4
SW-846 Organic Analytical Methods

Parameter	Sample Preparation	Sample Analysis
Volatile Organic Compounds		
Aqueous	Method 5030	Method 8260C
Solid	Method 5035	Method 8260C
Semivolatile Organic Compounds		
Aqueous	Method 3510C Method 3520C	Method 8270D
Solid	Method 3540C Method 3550B Method 3545 Method 3570	Method 8270D
Organochlorine Pesticides		
Aqueous	Method 3510C Method 3520C	Method 8081A
Solid	Method 3540C Method 3550B Method 3545 Method 3570	Method 8081A
Polychlorinated Biphenyls (Aroclors and Congeners)		
Aqueous	Method 3510C Method 3520C	Method 8082
Solid	Method 3540C Method 3550B Method 3545 Method 3570	Method 8082
Total Petroleum Hydrocarbons		
Aqueous	Method 3510C Method 3520C	Method 8015M
Solid	Method 3540C Method 3550B Method 3545 Method 3570	Method 8015M

Table 10-4
SW-846 Organic Analytical Methods (cont.)

Parameter	Sample Preparation	Sample Analysis
Herbicides		
Aqueous	Method 8151A	Method 8151A
Solid	Method 8151A	Method 8151A
Toxicity Characteristic Leaching Procedure (TCLP)		
Aqueous	Method 1311	
Solid	Method 1311	
Synthetic Precipitation Leaching Procedure (SPLP)		
Aqueous	Method 1312	
Solid	Method 1312	
Gel Permeation Chromatography (GPC)		
Aqueous	Method 3640A	
Solid	Method 3640A	
Florisil Cleanup		
Aqueous	Method 3620B	
Solid	Method 3620B	
Silica Gel Cleanup		
Aqueous	Method 3630C	
Solid	Method 3630C	
Sulfur Cleanup		
Aqueous	Method 3660B	
Solid	Method 3660B	
Sulfuric Acid Cleanup		
Aqueous	Method 3665A	
Solid	Method 3665A	

Table 10-5
CLP-Type Analytical Methods

Parameter	Method Reference
USEPA CLP Organics	OLM04.3, SOM01.2
USEPA CLP Inorganics	ILM04.1, ILM05.4
USEPA Low Level Organics	OLC03.2
NYS-ASP CLP Organics	ASP 2000/2005 SOW
NYS-ASP CLP Organics	ASP 2000/2005 SOW

Table 10-6
Other Analytical Methods

Parameter	Method Reference
Volatile Petroleum Hydrocarbons	
Aqueous	MADEP VPH 1.1
Solid	MADEP VPH 1.1
Extractable Petroleum Hydrocarbons	
Aqueous	MADEP EPH 1.1
Solid	MADEP EPH 1.1
New York State Total Petroleum Hydrocarbon	
Solid	310.13 Mod.
Extractable Total Petroleum Hydrocarbons	
Aqueous	CT ETPH 99-3
Solid	CT ETPH 99-3
Deisel Range Organics	
Aqueous	ME 4.1.25
Solid	ME 4.1.25
Gasoline Range Organics	
Aqueous	ME 4.2.17
Solid	ME 4.2.17

10.1 Analytical References

1. Analysis of Extractable Total Petroleum Hydrocarbons (ETPH) Using Methylene Chloride Gas Chromatograph/Flame Ionization Detection, Environmental Research Institute, University of Connecticut, March, 1999

2. Analytical Services Protocol, Volume 1-8, New York State Department of Environmental Conservation, 2003.

3. Annual Book of ASTM Standards. Part 31-Water. American Society for Testing and Materials, Philadelphia, PA, 1981.

4. Chemical Characteristics of Marine Samples, API Publications No. 4307, API, Washington, D. C.

5. Federal Register. Vol. 55, No. 61, March 29, 1990

6. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 3/83 Revision.

7. The EPA 600 Series. Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Appendix A, 40 CFR Part 136, Federal Register, Vol. 49, No. 209, 1984.

8. Methods of Soil Analysis. Part 2, Chemical and Microbiological Properties, Second Edition, American Society of Agronomy, Inc., Soil Science Society of America, Inc., Madison, WI, 1982.

9. Standard Methods for the Examination of Water and Wastewater, 20th Edition, APHA, Washington, D. C., 1998.

10. Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, SW-846, 3rd Edition Update IV. Office of Solid Waste and Emergency Response, USEPA, Washington, D. C., 1998.

11. USEPA Contract Laboratory Program. Statement of Work for Organic Analysis, USEPA, OLM04.3, OLC03.2, and SOM01.2.

12. USEPA Contract Laboratory Program. Statement of Work for Inorganic Analysis, USEPA, ILM04.1, ILM05.4.

13. Maine Health and Environmental Testing Laboratory. Modified GRO and DRO Methods, Method 4.2.17 and 4.1.25, September 6th 1995.

11.0 DATA COLLECTION, REDUCTION, VALIDATION AND REPORTING

11.1 Data Collection:

Most of MITKEM's data is uploaded into the Omega LIMS systems directly from the instruments. The exception is the GC's and GC/MS's in which data is first processed in Target and then uploaded into the LIMS. MITKEM is making progress in that the elimination of the Target reporting will occur in the near future.

Either the instrument analyst or data reporting group will upload the data into the LIMS. The person who performs the upload does a technical review to ensure recoveries of CCVs, MS, MSD, and LCS all seem to be correct. A completeness review is done at this time to ensure all applicable samples have been uploaded for all the necessary analytes.

Next, an employee with a technical background will perform the QA process of the uploaded data. This person is either a supervisor or someone with extensive experience in environmental chemistry. Corrections to the run are made at this step if necessary. When the review is complete, this technical person authorizes the data to be reported by "QA-ing" the run in the LIMS. For a more detailed view of the LIMS uploading/review procedure, see SOP No. 110.0028.

11.2 Data Reduction:

Instrument printouts, computer terminal displays, chromatograms, strip chart recordings and physical measurements provide raw data that are reduced to concentrations of analytes through the application of the appropriate calculations.

Equations are generally given within the analytical methods referenced in Section 10. Data reduction may be performed automatically by computerized data systems on the instrument, manually by the analyst, or by PCs using spreadsheet and/or data base software. This software includes Thru-Put's 'TARGET' for the analyses of organic analytes and Omega LIMS for metals, cyanide and mercury analysis. Currently all OLC and SOM analyses are processed and reported through Omega. MITKEM expects that all organic data, both CLP and non-CLP, will be processed completely through the LIMS System during the next year.

11.3 Data Verification:

The verification process requires the following checks to be made on data before they are submitted to the client:

- A completeness inspection is required which ensures that all required data are included in the data packages submitted to the client and that the appropriate signatures are present on the data packages.

- A contract compliance screening to ensure that contractual requirements have been satisfied.

- A consistency check to ensure that nominally identical or similar data appearing in different places within a data package are consistent with respect to value and units.

- A correctness check to ensure that reported data have been calculated correctly or transcribed correctly.

11.4 Data Validation:

Data validation is an essential element of the QA evaluation system. Validation is the process of data review and subsequent acceptance or rejection based on established criteria.

The following analytical criteria are employed by MITKEM in the technical evaluation of data:

- Accuracy requirements.
- Precision requirements.
- Detection limit requirements.
- Documentation requirements.

As in the case of EPA/CLP procedures, data acceptance limits may be defined within the method. As one means of tracking data acceptability, quality control charts are plotted for specific parameters determined in similar, homogeneous matrices. Control limits for non-CLP methods are statistically determined as analytical results are accumulated.

Upon completion of the evaluation, the evaluator dates and initials the data review checklist as described in Section 11.5 below.

11.5 Data Interpretation and Reporting:

Interpretation of raw data and calculation of results are performed by a scientist experienced in the analytical methodology. Upon completion of data reduction, the scientist signs for the reported results on the data review checklist. For GC/ECD and GC/MS, a technical peer review is performed using the data processing software prior to form generation.

The laboratory supervisor is responsible for the data generated in that department. The supervisor or other senior technical staff performs an independent review of data and completed report forms. Members of the QA staff also check the results on selected sets of data (usually 10%).

11.5.1 Report Formats:

MITKEM uses a flexible data reporting system where final report format is based on the requirements of the client. The two most common types of data reports generated by MITKEM are Level 2 or "commercial-format" and Level 4 or "CLP-format". MITKEM adapts its data report format, wherever possible, to meet customer requirements. Occasionally reports are generated that are a compromise between "commercial" and CLP-format deliverables or are designed to meet the needs of a particular regulatory format or sampling program.

Commercial data reports are generated using the Omega LIMS. All instrumental analysis data are uploaded from instruments to the LIMS by electronic data transfer. Non-instrumental analysis data or sample preparation data are manually entered into the LIMS. All manual data entry steps are double-checked to insure they are correct, and instrumental data are spot-checked to insure the proper functioning of the data upload system. All data receive a 100% review before they are released to the client as final.

CLP data reports are generated using specialized software, Thru-Put TARGET for many organics analyses, and the CLP report modules in the Omega LIMS for all inorganic and certain organic analyses. These reports also undergo a 100% review before they are released to the client in their final form.

Records are maintained for all data, even those results that are rejected as invalid.

11.6 Levels of Data Review:

MITKEM employs five (5) levels of data review. These are based on requirements outlined in several government and other environmental analysis programs including the U. S. Army Corps of Engineers, Air Force Center for Environmental Excellence (AFCEE), Naval Facilities Engineering Service Center (NFESC), HAZWRAP, EPA Contract Laboratory Program (CLP), as well as commercial engineering firm programs.

The data review and evaluation process is structured to insure that all data reported to customers has been thoroughly reviewed and approved using a multi-step process designed to identify and correct any error. At any step in the data evaluation and review process, the reviewer has the responsibility and authority to return any data not meeting requirements back to the previous step for re-analysis or correction. No reports are released to the client as final data without successfully passing through each step in the data evaluation and review process. The steps of the data review process are documented, generally using a checklist. Several checklists are used, depending on the type and format of analysis data being reviewed. Any data released prior to the completion of the full review process are released with the statement that the data is preliminary pending final review. The word "Preliminary" is automatically printed on the bottom of all data sheets that are generated prior to completion of data review.

The five levels of data review are detailed in SOP No. 110.0028. A Flow chart of the data review process follow in Figure 11.6-1.

11.7 Document Control:

All login sheets, Chains-of-Custody (COC) and Sample Condition Forms (SCF) and other sample transmittal documentation are generated in Sample Receiving. A red Workorder File is initiated to contain all workorder-specific hard copy documents. Samples are signed in/out of the sample receiving area by analysts. In the Prep lab, samples and all pertinent information is recorded into logbooks. Once samples are moved to the instrument lab, the transfer of extracts is documented in the transfer logbook. In the instrument lab, the analysis of extracts is recorded in the instrument run log. All analysis data, including ICAL, CAL and raw data are acquired using computer-controlled instruments, and stored on the hard drive of the computer performing data acquisition. Data are automatically copied to the company file server after acquisition. Organics analysis data are processed using Thru-Put Systems' Target software. This system creates a folder on the file server for each analysis fraction for each work order or SDG. This folder contains raw data, processed analysis results, instrument tune, initial calibration and continuing calibration results as well as a copy of the data processing method used. This allows for long-term archiving and complete reconstruction of the data at any time in the future. Data reporting forms and raw data are printed and arranged with all appropriate sample-preparation logbook page copies for technical review.

Inorganic data files are uploaded into Omega LIMS and reporting forms are printed. The original instrument data files and the processed SDG are stored on the file server where they can later be archived by the LIMS Administrator. Hard copy printouts for reporting forms, instrument data hardcopy output and all associated preparation logbook page copies are assembled for technical data review.

The company file server consists of two separate computers, each with an array of multiple hard disk drives, that are continuously mirrored, such that the failure of any single component or computer will not impact the operation of the system, or the ability to recover data. All new files or data are copied to magnetic tape on a daily basis. On a monthly basis full system back up to tape is performed. Following technical review, and generation of the report narrative results go into the workorder file in data reporting. The original copy of the report is sent to the client. The report is also scanned into an optical file database for long-term archiving. As documents are scanned into the database they are recorded for permanent storage on hard drives within the MITKEM fileserver. All other information associated with the report, including data review checklists are kept in the red workorder file. The workorder files are kept onsite in a storage area for approximately 6 months. The files are then shipped to an offsite storage area where they will remain for a total of 7 years. After this time, the files will be destroyed.

11.7.1 Logbooks:

All logbooks are issued and controlled by the QA Department. Logbooks are given a unique ID that includes the mm/yy the logbook was printed. Laboratory personnel must sign for the logbook when it has been released by the QA Department. When logbooks are complete, the analyst returns them to the QA Department for archiving. At that point, a new logbook is released. The archived logbooks are stored in an on-site storage box for approximately 4-6 months and then are stored in a locked off-site storage facility. MITKEM will archive logbooks for a minimum of ten (10) years.

11.7.2 Workorder/Data Files:

MITKEM is a secured, limited access building. The doors are secured with a keypad entry system. All hard copy information pertaining to the analysis of samples is maintained and stored in a workorder file folder. This information includes all login sheets, COC, SCF, bench sheets and analytical data. Electronic data are also stored by laboratory workorder number on the company file server, and in the optical file database of completed reports. File folders containing all hard copy data and other workorder information are stored in an off-site storage facility for a total of 7 years. The off-site storage facility is a locked storage area. Access is limited to the CFO or his designee and request to retrieve a file will be made to this person.

In the event MITKEM changes ownership, the maintenance, control, storage and eventual disposal at the end of the appropriate time period, of all records, including client data and QA/QC files, will transfer to the new owners.

In the event MITKEM decides to cease operations, clients will be notified prior to the cessation of operations and their files/records will be made available to them. Within a designated time period after notification, the client will be responsible for taking custody and the future maintenance of their records. If the client determines they do not want to maintain the records, these will be disposed of properly.

11.7.3 Standard Operating Procedures (SOPs):

SOPs are prepared by the Lab Supervisor and laboratory personnel in conjunction with the QA/QC Director. The QA Director/Staff downloads a copy of the current SOP to the network at Public on 'Avogadro' (Q:). The SOPs can be found in Q:\QA_SOPs. In addition a .pdf file of the SOP is located in Q:\QA PUBLIC\PDF-MITKEM SOPs, for sending to clients or for analyst reference.

The laboratory staff revises the SOPs by making changes to the document that is then reviewed by the department supervisor only if the supervisor is not the party responsible for the revisions. Any additional changes are made at this point.

The QA Department is notified that revisions are completed. The QA Director/Staff moves the revised copy of the SOP to the QA directory, QA Safety/SOPs Needing QA Revision. The QA Director makes changes to the document to include revision number and date and title clarification, if necessary.

The QA Director prints a copy of the SOP that is then signed by the Lab Director or Operations Manager, and the QA Director. Copies of the signed SOP are then made for the relevant departments. Each copy is assigned a control number that is recorded on the SOP cover sheet. Copies are distributed to the relevant departments with a review sheet attached. At this time the old copies of the SOP are collected from the labs and destroyed. Each analyst who performs any duties related to the SOP must review the new version and sign that he or she has read and understands the material there. The signed review sheets are then returned to the QA Department. The SOP copy is stored in the department for easy reference. A new .pdf file is made to overwrite the "old" version in QA Public/SOP-PDF Versions. The .pdf version is also available to all personnel.

SOP review/revisions occur on an annual basis. The procedure for preparing, reviewing, approving, revising and distributing SOPs as well as the SOP Revision Schedule are described in SOP No. 80.0012.

Minor changes to the SOP between revision dates can be done by making hand-written changes to the document and its copies. The changes must be initialed by the QA Director and incorporated into the next version

SOP. Minor changes are recorded in the Minor Revision Record that is a part of the master copy.

11.7.4 Method Updates:

In most cases it is the laboratory's policy to implement new revisions of frequently used methods within six months of the date the method revision is promulgated or published as a final method. The QA/QC Director and Technical Director make the final decision on when a method revision will be adopted by the laboratory. Additionally, if a client specifically requests or mandates that an "older" method, MITKEM will advise the client that it is not the most recent method. If the client still insists upon the older method, MITKEM will comply and make a note in the narrative.

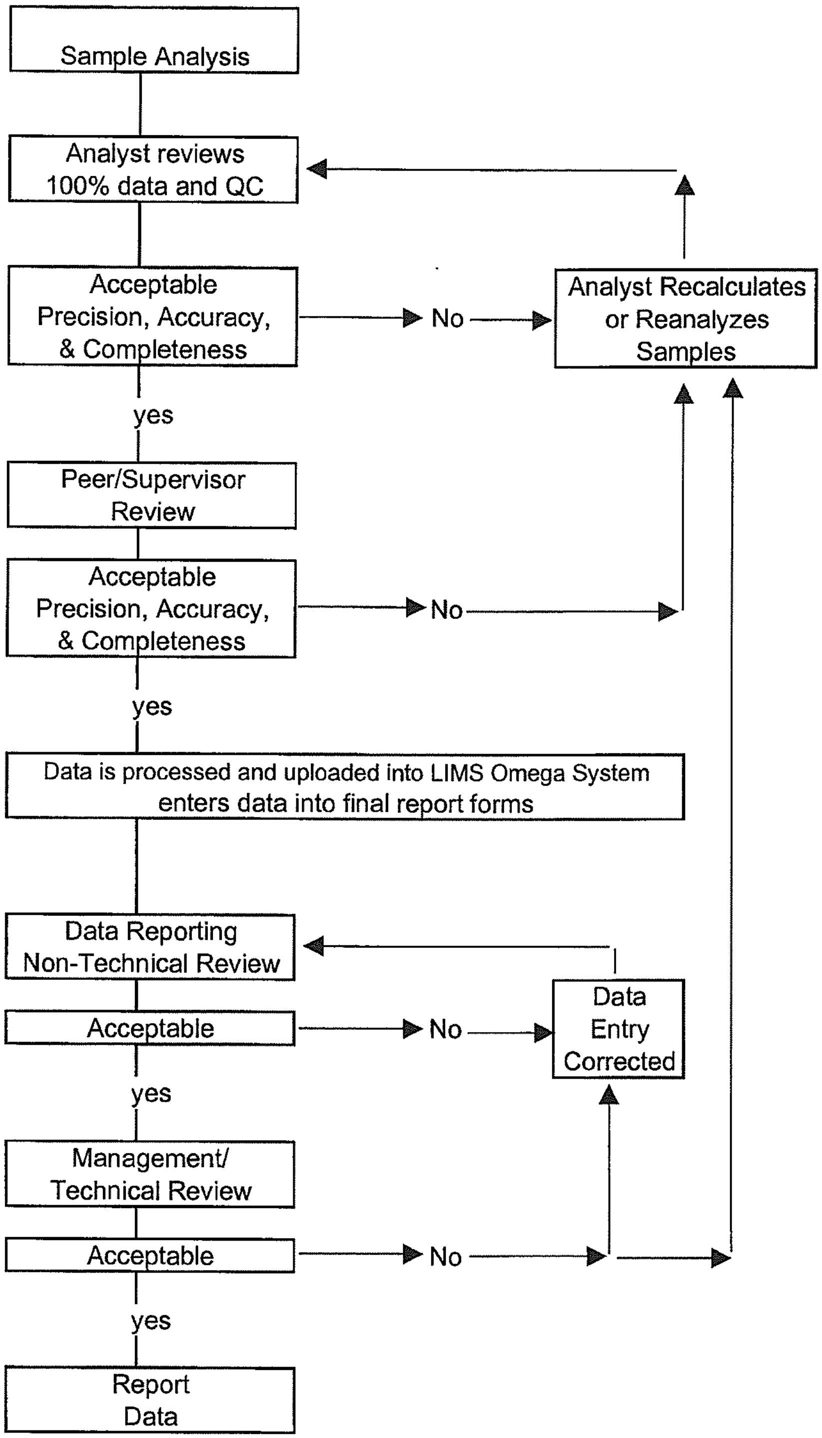
When the laboratory is in the middle of a client's project, the lab will continue using the same revision for the entire sampling event unless advised otherwise by the client. Consequently, once the laboratory has formally adopted a new method revision, both the old and new revision may be in use at the same time, depending on the project.

If a client should not specify which methods to be used, the methods employed by the laboratory shall be fully documented and validated. Additionally, the methods shall be published in a reputable technical journal or text or by a reputable technical organization or instrument manufacturer.

Laboratory-developed methods can be used as long as they have been documented and validated by qualified personnel. In all cases the client should be notified.

Figure 11.6-1
Data Review Flow Diagram

Mitkem Laboratories
Review Process Flow Diagram



12.0 LABORATORY QUALITY CONTROL CHECKS

MITKEM analytical procedures are based on sound quality control methodology, which derives from three primary sources:

1. Specific EPA and other approved analytical methods, and
2. "Handbook for Analytical Quality Control in Water and Wastewater Laboratories" (EPA 600/4-79-019).
3. Standards for Good Laboratory Practice.

In the application of established analytical procedures MITKEM employs, at a minimum, the QC protocols described in the references found in the Analytical Methods section of this document. Specific projects may require additional quality control measures, due to such factors as difficult sample matrices or use of innovative techniques. For those projects MITKEM will recommend and implement, subject to client approval, QC measures to produce data of known quality.

Each of the MITKEM laboratory departments have an individual QC program, which includes, but is not limited to, the practices described below.

12.1 Method Detection Limit Determination/Verification:

Method Detection Limits are developed annually for certain inorganic and many organic analyses. Per NELAC Standards, MDLs are not required where target analytes are not reported below the lowest calibration standard concentration. For these analyses, results are only reported within the calibration range, and MDLs are not appropriate or needed. For certain inorganic analyses and most organic analyses, Mitkem typically reports analytes below the lowest level of the calibration range, but above the MDL, as estimated and are qualified with the "J" flag. For these analyses MDLs are developed. Mitkem reports estimated values below the calibration range for those analyses where results are able to be confirmed as in dual column confirmation, or by two concurrent determinative tests such as retention time and mass spectra as in GC/MS analyses.

To address special project requirements, MDLs can be determined for those tests which are not routinely reported below calibration range. If a client requests results to be reported below the calibration range without an MDL study, this is clearly identified in the workorder narrative.

Following an MDL study, the determined limits are verified by the analysis of an MDL Verification Standard. This standard is analyzed at approximately 2 to 3 times the calculated MDL.

12.2 Personnel Training:

Chemists who begin their employment at MITKEM are to be instructed under the MITKEM Safety Training Program within the first month. The Safety Training Program includes laboratory basics, safety video and testing, and MSDS instruction.

Before performing any analyses, a chemist is required to read the appropriate protocols and SOPs. The chemist is required to complete an SOP review form which lists all the SOPs he or she has read and understands.

The new analyst must become familiar with the laboratory equipment and the analytical methods, and begins a training period during which he or she works under strict supervision. Independent work is only permitted after the chemist successfully completes an accuracy and precision study.

The study is also commonly referred to as a Demonstration of Capability exercise. Upon the successful completion of the Demonstration of Capability exercise, the QA Department issues a Demonstration of Capability Certificate (DOCC) which is signed by both the QA Director and Operations Manager and filed in the employee's personnel folder, which is stored in the QA Department.

Demonstration of Capability studies require the acceptable recovery of 4 LCS samples for each matrix or the acceptable analysis of a blind spike sample such as a Performance evaluation sample. Acceptance limits are established by the method. It is necessary to pass the study whether for extraction and/or analysis.

Initial and on-going personnel training includes data integrity training. The 4 required elements of the data integrity system include: 1) data integrity training, 2) signed data integrity documentation, 3) in-depth, periodic monitoring of data integrity, and 4) data integrity procedure documentation.

Data integrity training topics will include the need for honesty and full disclosure in all analytical reporting, how and when to report integrity issues and what those issues could be. Employees will understand that infractions of data integrity procedures can result in an investigation that could lead to serious consequences which include immediate termination, and civil or criminal prosecution. At the start of employment all new employees read, discuss and sign a Confidentiality, Ethics and Data Integrity Agreement. Annually, an on-going integrity training session is held. An attendance sheet will be generated for every integrity session.

Data integrity procedures are reviewed and updated annually by senior management.

Training for the EPA Statement of Work occurs according to the above requirements. In addition, analysts are required to read the CLP Statement of Work as a part of the documentation training.

12.3 Control Charts:

For organic and inorganic analyses, the recoveries of analytes in the lab control samples are plotted on control charts. These charts are used to establish control and warning limits.

12.3.1 Control limits are calculated ,compared, and/or updated at least annually from the LCS, MS/MSD, and Surrogate data points for each analyte and matrix using the following equations:

$$Average(\bar{x}) = \frac{\left[\sum_{i=1}^{n} x_i\right]}{n}$$

$$SD = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$$

In which:

SD = Standard Deviation

N = number of data points

Warning Limits = Average ± 2 * SD

Control Limits = Average ± 3 * SD

12.3.2 Control limits must be approved by the QA/QC Director and by the Technical Director or Operations Manager prior to adoption by the laboratory. In the event that limits are wider than method recommended limits, the method recommended limits may be adopted and the analytical procedure will be re-evaluated and/or re-determined to identify possible causes. Additionally, in the event that control limits are tighter than 15% from the average, the lab may adopt a control limit of ±15% from the average. If in the experience of the laboratory, statistical control limits are unreasonably wide or narrow, alternative limits may be used until appropriate statistical limits are developed. Alternative limits are based on sources such as Department of Defense Quality Systems Manual published guidelines, EPA limits from the specific test method or from similar methods, laboratory experience with the method or other sources.

12.3.3 Control charts are plotted in EXCEL using the Omega LIMS system.

Data from each laboratory is uploaded into the LIMS. The compounds, recoveries, and date analyzed for each test are recorded in the system. In order for LIMS generated control limits to be valid, all data, including data not meeting existing recovery criteria, must be uploaded. As the laboratory uploads data for a wider range of tests, control charts will be available for these tests. Control charts may be generated for each analyte in the inorganic department to include both metals and wet chemistry parameters, and for a representative sampling of analytes in the organic sections. Each control chart is then printed for review by the QA/QC Director and by the Lab Supervisor. Out of control situations noted on the control chart are discussed with the Supervisor or Technical Director by the QA/QC Director.

An example control chart is presented as Figure 12.3-1. LCS data must be reviewed and evaluated daily against the Control Limits to establish that the system is in control.

12.3.4 The following situations constitute an out of control situation on a control chart:

- One data point above or below the Control Limit line.
- Two consecutive data points above or below the Warning Limit line.
- Six or more consecutive data points above the Average Line or six or more consecutive data points below the Average Line. This situation suggests a trend and suggests the procedure has been changed in some way (for better or worse). The cause for this trend must be investigated.

12.4 General QC Protocols:

12.4.1. Organics Laboratory:

- Trip blanks and holding blanks, when applicable, are analyzed to detect contamination during sample shipping, handling and storage.

- Method blanks, at a minimum of one in every 20 samples, are analyzed to detect contamination during analysis.

- Volatile organic method blanks are analyzed once during each analytical sequence.

- One blank spike (Laboratory Control Sample or LCS) consisting of an analytical sample of laboratory water, anhydrous sodium sulfate, or Ottawa sand with every batch of 20 or fewer samples, is analyzed to determine accuracy.

- Sample spikes and spike duplicates, as requested, are analyzed to determine accuracy and the presence of matrix effects. The Relative Percent Difference (RPD) is also determined for matrix spike/matrix spike duplicates to measure precision. The criteria followed are stated in the individual methods. For batches without a sample duplicate (for example, if insufficient sample volume is provided), a duplicate blank spike (LCSD) is performed to provide for precision measurement.

- Performance evaluation samples from EPA and state agencies are analyzed to verify continuing compliance with EPA QA/QC standards.

- Surrogate standards are added to samples and calculations of surrogate recoveries are performed to determine matrix effect and extraction efficiency.

- Internal standards for GC/MS analysis are added to sample extracts to account for sample-to-sample variation.

- GC analysis of EPA traceable standards to verify working standard accuracy and instrument performance.

- Initial multi-level calibrations are performed to establish calibration curves.

- Instrument calibration is established or verified with every analytical sequence.

- Tuning of GC/MS systems once every 12 hours for CLP and SW-846 methods or 24 hours for methods 624/625 to method specifications is implemented for consistency in data generation.

When QC limits are not met during an analytical run, the source of the problem must be investigated. Following an evaluation of the data, those samples affected must be re-analyzed after the problem has been solved. If QC limits continue to be out of control, the instrument must be checked and/or a service call made and/or further corrective action implemented.

12.4.2. Inorganic Laboratory:

- Trip blanks are analyzed when applicable, to detect contamination during sample shipping, handling and storage.

- Method blanks are analyzed at a minimum of one every 20 samples, to detect contamination during analysis.

- One matrix spike of an analytical sample or laboratory water or soil is made and spike recoveries are calculated with every batch up to 20 samples to determine accuracy. Duplicate samples are analyzed and the RPD between the sample and duplicate is calculated for every batch up to 20 samples. If insufficient volume of sample is received, a note is made in the appropriate preparation logbook.

- Performance evaluation samples from EPA and state agencies are analyzed to verify continuing compliance with EPA QA/QC standards.

- Metals analysis instruments are calibrated for every analytical run.

- QC/LCS checks samples are analyzed during every analytical batch of up to20 samples in order to document accuracy.

When QC limits are not met during an analytical run, the source of the problem must be investigated. Following an evaluation of the data, those samples affected must be re-analyzed after the problem has been solved. If QC limits continue to be out of control, the instrument must be checked and/or a service call made and/or further corrective action implemented.

12.5. Lab Pure Water used for method blanks and dilutions:

Mitkem uses several systems to generate analyte-free water for use in the laboratory. These systems generate high quality, analyte free water dedicated to the needs of specific analyses.

12.5.1. For inorganic analyses Mitkem uses a US Filter mixed-bed deionization system followed by particle and carbon filters. This is followed by a polishing system using Barnstead E-Pure cartridges optimized for removal of inorganic constituents. Purity is monitored using an on-line electrical resistivity meter.

12.5.2. For organic analyses,the extractable organics laboratory uses a Barnstead E-Pure system optimized for removal of organic constituents. The volatile organics laboratory uses an in-house activated carbon filtration system to provide analyte free water. As organic contaminants are not measured by a resistivity meter, this is not a relied-upon method to monitor the quality of organic analyte-free water. Instead, laboratory method blanks are used, typically several per working day, to monitor the acceptability of the water for its intended use. Any analyte detected above (half of) the reporting limit is investigated. If this can be traced to the water purification system as its source, maintenance is performed on the water purification system.

Figure 12.3-1
Example Control Chart

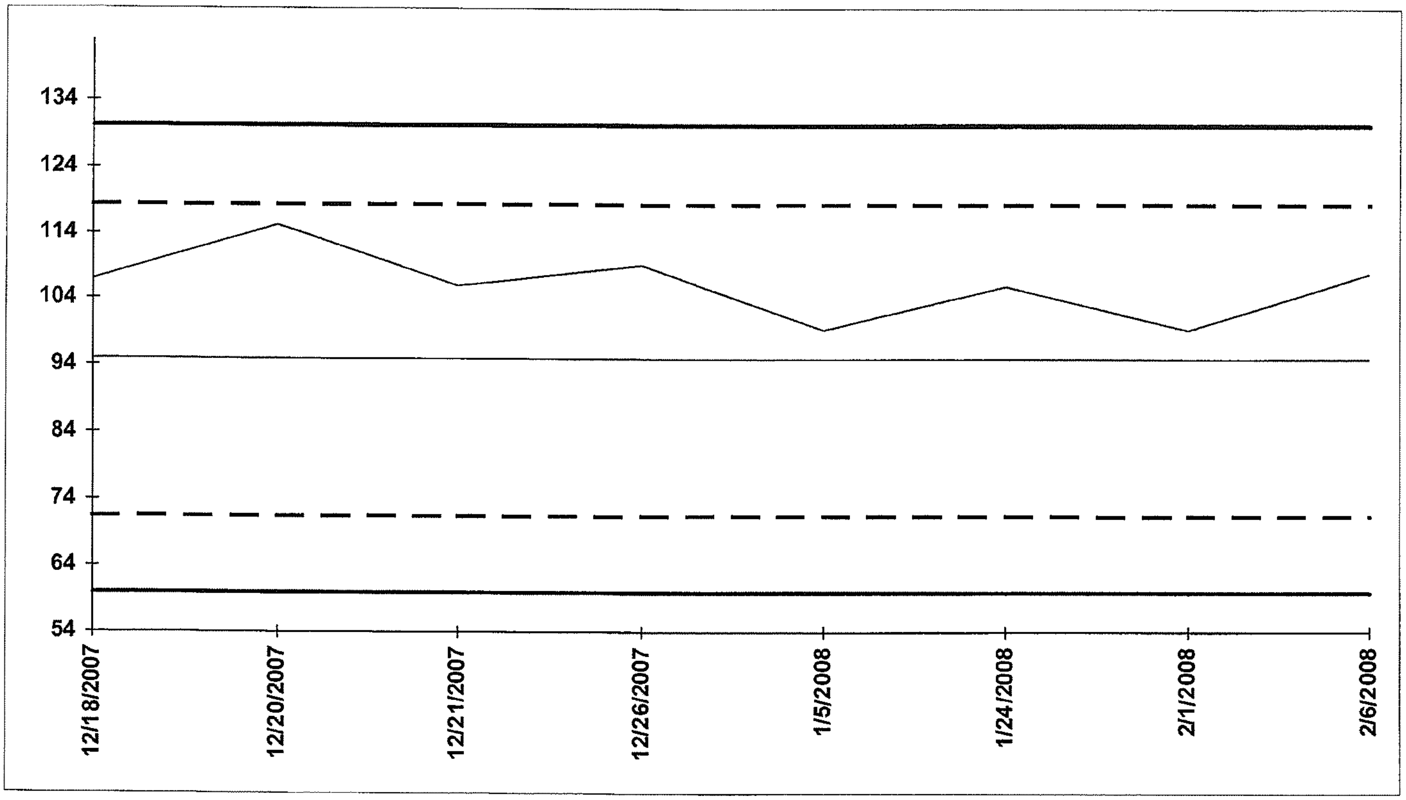
Mitkem Laboratories

REC QUALITY CONTROL CHART

Date: *15-Feb-08*

Test Code: SW8082_S Analyte: AROCLOR-1260

SampType	Sample ID	Analysis Date	Batch ID	Low Limit	High Limit	% Recovery
LCS	LCS-33875	12/18/2007	33875	60	130	109.2
LCS	LCS-33875	12/18/2007	33875	60	130	104.6
LCSD	LCSD-33806	12/20/2007	33806	60	130	118.6
LCSD	LCSD-33785	12/20/2007	33785	60	130	115.2
LCS	LCS-33806	12/20/2007	33806	60	130	109.6
LCS	LCS-33785	12/20/2007	33785	60	130	117.2
LCS	LCS-33822	12/21/2007	33822	60	130	103.9
LCSD	LCSD-33822	12/21/2007	33822	60	130	107.8
LCS	LCS-33951	12/26/2007	33951	60	130	124.1
LCSD	LCSD-33951	12/26/2007	33951	60	130	120.0
LCS	LCS-33970	12/26/2007	33970	60	130	116.8
LCSD	LCSD-33970	12/26/2007	33970	60	130	112.2
LCS	LCS-33892	12/26/2007	33892	60	130	84.2
LCSD	LCSD-33892	12/26/2007	33892	60	130	98.3
LCS	LCS-34138	1/5/2008	34138	60	130	98.3
LCSD	LCSD-34138	1/5/2008	34138	60	130	100.8
LCSD	LCSD-34483	1/24/2008	34483	60	130	106.4
LCS	LCS-34483	1/24/2008	34483	60	130	105.5
LCS	LCS-34658	2/1/2008	34658	60	130	99.4
LCSD	LCSD-34747	2/6/2008	34747	60	130	107.4
LCS	LCS-34747	2/6/2008	34747	60	130	108.3



13.0 QUALITY ASSURANCE SYSTEMS AUDITS, PERFORMANCE AUDITS AND FREQUENCIES

The MITKEM Quality Assurance staff performs routine internal audits of the laboratory. The frequency of such audits depends on the workload in house but is done annually, at a minimum. These audits entail reviewing laboratory logbooks and all appropriate operations to ensure that all laboratory systems including sample control, analytical procedures, data generation and documentation meet contractual requirements and comply with good laboratory practices.

13.1 System Audits:

The QA Director audits each individual laboratory annually in order to detect any sample flow, analytical or documentation problems and to ensure adherence to good laboratory practices as described in MITKEM's Standard Operating Procedures and Quality Assurance Plan. A checklist used in an internal systems audit at MITKEM is presented in Figure 13.1-1.

Areas covered by the internal audit include logbook documentation and review, standard traceability, standard storage and expiration dates, method criteria adherence, instrument maintenance records, SOP review, and knowledge of the analysts. Often, deficiencies that have been noted during "outside" audits will also be reviewed.

Upon the completion of the internal audit, a formal audit report is presented to the laboratory supervisor who is given a specific timeframe to respond in writing to the deficiencies. The QA Department will do a follow up audit to check that at least the major deficiencies have been corrected. The follow-up audit occurs within 30-45 days from the date of the audit response.

13.2 Performance Audits:

MITKEM participates in external Performance Test (PT) studies under the National Environmental Accreditation Program (NELAP) through the State of New Jersey (Mitkem Laboratories Primary Accreditation Authority). The QA department of the laboratory administers the Performance Evaluation Samples for Wastewater/Solid Waste (WW/SHW). Additionally, performance samples are administered for test methods not certified through the New Jersey program, such as explosives and specific state methods.

Several times a year outside agencies (federal, state, or private) may schedule an audit at Mitkem in order to check the laboratory's processes. Most often these audits begin and end with a meeting between auditors and laboratory management. Each individual laboratory is examined. The QA Director and/or

Senior Management Staff are most likely to remain with the auditors at all times during the audit.

Sometime after the audit, Mitkem receives a formal audit report to which it must respond. The audit report is initially reviewed by the QA Director who copies and distributes the report to each laboratory supervisor. The supervisors are required to respond in writing to the findings that pertain to his or her department. The QA Officer compiles the formal response that could be tweaked several times before the auditing authority accepts the results.

The QA Officer then sends a memo to each supervisor to detail what needs to be done in each department within a specific timeframe. The QA Department then follows up with the labs to ensure procedures have been modified and the corrective actions are in place.

Internally, performance is monitored on a daily basis at MITKEM through the use of surrogate standards, LCS, and MS/MSD samples. Check samples from independent commercial sources are employed routinely in each of the MITKEM laboratory departments and ensure continuing high-level performance. The QA Director at a minimal frequency may distribute internal blind PE samples to each laboratory department annually. These blind PE samples can also be used to show on-going analyst proficiency in lieu of 4 LCS studies.

Figure 13.1-1
QA Systems Audit Checklist

Quality Assurance Department
Mitkem Laboratories
Warwick, RI
Quality Review of Laboratory Department

Auditor:
Date:

Purpose

The Quality Review is a necessary tool to assess a department's quality and service functions. Each department will undergo a review of their process and procedures to evaluate their needs and areas of possible improvement. Each department will be tracked for quality, safety, compliance, reoccurring errors and process improvement.

Process

Each department will be broken down into several categories or areas of review. Each category will be reviewed and assessed for compliance. The categories will include at a minimum:

Personnel Training and Knowledge
Equipment
SOP Updates and Review
Logbook Review and Control
Chemicals/Standard Storage and Preparation
Sample Procedures and Method Compliance
QA/QC Procedures
Corrective Actions in process

Each category will be reviewed and a listing of any deficiency or findings will be documented for response and correction. The department Supervisor (s) will be required to respond to each deficiency or finding within 30 days of receipt of this report. All deficiencies or findings must have its correction(s) documented. For example, logbook deficiencies will require a photocopy of the correction(s). All other responses will require a written response or adequate explanation. Deficiencies will be tracked for reoccurrence. All documentation should be forward to the QA department for evaluation. A follow up audit may be scheduled.

Findings:

Personnel Training and Knowledge

Equipment

Quality Assurance Department
Mitkem Laboratories
Warwick, RI

SOP Updates and Review

Logbook Review and Control

Chemicals/Standard Storage and Preparation

Sample Procedures and Method Compliance

QA/QC Procedures

Corrective Actions in process

Items marked with an asterisk will require a written response by the lab supervisor or his designee to the QA Dept. This response must be submitted to the QA Department by *mm/dd/yyyy* .

Auditor ____________________________________ Date ____________________

14.0 PREVENTIVE MAINTENANCE

Preventive maintenance is a routine practice at MITKEM for all instrumentation. Scheduled preventive maintenance minimizes instrument downtime and subsequent interruption of analysis. All major instrumentation is under service contracts so that downtime (due to catastrophic events) is minimized.

Only those equipment items meeting or exceeding applicable performance requirements are used for data collection. This includes items such as laboratory balances as well as major analytical instruments such as ICPs, GCs and GC/MSs.

MITKEM's laboratory personnel are familiar with the routine and non-routine maintenance requirements of the instruments they operate. This familiarity is based on education, hands-on experience and manufacturer's training courses.

GC Maintenance:

1. The injection septum will be replaced once approximately fifty (50) injections or earlier if a leak develops.

2. The injection liner will be replaced once approximately fifty (50) injections or when initial and/or continuing calibrations fails repeatedly to meet method requirements.

3. The gold seal will be replaced except for septum and liner, and the column will be trimmed whenever an initial calibration is run.

4. The column will be replaced if chromatograms show excessive peak tailing and/or initial and continuous calibration verifications fail repeatedly to meet method requirements.

GC/MS Maintenance:

1. GC injector and liner are cleaned daily for semivolatiles and monthly for volatiles.

2. The column will be replaced if chromatograms show excessive peak tailing and/or initial and continuous calibration verifications fail repeatedly to meet method requirements.

3. The ion source will be cleaned when initial and/or continuing calibration repeatedly fail method specified criteria.

4. The pump oil will be replaced once a year.

ICAP Maintenance:

1. Peristaltic pump tubing will be replaced every sixteen (16) hours of instrument time or sooner when memory effects are manifested.

2. The plasma torch is cleaned with (aqua regia) every 1-2 weeks. If memory effects are manifested the torch will be cleaned immediately.

3. The sample introduction (spray chamber and nebulizer) is cleaned every 2-3 weeks.

4. Air filters are cleaned each time the torch is cleaned or as needed upon visual inspection.

5. Once every six (6) months, under service contract, the instrument undergoes extensive maintenance by a manufacturer's service engineer.

Mercury FIMS 100 Maintenance:

1. Pump tubing is replaced every 48 hours of instrument run time.

2. Sample loops, gas tubing extensions and sample capillaries are replaced as needed.

Lachat 8000 Maintenance:

1. All pump tubing is replaced every 48 hours of instrument run time.

2. Auto sampler arm is lubricated every 48 hours of instrument run time.

3. The manifolds, tubing connections, valves, etc. are cleaned or replaced as needed.

TCLP/SPLP Tumbler Maintenance:

1. The tumbler is checked at every use for number of rotations per minute (30rpms), the ambient temperature checked and documented in the RPS Logbook.

2. If the tumbler is not spinning at 30rpms, motor is cleaned and oiled.

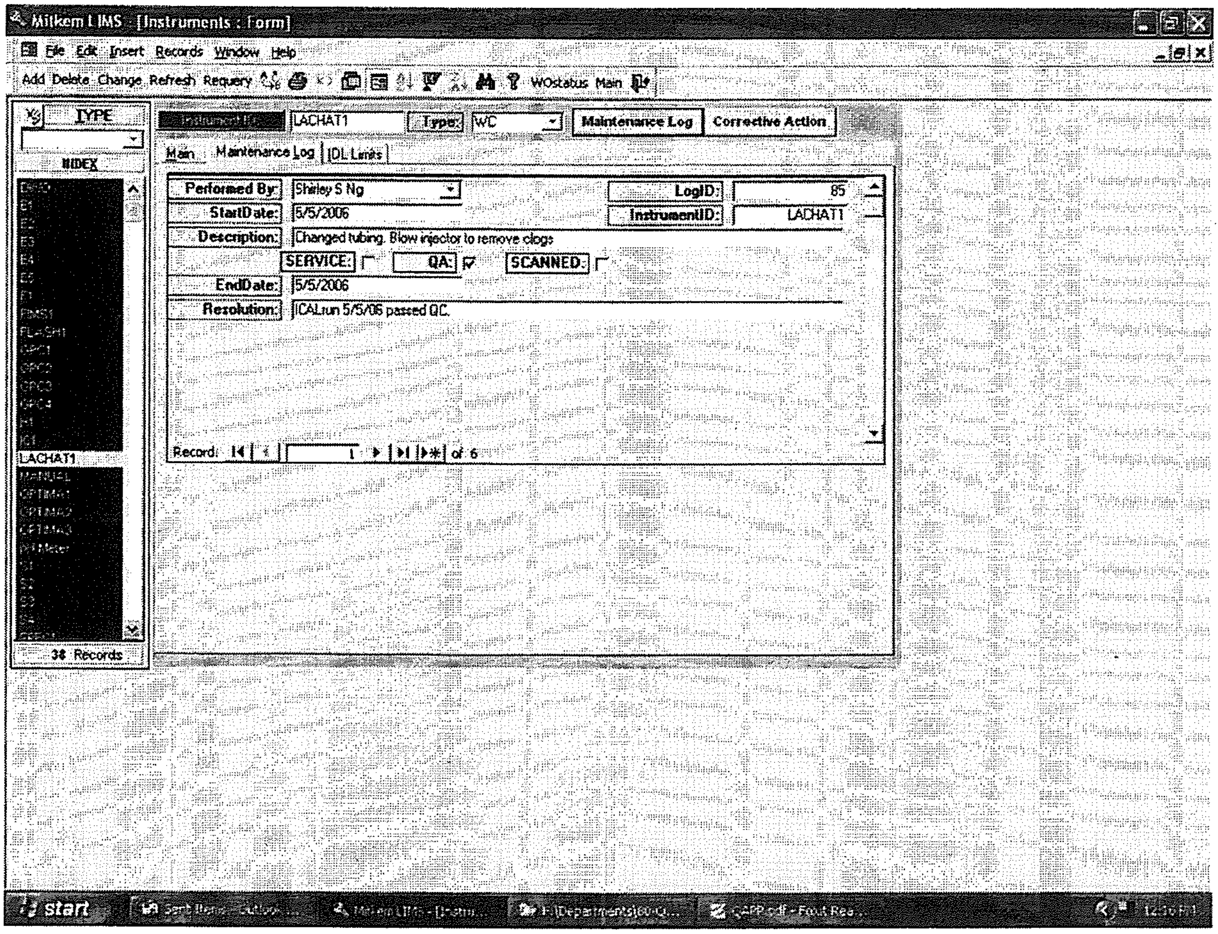
3. If tumbler is not spinning at 30rpms after maintenance, the motor will be replaced.

Instrument maintenance logs are kept for each instrument in the OMEGA LIMS System (figure 14-1). All employees have access to the LIMS system. The person performing the maintenance is required to provide the following information in the online log:

- Equipment identifier
- The inspection, maintenance, calibration or corrective action(s) performed.
- The trigger(s) for the maintenance action(s)
- The identity of the person(s) performing the maintenance
- The date on which the work was performed, and
- The condition of the equipment upon completion of the work.

MITKEM maintains an inventory of replacement parts required for preventive maintenance and spare parts that often need replacement, such as filaments for GC/MS systems and the more mundane electrical fuses and GC column ferrules. To control cost, the appropriate supervisor shall decide the types and numbers of spare parts kept on hand for each equipment item.

Figure 14-1



Example of Instrument Maintenance Log

Figure 14-2
Instrument Maintenance Schedule

Figure 14-2

Mitkem Laboratories

Preventive Maintenance Schedule

Instrument	Activity	Frequency
Gas Chromatograph (GC)	Injection septum replaced	Every 50 injections
	Injection liner replaced	Every 50 injections
	The column will be replaced if chromatograms show excessive peak tailing and/or initial and continuing calibration verifications fail repeatedly to meet method requirements.	As needed
GC/MS	GC injector and liner replaced	Daily
	The column will be replaced if chromatograms show excessive peak tailing and/or initial and continuing calibration verifications fail repeatedly to meet method requirements.	As needed
	The ion source will be cleaned when initial and/or continuing calibration repeatedly fail method specified criteria.	As needed
	The pump oil is replaced.	Annually
Inductively Coupled Plasma (ICP)	Peristaltic pump tubing is replaced	Every 16 hours of instrument run time
	The plasma torch is cleaned (aqua regia).	Weekly
	The sample introduction (spray chamber and nebulizer) is cleaned	Weekly
	Air filters are cleaned.	Biweekly
	The instrument undergoes extensive maintenance by the manufacturer's service engineer.	Semiannually
Mercury FIMS 100	Pump tubing is replaced	Every 48 hours of instrument run time
	Sample capillary and tubing are replaced	Every 48 hours of instrument run time
	Inside of optical cell is cleaned	Every 48 hours of instrument run time
Lachat 8000	All pump tubing is replaced	Every 48 hours of instrument run time
	Autosampler arm is lubricated	Every 48 hours of instrument run time
	The instrument undergoes extensive maintenance by the manufacturer's service engineer.	Semiannually

15.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, COMPLETENESS, METHODS DETECTION LIMIT AND LINEAR DYNAMIC RANGE

These mathematical equations represent the means of calculating analytical figures of merit on a routine basis at MITKEM. However, they may be supplanted with other calculations if requested by the client. Precision, accuracy and completeness are also discussed in Section 6.

15.1 Precision:

Precision is frequently determined by the comparison of replicates, where replicates result from an original sample that has been split for identical analyses. Standard deviations, *s*, of a sample are commonly used in estimating precision.

Sample standard deviation, *s*:

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

where a quantity, x_i (e.g. a concentration), is measured n times with a mean, $\bar{x}$.

The relative standard deviation, *RSD* (or sample coefficient of variation, *CV*), which expresses standard deviation as a percentage of the mean, is generally useful in the comparison of three or more replicates (although it may be applied in the case of n = 2).

$$\%RSD = 100\ (s\ /\ \bar{x})$$

or

$$CV = 100\ (s\ /\ \bar{x})$$

In which: *RSD* = relative standard deviation, or
CV = coefficient of variation
s = standard deviation
$\bar{x}$ = mean

For duplicates (samples that result when an original sample have been split into two for identical analyses), the relative percent difference (*RPD*) between the two samples may be used to estimate precision.

$$RPD = \frac{2(D_1 - D_2)}{(D_1 + D_2)} \times 100\%$$

In which: D_1 = first sample value
D_2 = second sample value (duplicate)

15.2 Accuracy:

The determination of accuracy of a measurement requires knowledge of the true or accepted value for the signal being measured. Accuracy may be calculated in terms of bias as follows:

$$Bias = X - T$$

$$\%Bias = 100\frac{(X - T)}{T}$$

In which: X = average observed value of measurement
T = "true" value

Accuracy also may be calculated in terms of the recoveries of analytes in spiked samples:

$$\%\text{Recovery}(\%R) = 100 \times \frac{(SSR - SR)}{SA}$$

where: SSR = spikes sample result
SR = sample result
SA = spike added

15.3 Completeness:

Determine whether a database is complete or incomplete may be quite difficult. To be considered complete, the data set must contain all QC check analyses verifying precision and accuracy for the analytical protocol. Less obvious is whether the data are sufficient to achieve the goals of the project. All data are reviewed in terms of goals in order to determine if the data set is sufficient.

Where possible, the percent completeness for each set of samples is calculated as follows:

$$\%\text{Completeness} = \frac{\text{valid data obtained}}{\text{total data planned}} \times 100$$

15.4 Method Detection Limit:

The method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is not zero. It is computed as follows from data obtained by repeatedly determining an analyte in a given sample matrix:

1. Analyze at least seven samples of a homogeneous matrix spike that contains the analyte(s) of interest at concentrations of three to five times the expected MDL. The entire sample preparation and analysis protocol must be applied in each analysis; simply preparing one sample and repeating a measurement three or more times on the sample in not acceptable.

2. Upload the acceptable data into LIMS Omega.

3. The LIMS will compute the standard deviation of the results for each analyte using the following equation:

$$\text{MDL} = t_{(n\text{-}1,\ \alpha=0.99)}\ (s)$$

Where t is the one-sided student's t value appropriate for the number of samples analyzed, n; α is the statistical confidence level; and s is the standard deviation.

The one-sided t-values are presented below:

Number of samples	t-value
7	3.14
8	2.996
9	2.90
10	2.82

4. The MDL is then checked against 40CFR136 requirements by the QA Department. If the MDL is acceptable then it is uploaded into the LIMS by either the QA Department or LIMS Administrator.

5. Immediately following the determination of the MDL, MDL check samples are analyzed at a concentration approximately equal to 2 x the new MDL. The analyte of interest must be detected at this concentration, or the MDL may require raising.

6. An elevated MDL can be uploaded if necessary into the LIMS as long as documentation is available to show that the applicable method can produce an MDL at least that low. This can commonly occur for ICP

analysis in which extremely low MDLs can cause method compliance issues.

15.5 Linear Dynamic Range:

The linear dynamic range is the concentration range over which the instrument response is linear. It is determined by analyzing a series of standard solutions that extends beyond the non-linear calibration region at both the low and high extremes, and selecting that range of standards which demonstrates a linear relationship between instrument response and concentration.

For ICP analysis, the linear dynamic range is determined by analyzing each metal at 3 different concentrations. The concentration which produces results within a 10% error is determined to be the linear dynamic range. This procedure must be performed per individual method requirements.

ILM5.3 requires the analysis of the linear dynamic range be determined quarterly, with a 5 % error.

16.0 CORRECTIVE ACTION

An essential element of the QA Program, Corrective Action provides systematic, active measures taken in the resolution of problems and the restoration of analytical systems to their proper functioning.

Corrective actions for laboratory problems are described in MITKEM's laboratory standard operating procedures. Personal experience often is most valuable in alerting the bench scientist to questionable results or the malfunctioning of equipment. Specific QC procedures are designed to help the analyst determine the need for corrective actions (see Section 11, Data Reduction, Validation and Reporting). Corrective actions taken by scientists in the laboratory help avoid the collection of poor quality data. MITKEM's corrective action program divides these issues into routine and non-routine corrective actions as described below.

<u>Routine Corrective Action</u> – A routine corrective action is taken when the out-of-control event encountered is one that is detected at the appropriate level in the QA process. Routine corrective actions are defined in the analytical SOP with specific steps to be taken as corrective action (i.e., low surrogate recovery, continuing calibration verifications, project specific protocols that do not meet acceptance criteria, etc.) Routine corrective actions must be documented as described in the analytical SOP, but do not require further documentation in the corrective action logbook. Examples of routine corrective action situations: surrogate/surrogates out, LCS out, CCV out, ICV out, IS area/areas out, typographical errors, random blank contamination, or false positive hit/spectral ID match corrected during data review.

<u>Non-Routine Corrective Action</u> – A non-routine corrective action is taken when the out-of-control event encountered is not typical for the method. For example, QC failures that pass through the final review to the client, procedural errors – not following the SOP, or a situation not being detected by normal QA procedures that could adversely impact the accuracy, precision, etc. of a result. Non-routine corrective actions must be documented in the Corrective Action Request (CAR) system, located within the MITKEM LIMS. The analyst, using his/her own judgement, may deem any corrective action situation non-routine and formally document it in a CAR. When in doubt about a corrective action, the analysts are instructed to err on the side of formal CAR documentation. Examples of non-routine corrective action situations include: bad standard, expired standard mix being used, incorrect equation, "client-detected" problems, not following SOP protocols, using bad or contaminated lot of chemical/reagent/solvent, deciding to release data not conforming to SOP requirements, compound retention time outside of range, or improper library spectrum that leads to re-occurring mis-identification of compounds.

The essential steps in MITKEM's corrective action system are:

1. Identify and define the problem.

2. Assign responsibility for investigating the problem. Usually this individual is the department supervisor.

3. Investigate and determine the cause of the problem.

4. Determine a corrective action to eliminate the problem and prevent recurrence. Any changes that result from the corrective action investigation must be documented.

5. Assign and accept responsibility for implementing the corrective action.

6. Establish effectiveness of the corrective action and implement it.

7. Verify that the corrective action has eliminated the problem.

8. Both the laboratory and the QA Department need to monitor the corrective action to ensure it is effective.

9. Any corrective actions that cast doubt on the laboratory's compliance with its own policies and procedures may require an internal audit by the QA Department.

This scheme is generally accomplished through the use of Corrective Action Report Forms available to each of MITKEM's laboratories within the OMEGA LIMS system. Use of this report notifies the QA Department of a potential problem as described in SOP No. 80.0007. The QA Director initiates the corrective action by relating the problem to the appropriate laboratory managers and/or project managers who then investigate or assign responsibility for investigating the problem and determine its cause. Once determined, the QA Director will approve appropriate corrective action. Its implementation is later verified through an internal laboratory audit. Once the QA Director feels the system has returned to control, s/he will finalize the CAR using a password protected QA step.

Information contained on corrective action forms is kept confidential within MITKEM and is generally limited to the individuals involved. Severe problems and difficulties may warrant special reports to the Laboratory Director of MITKEM who will ensure that the appropriate corrective actions are taken.

Nonconformance:

Any breech of standard protocols is a nonconformance item that is documented on the Corrective Action Request Form and management informed immediately. The following are nonconformance items:

1. Sample holding time exceeded.

2. Hoods, Class "S" weights, NIST Thermometers, balances, automatic pipettes, being used but not certified.

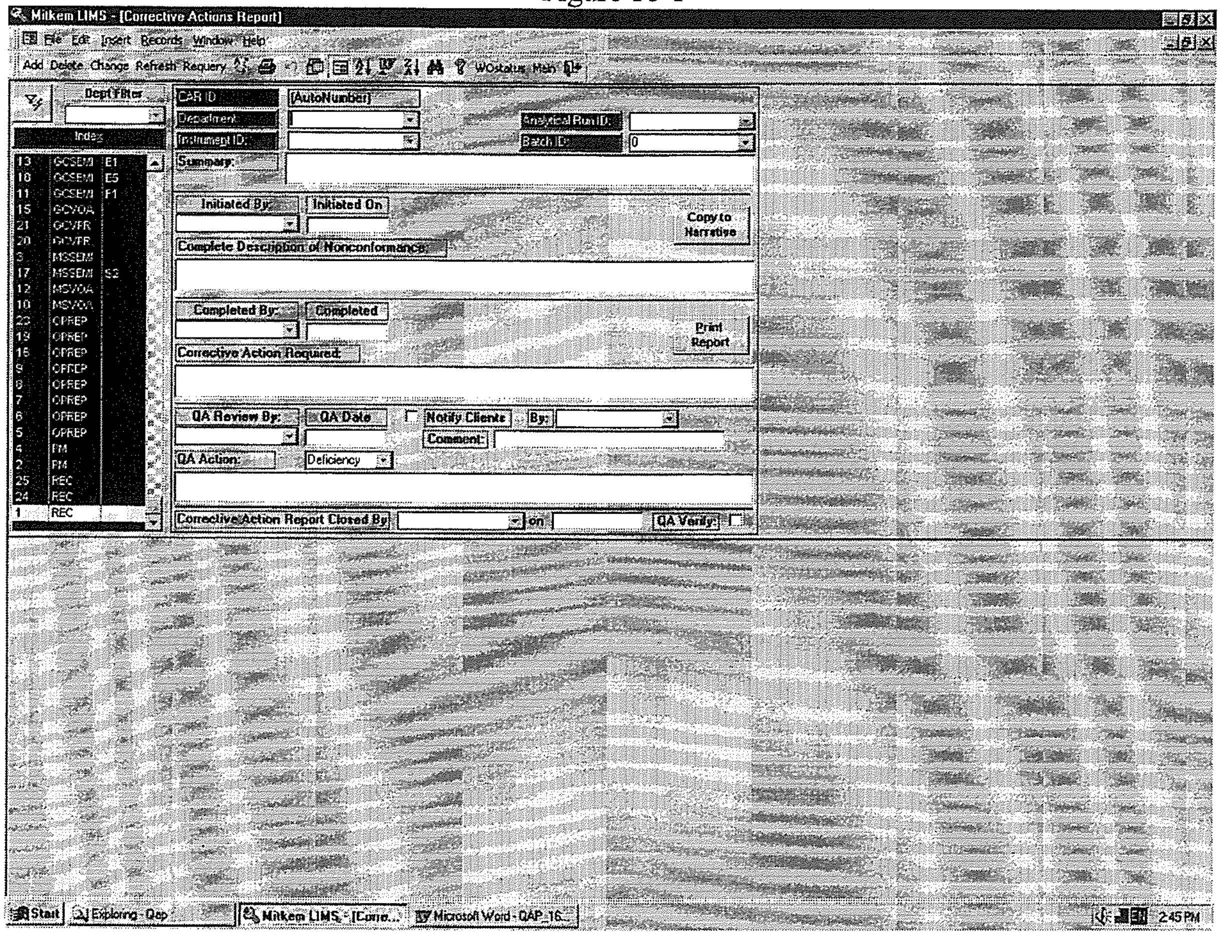
3. Expired standards being used.

4. Manual integration being misrepresented.

16.1 Client Complaints:

MITKEM ensures client complaints are dealt with quickly and completely. The policies are stated in the laboratory Client Complaint Standard Operating procedure (SOP No. 80.0002).

Figure 16-1



Quality Assurance Corrective Action Request Form

17.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

The MITKEM Quality Assurance Director submits a QA report annually to upper management. The report should be completed and submitted no later than the 15th of July in any calendar year.

The report contains detailed laboratory information and QA activities during the previous twelve months. Items to include are the status of internal and external audits, client complaints, quality control activities, resources and staffing. See the following pages for the report format.

Management will review the QA report and respond to outstanding issues. Management will add a review of the suitability of policies and procedures, and any other relevent issues. The response report is due within 30 days of the QA Report receipt.

A copy of the report is kept on file in the QA department.

In case of a severe problem or difficulty, a special report is prepared by the QA Director and submitted immediately to management.

Figure 17-1

MITKEM LABORATORIES,
A DIVISION OF SPECTRUM ANALYTICAL, INC.
Annual Quality Assurance Report to Management

1. Status of Internal Audits.

2. Status of External Audits.

3. Identification of Quality Control issues in the laboratory.

4. Discussion of corrective action issues.

5. Proficiency Testing.

6. Changes in volume and type of work undertaken.

7. Client Feedback.

8. Reports from management and supervisory personnel.

18.0 SAFETY

MITKEM maintains safety through a program managed by the Safety Officer and the Safety Committee. Responsibilities include many activities needed to comply with the Right-to-Know Laws.

- Training seminars with information on OSHA safety instruction for new employees.
- Introductory training to include location of fire extinguishers, first aid supplies, etc.
- Chemical Hygiene Plan/Health and Safety manual review when hired.
- Annual Health and Safety Manual review and revision as needed.
- Monthly Safety Committee meetings.
- Centralized MSDS information.
- Maps with safety equipment and all exits noted.
- Posted safety rules.

If a chemical spill occurs, proper actions are described in Mitkem's Contingency Plan. Each department at Mitkem has its own copy of the Contingency Plan. Additionally, the local fire department (Warwick) and hospital (Kent County) also have a copy in case a need arises. All employees are required to review the plan when hired.

Emergency equipment, such as spill control kits, fire extinguishers and fire blankets are located throughout the laboratory areas. The Contingency Plan has instructions for evacuation, notification of emergency authorities and regulatory personnel in the event of a chemical accident.

19.0 WASTE MANAGEMENT

19.1 Pollution Prevention

The waste management option of choice is to prevent pollution by minimizing the amount or types of chemical wastes that are generated. Mitkem's ability to minimize waste generation is limited by the chemical analysis techniques that are required by the EPA or other authors of test methods. As new test methods are utilized in the laboratory, the type and volume of chemical waste generated by the new test is considered. Analysts and Supervisors are encouraged to look for ways to reduce the amount of chemical waste, or the type of chemical waste generated during the testing process; HOWEVER, no method is allowed to be modified without discussion among the Supervisor, Technical Director, QA Director and other management personnel to determine the affect of the change on the resulting data.

19.2. Waste Management

Mitkem has identifies and routinely disposes of chemical wastes in several hazardous waste streams. In general these are acids, caustics, solvent wastes and various laboratory waste solids. No laboratory chemical waste is disposed in the trash or dumped down the drain. All remaining sample volume following testing, and after contract-required disposal date has past, are disposed in one of these waste streams. These wastes are fully described in Mitkem's Waste Management Plan and in Mitkem's Profile Log that has been prepared by Univar, Mitkem's waste hauler. Other hazardous wastes are identified and properly disposed according to these documents.

Continued compliance is monitored monthly by an outside consultant to ensure all RI DEM regulations are met.

20.0 DEFINITIONS, ACRONYMS, ABBREVIATIONS:

ACCURACY: The closeness of agreement between an observed value and An accepted reference value.

BATCH: A group of samples of the same matrix that are processed as a unit. Unless defined differently by a specific analytical method (such as Oil & Grease by Method 1664), the maximum batch size is 20 samples.

BIAS: The deviation due to analytical or matrix effects of the measured value from a known spiked amount.

BLANK: A "clean" matrix analysis. Such as: Equipment Blank, Method Blank, Trip Blank.

CAS: Chemical Abstracts Service, a registry where chemicals are assigned identification numbers.

CCB: Continuing Calibration Blank

CCV: Continuing Calibration Verification standard.

CLP: Contract Laboratory Program. A contract used by EPA to purchase analytical services. Also refers to the test protocols described in that contract. The CLP analyses can be used for EPA or for other clients. CLP-format data reports are arranged as described in the EPA CLP contract, including specified data report pages and all raw data. The CLP analysis scheme includes OLM (Organic Low/Medium-soil and water), OLC (organic low concentration-waters only) and ILM (Inorganic Low/Medium-soil and water) analyses.

CONTROL SAMPLE A QC sample introduced into a process to monitor the performance of the system.

DL: Dilution, not used when the initial analysis is performed at dilution, but is used for a secondary dilution.

DUPLICATE: see Matrix Duplicate, Field Duplicate, and Matrix Spike Duplicate.

EQUIPMENT BLANK A sample of analyte-free water that has been used during sample collection to measure any contamination introduced during sample collection.

ICB: Initial Calibration Blank

ICV: Initial Calibration Verification standard

IDL: Instrument Detection Limit. Statistical value similar to MDL, but with analyses performed on standards that have not been through the sample preparation process.

FIELD DUPLICATES possible to the same point in space and time. Independent samples that are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

LAB CONTROL SAMPLE(LCS) A blank spiked with compound(s) representative of the target analytes. This is used to document laboratory performance in a "clean" matrix.

MATRIX: The component or substrate (e.g., water, soil, air, and oil) which contains the analyte of interest.

MATRIX DUP (DUP) A sample split by the laboratory that is used to document the precision of a method in a given sample matrix.

MATRIX SPIKE (MS) An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

MATRIX SPIKE DUPE (MSD) Laboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given Sample matrix.

METHOD BLANK (MB) An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

METHOD DETECTION LIMIT (MDL) The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte. For operational purposes, when it is necessary to determine the MDL in the matrix, the

MDL should be determined by multiplying the appropriate one-sided 99% t-statistic by the standard deviation obtained from a minimum of seven analyses of a matrix spike containing the analyte of interest at a concentration estimated to be three to five times the MDL, where the t-statistic is obtained from standard references.

MSA: Method of Standard Additions

ND: Not Detected. Used in conjunction with the reporting limit.

ORGANIC-FREE REAGENT WATER: For volatiles, all references to water in the methods refer to water in which an interferent is not observed at the reporting limit of the compounds of interest. Organic-free reagent water can be generated by passing tap water through a carbon filter bed containing about 1 pound of activated carbon. A water purification system may be used to generate organic-free deionized water.
For semivolatiles and nonvolatiles, all references to water in the methods refer to water in which an Interferent is not observed at the reporting limit of the compounds of interest. Organic-free reagent water can be generated by passing tap water through a carbon filter bed containing about 1 pound of activated carbon. A water purification system may be used to generate organic-free deionized water.

PPB: Parts Per Billion, ug/L, ug/Kg

PPM: Parts Per Million, mg/L, mg/Kg

PQL: Practical Quantitation Limit. Is equivalent to Reporting Limit.

PRECISION: The agreement among a set of replicate analyses.

PS: Post Spike. Spike added at the analysis level (as opposed to at the beginning of sample preparation) to determine interferences.

REPORTING LIMIT: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The RL is generally 5 to 10 times the MDL. However, it may be nominally chosen other than these guidelines to simplify data reporting. For many analytes the RL concentration is selected as the lowest non-zero standard in the calibration curve. Sample RLs are matrix-dependent, and are adjusted by the amount of sample analyzed, dilution, percent moisture.

RE: Reextraction or Reanalysis

RPD: Relative Percent Difference, used to determine precision.

RRF: Relative Response Factor. Used for quantification with the internal standard procedure.

RT: Retention Time for a chromatographic peak, as calculated from the time of injection.

SD: Serial Dilution

STANDARD ADDITION: The practice of adding a known amount of an analyte to a sample immediately prior to analysis. It is typically used to evaluate interferences.

STANDARD CURVE: A plot of concentrations of known analyte standards versus the instrument response to the analyte. Calibration standards are prepared by successively diluting a standard solution to produce working standards which cover the working range of the instrument. Standards should be prepared at the frequency specified in the appropriate method. The calibration standards should be prepared using the same type of acid or solvent and at the same concentration as will result in the samples following sample preparation. This is applicable to organic and inorganic chemical analyses.

SURROGATE: An organic compound that is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples.

TRIP BLANK: A sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organics samples.

From EPA SW-846, Revision 4, and other sources.

MITKEM LABORATORIES

INSTRUMENTATION and EQUIPMENT LIST

APPENDIX A

Weight Set Identification:

1. **WT1-Organic Prep Weight Set**
2. **WT2-Organic Prep 100g**
3. **WT3-Organic Prep 300g**
4. **WT4-Organic Prep 1kg**
5. **WT5-Inorganics Weight Set**
6. **WT6-VOA Weight Set**

Mitkem Laboratories
Balance List

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
TOP-LOADING Balance	OHAUS	1121230069	2000	2000	New	TL10	Organic
Analytical Balance	Denver	0077138	1995	1995	New	AB-1	Inorganic
TOP-LOADING Balance	OHAUS Voyager	F2921120391055	2001	2001	New	TL9	Inorganic
TOP-LOADING Balance	Denver	0079896	2000	2000	New	TL1	Metals
TOP-LOADING Balance	OHAUS Precision Std.	C22427176	2002	2007	New	TL6	Metals
TOP-LOADING Balance	OHAUS Navigator	1121122373	2002	2002	New	TL11	Unit 3
TOP-LOADING Balance	OHAUS	CD8910	2000	2000	New	TL4	VOA
TOP-LOADING Balance	OHAUS Navigator	1122173423	2003	2003	New	TL12	Inorganic
TOP-LOADING Balance	OHAUS Scout Pro	7126212230	2007	2007	New	TL13	LOGIN

Mitkem Laboratories
Equipment List

Department: Inorganics : Metals& Wet Chemistry

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
Optima 4300DV	Perkin Elmer	077N3102302	Nov-03	Nov-03	New	Optima3	Metals
Optima 3100XL	Perkin Elmer	069N8060801	Nov-98	Nov-98	New	Optima2	Metals
FIMS 100	Perkin Elmer	1131	Mar-00	Mar-00	Used	FIMS	Metals
GPR Centrifuge	Beckman Instruments	7M149	Apr-02	Apr-02	Used	Centrifuge	Unit 3
Apollo 9000	Tekmar/Dohrmann	US03035002	Apr-03	Apr-03	Demo	TOC1	Unit 3
Quick Chem 8000	Lachat Instruments	A83000-1020	Apr-96	Apr-96	New	Lachat	Unit 3
IC	Dionex	95030498E980802	May-03	May-03	New	IC1	Unit 3
Genesys 20	Thermospectronic	3SGD332010	Apr-02	Apr-02	New	Spec 2	Wetchem
Dessicator	Sanplatec Corp	none	June-06	June-06	New	DryKeeper	Unit 3

Mitkem Laboratories
Equipment List

Department: Organic Prep

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
Vortex Concentrator	Labconco	000493001C	Jul-98	Jul-98	New	RV I	O Prep
Vortex Concentrator	Labconco	010595103E	Apr-99	Apr-99	New	RV II	O Prep
Vortex Concentrator	Labconco	011196291E	Jun-01	Jun-01	New	RV III	O Prep
Vortex Concentrator	Labconco	246368	Dec-05	Jan-06	Used	RV IV	O Prep
Vortex Concentrator	Labconco	266438	Dec-05	Jan-06	Used	RV V	O Prep
Vortex Concentrator	Labconco	246505	Dec-05	Jan-06	Used	RV VI	O Prep
Vortex Concentrator	Labconco	266818	Dec-05	Jan-06	Used	RV VII	O Prep
Nitrogen Concentrator Bath	Organomations	17033	Jun-97	Jun-97	New	NZ1	O Prep
Deionized Water Generator	Barnstead Thermodyne	582941018789	Jun-95	Jun-95	New	DI1	O Prep
Pressurized Fluid Extractor	Dionex	98070129	Jun-00	Jun-00	New	PFE1	O Prep
Gel Permeation Chromatograph	J2/AccuPrep	P26D031	Jun-05	Jul-05	New	GPC3	O Prep
Gel Permeation Chromatograph	J2/AccuPrep	06D-1196-4.1	Jul-07	Aug-06	New	GPC4	O Prep
Misonex Ultrasonic Disruptor	Sonicator/Heat systems	Unable to view			New	OPH1	O Prep
Misonex Ultrasonic Disruptor	Sonic Dismembrator Fisher Model 550	Unable to view			New	OPH2	O Prep

Misonex Ultrasonic Disruptor	Sonic Dismembrator Fisher Model 500	Unable to view			New	OPH3	O Prep
Misonex Ultrasonic Disruptor	Sonic Dismembrator Fisher Model 500	Unable to view			New	OPH4	O Prep

Mitkem Laboratories
Equipment List

Department: Pest/PCB

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
GC/ECD	Hewelett Packard	3336A55650	Oct-94	Oct-94	New	E1	Pest/PCB
GC/ECD	Hewelett Packard	3336A59890	Oct-94	Oct-94	New	E2	Pest/PCB
GC/ECD	Hewelett Packard	3235A45554				E3	Pest/PCB
GC/ECD	Hewelett Packard	US00032017				E4	Pest/PCB
GC/ECD	Agilent	US00037060				E5	Pest/PCB
GC/FID	Hewelett Packard	US00001898				F1	Pest/PCB

Mitkem Laboratories
Equipment List

Department: Receiving

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
% Solid Oven	Thello Lab Oven	600011006			used		Unit 3
R2 Fridge	Kenmore 15	D74779289			used		Receiving
Walk in Cooler		Not Applicable			used		Receiving

2/15/2008

Mitkem Laboratories
Equipment List

Department: SVOA

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
GC/MS	Agilent	3336A55649 / 3435A01848	Oct-94	Oct-94	New	S1	SVOA
GC/MS	Agilent	3310A48337 / 3449A02133	Oct-94	Oct-94	New	S2	SVOA
GC/MS	Agilent	US00011367 / US72821130	Nov-99	Nov-99	Used	S3	SVOA
GC/MS	Agilent	CN10315002/ VS30945365	May-03	May-03	New	S4	SVOA
GC/MS/FID	Agilent	CN107223014 / US73317299	Jan-08	Jan-08	New	S5	SVOA

Mitkem Laboratories
Equipment List

Department: VOA

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
GC/MS	Hewelett Packard	3336A55963				V1	VOA
Auto sampler	OI	13193				V1	VOA
Concentrator	OI	J651460769				V1	VOA
GC/MS	Hewelett Packard	3336A58222				V2	VOA
Auto sampler	OI	13091				V2	VOA
Concentrator	OI	H340460074				V2	VOA
GC	Hewelett Packard	3336A56504				V3	VOA
Auto sampler	OI	C508411868				V3	VOA
Concentrator	OI	J430460188				V3	VOA
GC	Hewelett Packard	2843A21041				V4	VOA
Auto sampler	Tekmar/Dohrmann	90312004				V4	VOA
Concentrator	Tekmar/Dohrmann	88341012				V4	VOA

2/15/2008

Mitkem Laboratories
Equipment List

Department : VOA

Equipment	Manufacturer	Serial #	Date Received	Date in Service	Condition New/Used	Equipment ID	Location
GC/MS	Hewelett Packard	US00007055				V5	VOA
Auto sampler	OI	13462				V5	VOA
Concentrator	OI	J651460769				V5	VOA
GC/MS	Hewelett Packard	US00031343				V6	VOA
Auto sampler	OI	B03745A407				V6	VOA
Concentrator	OI	J651460769				V6	VOA
GC	Hewelett Packard	3140A37463				V7	VOA
Auto sampler	Tekmar/Dohrmann	US01170015				V7	VOA

Laboratory Information System Equipment

1. **Data Collection**:
    1.1. 12 - HP chem station software for collecting GC-ECD and GC-MS data
        1.1.1. 5 GC-ECD
        1.1.2. 4 GC-MS (SVOA)
        1.1.3. 4 GC-MS (VOA)
    1.2. Hardware varies but is x86 compatible
    1.3. OS is Windows, Various Versions (9x, NT, 2000)

2. **Data Storage**:
    2.1. Dell Poweredge servers
        2.1.1. Dual P IV Xeon processors
        2.1.2. 2 GB RAM
        2.1.3. 105 GB Storage expandable to 750 GB internally
        2.1.4. OS is Windows, Various Versions (NT and 2003)
    2.2. LTO tape drive - daily backup, long term archiving and data restoration
    2.3. Tape software is Backup Exec (10.x)

3. **Compound Identification**:
    3.1. 12 - Target 4.14 chromatographic software
    3.2. Hardware is Intel based (3GHZ, 512MB RAM) for Target 4.14
    3.3. OS is Windows Xp

4. **Forms Generation**:
    4.1. In house forms generation LIMS modules for SW-846, ILM4 and ILM5 metals
    4.2. In house forms generation LIMS modules for SW-846, OLC03 and SOM01 organics
    4.3. Target-based forms generation for OLM04 and SW-846 organics
    4.4. Hardware varies but is x86 compatible
    4.5. OS is Windows, Various Versions (2000 and Xp)

MITKEM LABORATORIES,
A DIVISION OF SPECTRUM ANALYTICAL INC.
FEATURING HANIBAL TECHNOLOGY

CONFIDENTIALITY, ETHICS, and DATA INTEGRITY AGREEMENT

APPENDIX B

CONFIDENTIALITY, ETHICS, AND DATA INTEGRITY

The confidentiality, ethics, and data integrity agreement attached must be signed and dated by all new personnel associated with the data generated by Mitkem Laboratories. All said personnel will complete a training course and understand the information stated in the agreement. The course must include the ethical and legal responsibilities including the potential punishments and penalties for improper, unethical, or illegal actions. All personnel must fully understand this information before signing the agreement.

Data Integrity training will be done on an annual basis. If changes to the enclosed integrity agreement are made, then all employees will be required to review and sign. All documents are stored in the employee's personnel file located in the QA Department.

MITKEM LABORATORIES,
A DIVISION OF SPECTRUM ANALYTICAL INC.
FEATURING HANIBAL TECHNOLOGY

CONFIDENTIALITY, ETHICS AND DATA INTEGRITY AGREEMENT

I. I, ______________________________ *(Name)*, state that I understand the standards of integrity required of me with regard to the duties I perform and the data I report in connection with my employment at Mitkem Laboratories.

II. I agree that in the performance of my duties at Mitkem Laboratories:

A. I shall not improperly use manual integrations to meet calibration or method QC criteria, such as peak shaving or peak enhancement.

B. I shall not intentionally misrepresent the date or time of analysis by resetting computer or instrument date/time.

C. I shall not falsify analytical results.

D. I shall not report analytical results without proper analysis documentation to support the results; dry-labbing.

E. I shall not selectively exclude data to meet QC criteria, such as calibration points, without technical or statistical justification.

F. I shall not misrepresent laboratory performance by presenting calibration data or QC limits within data reports that are not linked to the data set reported.

G. I shall not represent matrix interference as basis for exceeding acceptance criteria in interference-free matrices, such as method blanks and Laboratory Control Standards (LCS).

H. I shall not manipulate computer software for improper background subtraction or chromatographic baseline manipulations.

I. I shall not alter analytical conditions such as EM voltage, GC temperature program, etc. from standards analysis to sample analysis.

J. I shall not misrepresent QC samples such as adding surrogates after sample extraction, omitting sample preparation steps, or over-spiking/under-spiking.

K. I shall not report analytical results from the analysis of one sample for those of another.

L. I shall not intentionally represent another individual's work as my own.

III. I agree to report immediately any accidental or intentional reporting of non-authentic data by myself. Such report must be made to any member of Mitkem Laboratories' Management and the QA Director (Hanibal Tayeh, Kin Chiu, Yihai Ding, Edward Lawler, Cinde Gomes, Sharyn Lawler) both orally and in writing.

IV. I agree to report immediately any accidental or intentional reporting of non-authentic data by other employees. Such report must be made to any member of Mitkem Laboratories' Management and the QA Director (Hanibal Tayeh, Kin Chiu, Yihai Ding, Edward Lawler, Cinde Gomes, Sharyn Lawler) both orally and in writing.

V. Questions pertaining to confidentiality, ethics, and integrity may be posed to any of the above individuals.

VI. I agree not to divulge any pertinent information including but not limited to data and any other information about a project to outside sources without the prior consent from the client.

I understand that failure to comply with the above ethics and data integrity agreement can result in my immediate dismissal from Mitkem Laboratories.

______________________________ ____________________
(Signature) *(Date)*

____
(Print Name)

Training Session Record

Please read, sign and follow the instruction (s) below.

Subject: Ethics and Integrity Training to include proper laboratory practices with an understanding of examples and consequences for falsifying data. Falsifying data can lead to written warning, termination, business closure, and/or civil or criminal prosecution. It is my responsibility to report to my supervisor (anonymously if I prefer) any acts that could lead to the falsifying of data.

I agree that I understand the procedure referenced above and have attended a training session for its proper implementation.

Staff Member Name	Date	Signature	Staff Member Name	Date	Signature

MITKEM LABORATORIES

SUBCONTRACTORS

CONFIDENTIALITY, ETHICS AND DATA INTEGRITY AGREEMENT

I. I, ______________________________ *(Name)*, authorized representative of

______________________________(Subcontractor) state that I understand the standards of integrity required of me and the Subcontractor with regard to the duties performed and the data reported in connection with the analysis/analyses contracted by Mitkem Laboratories.

II. Subcontractor agrees that in the performance of analysis for Mitkem Laboratories:

A. Subcontractor shall not intentionally report data values or results that are not the actual values measured or observed;

C. Subcontractor shall not modify data values unless the modification can be technically justified through a measurable analytical process;

D. Subcontractor shall not intentionally report the dates and times of data analyses that are not the true and actual dates and times of analyses; and

D. Subcontractor shall not intentionally represent another's work as its own.

III. Subcontractor agrees to report immediately any accidental or intentional reporting of non-authentic data to Mitkem Laboratories.

IV. Subcontractor agrees not to divulge any pertinent information including but not limited to data and information about any Mitkem projects to outside sources without the prior consent from Mitkem or its clients.

I understand that failure to comply with the above ethics and data integrity agreement can result in immediate termination of the subcontract relationship with Mitkem Laboratories.

______________________________ ______________________________

(Signature) *(Date)*

____

(Name)

____

(Title)

MITKEM LABORATORIES

Resumes of Key Personnel

APPENDIX C

KIN S. CHIU

Laboratory Technical Director

Dr. Chiu is a MIT trained mass spectroscopist with extensive experience in the trace level analyses of organic and hazardous waste compounds in environmental samples. He has over twenty years of experience in using GC/MS, HPLC and GC with various detectors. He has been involved with research and development on non-routine analytical approaches to environmental chemistry problems. Dr Chiu has been the lead chemist responsible for analytical laboratory operations at several of the most respected laboratory facilities in the northeast.

Dr. Chiu has extensive program management experience through positions of high responsibility in Contract Laboratory Program (CLP) laboratories. He also has significant experience with the management of programs involving Army Corps of Engineers, Navy and Air Force analytical requirements.

Dr. Chiu also has extensive experience with the financial and business management responsibilities of small and medium size corporations, as well as the public sector. Mitkem Corporation was his second environmental laboratory start-up. The first, CEIMIC Corporation was also highly successful. He was an active partner in both the technical and business aspects of both companies.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Cambridge, Massachusetts
Chemistry, PhD

RUTGERS UNIVERSITY
New Brunswick, New Jersey
Environmental Sciences, MS

UNIVERSITY OF MARYLAND
College Park, Maryland
Chemistry, BS

RELATED EXPERIENCE

2008-Present	**MITKEM LABORATORIES,** **A Division of Spectrum Analytical, Inc.** Warwick, Rhode Island - Laboratory Technical Director
1994-2007	**MITKEM CORPORATION** Warwick, Rhode Island - Chief Executive Officer - Technical Director
1993	**COAST TO COAST ANALYTICAL** Westbrook, Maine - Director of Laboratory Operations
1991-1993	**MASSACHUSETTS WATER RESOURCES AUTHORITY** Boston, Massachusetts - Laboratory Superintendent
1988-1992	**CEIMIC CORPORATION** Narragansett, Rhode Island - Vice President Organic Laboratory Operations and Technical Director
1983-1988	**ENSCO/ERCO DIVISION** Cambridge, Massachusetts - Head of Research and Development

MITKEM LABORATORIES

A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

YIHAI DING
Operations Manager

Mr. Ding has experience in a wide variety of analytical chemistry techniques, including GC, GC/MS, HPLC and FTIR. His expertise includes the operation, calibration and maintenance of sophisticated, computer controlled instrumentation.

Mr. Ding's responsibilities at Mitkem involve the coordination of Mitkem's laboratory sections. His duties in this role include overseeing department supervisors and analysts in the daily calibration, maintenance and troubleshooting of analytical instruments, monitoring schedules and holding times, analysis of samples, review of sample and QC data. He also is involved with the implementation of Standard Operating Procedures, documentation of instrument and method QC criteria and development of new methods and implementation of new analytical technology.

Mr. Ding's prior experience includes research into the mechanisms and kinetics of various biochemical processes. A large portion of this research has required the analysis of reactants and products using state-of-the-art chemical instrumentation. Mr. Ding has also taught chemistry and biochemistry laboratory courses at the university level.

EDUCATION

MIDDLE TENNESSEE STATE UNIVERSITY
Murfreesbro, Tennessee
- Chemistry, MS

JILIN UNIVERSITY
Changchun, China
- Biochemistry, BS

RELATED EXPERIENCE

2008-present

MITKEM LABORATORIES,
A Division of Spectrum Analytical, Inc.
Warwick, Rhode Island
- Operations Manager

2005-2008

MITKEM CORPORATION
Warwick, Rhode Island
- Laboratory Manager

2005	**STL LABORATORIES** Savannah, Georgia - Supervisor of Semi-Volatile GC and GC/MS - GC/MS Analyst - GC/ECD Analyst
1998-2005	**MITKEM CORPORATION** Warwick, Rhode Island - GCMS Supervisor for both Volatile Organics Laboratory and Semi-Volatile Organics - GC/MS Analyst
1994-1998	**MIDDLE TENNESSEE STATE UNIVERSITY** Murfreesbro, Tennessee - Researcher - Laboratory Instructor, chemistry and biochemistry
1993-1994	**NATIONAL ENZYME ENGINEERING LAB** Changchun, China - Researcher

EDWARD A. LAWLER

Business Development Manager

Mr. Lawler has over twentyfive years of experience in environmental laboratory operations. He has extensive experience in managing laboratory workflow and in establishing and maintaining customer relationships. He also has considerable experience in a wide range of environmental chemical analyses, with a concentration in trace level volatile organics analysis.

Mr. Lawler's responsibilities include prioritization of all analytical chemistry testing at Mitkem. This includes daily meetings with the organic and inorganic laboratory supervisors and managers to insure all technical and schedule requirements are met. Mr. Lawler also reviews laboratory data to insure QA/QC criteria have been achieved, and provides final review of data reports prior to delivery to clients. Mr. Lawler also manages certain significant analytical testing programs, acting as principal technical liaison with the client.

Mr. Lawler's previous experience includes various staff, management and senior management positions at several environmental testing laboratories. Direct project experience includes EPA CLP, Army MRD, Navy NEESA and NFESC, DOD HAZWRAP and New York DEC ASP programs. Mr. Lawler has also provided expert testimony at several Superfund trials including pre-trial consulting and trial witness services.

EDUCATION: **UNIVERSITY OF MASSACHUSETTS**
Amherst, Massachusetts
Environmental Sciences, BS

RELATED EXPERIENCE:

2008-Present **MITKEM LABORATORIES,**
A Division of Spectrum Analytical, Inc.
Warwick, Rhode Island
-Business Development Manager

1997-2008 **MITKEM CORPORATION**
Warwick, Rhode Island
-Operations Manager

1989-1997	**NATIONAL ENVIRONMENTAL TESTING, CAMBRIDGE DIVISION** Bedford, Massachusetts -Division Manager -Proposal/Contract Manager -Director of Project Management
1983-1989	**CAMBRIDGE ANALYTICAL ASSOCIATES, INC.** Boston, Massachusetts -Project Manager -Volatile Organic Laboratory Manager
1978-1983	**ENERGY RESOURCES COMPANY, INC. - ERCO** Cambridge, Massachusetts -Volatile Organics (GC) Manager -Analytical Chemist-Volatile Organics Lab -Analytical Chemist-Organic Preparation Lab
1978	**LAPUCK LABORATORIES, INC.** Watertown, Massachusetts -Analytical Chemist-Wet Chemistry & Metals -Microbiologist

SHARYN B. LAWLER

Quality Assurance Director

Ms. Lawler has over twenty years of experience in the environmental laboratory industry. She has experience in implementation, operation and management of QA systems operating under USEPA, US Army Corps of Engineers and NELAC programs.

Ms. Lawler's responsibilities include development and implementation of the Quality Assurance Plan and Standard Operating Procedures. Her duties include interacting with federal and state regulatory officials in the acquisition and maintenance of laboratory certifications. She is also responsible for managing Mitkem's document control program. Mrs. Lawler performs both internal and external audits as well as overseeing the corrective action system, training program and evaluating QC check samples.

Previously Ms. Lawler was a senior data reviewer for Mitkem, where she was responsible for final QA/QC review of organic, metals and wet chemistry data. She insured final data met all method and in-house QC criteria prior to release to the customer, and that any issues were documented and described for inclusion in case narratives. A significant portion of this work involved review of full CLP-format data deliverables packages, both for standard as well as non-routine analyses. Prior to Mitkem, Ms. Lawler worked for two CLP laboratories where she held positions including senior data review specialist, CLP Organics Task Manager and analyst in several laboratory sections.

EDUCATION:

UNIVERSITY OF MASSACHUSETTS
Amherst, Massachusetts
Independent Conc., Coastal Plant Ecology, BS

RELATED EXPERIENCE:

2008-Present

MITKEM LABORATORIES,
A Division of Spectrum Analytical, Inc.
Warwick, Rhode Island
- QA Director

2006-2008	**MITKEM CORPORATION** Warwick, Rhode Island - QA Director
1997-2005	**MITKEM CORPORATION** Warwick, Rhode Island - Senior Data Reviewer
1988-1997	**NATIONAL ENVIRONMENTAL TESTING** Bedford, Massachusetts - Senior Data Reviewer - CLP Organic Task Manager
1983-1988	**CAMBRIDGE ANALYTICAL ASSOCIATES** Boston, Massachusetts - CLP Organic Task Manager - Semivolatiles Analyst - Preparation Laboratory Analyst

AGNES R. NG

Project Manager

Ms. Ng has gained extensive and diversified experience in environmental laboratories using U.S. EPA CLP and SW846 methodologies, as well as participating in US Navy and Army analytical services programs.

Ms. Ng's responsibilities involve the management of Mitkem's EPA Contract Laboratory Program (CLP) analytical services contracts. This includes the daily oversight of incoming samples, maintenance of chain of custody documentation and communication records and resolution of any discrepancies or other issues involving CLP sample assignments. Her responsibilities also include ongoing communication with EPA, sampler and DynCorp personnel, as well as monitoring data delivery schedules, writing project narratives and finalizing case communication. Ms. Ng managed Mitkem's four contracts with the EPA, which included one Organics Low Concentration (OLC), two Organics Low/Medium Concentration (OLM) and one Inorganics Low/Medium Concentration (ILM) analytical services contracts. At present Ms. Ng manages Mitkem's Organics Multi-Media, Multi-Concentration (SOM01.2) analytical services contract.

Previously, Ms. Ng's held the position of QA/QC Manager where her responsibilities included the development and implementation of Standard Operating Procedures, documentation of instrument and method performance using Method Detection Limit studies, routine review of final laboratory data reports, review of analyst training and performance data and management of the corrective action system. Her duties also included interaction with federal and state regulatory officials in the acquisition and maintenance of laboratory certifications. She was also responsible for the management of Mitkem's document control program.

Prior experience includes management of the daily operations of the sample preparation laboratory facility at Mitkem. Duties in this position included monitoring sample backlog, holding times, process work flow, and delivery due dates. Ms. Ng also developed and implemented new test methods, trained laboratory staff, performed instrument maintenance and reviewed sample and QC data. Prior to joining Mitkem Ms. Ng worked as an analytical chemist at NET Cambridge Division performing analyses under a wide variety of programs including Army COE, Navy NEESA, DOE HAZWRAP and EPA CLP.

EDUCATION

SIMMONS COLLEGE
Boston, Massachusetts
- Chemistry, BS
- Mathematics, BS

RELATED EXPERIENCE

2008-Present	**MITKEM Laboratories,** **A Division of Spectrum Analytical, Inc.** Warwick, Rhode Island - CLP Project Manager
1997-2008	**MITKEM CORPORATION** Warwick, Rhode Island - CLP Project Manager - Manager, Sample Preparation Laboratory
1995-1997	**NATIONAL ENVIRONMENTAL TESTING** Bedford, Massachusetts - Chemist, Organic Preparation
1992-1995	**SIMMONS COLLEGE CHEMISTRY DEPT.** Boston, Massachusetts - Teaching Assistant, Chemistry Department

SCOTT HUNTLEY

LIMS Manager

Mr. Huntley has over twenty years experience in the environmental testing field. He has considerable experience in computer sciences and had been involved, throughout his career, in the setup and implementation of several Laboratory Information Management Systems (LIMS) and automated data reduction systems. Mr. Huntley's responsibilities include the set-up and validation of automated data transfer, reduction, storage, evaluation and reporting programs within Mitkem's LIMS. He also is responsible for set-up of the electronic data delivery capabilities as well as the control charting capabilities of this system.

Previously Mr. Huntley has held several supervisory positions in environmental laboratories focusing on CLP and other DOD analytical programs. He has a wide range of experience in routine and state of the art analytical programs and methods. Mr. Huntley is experienced in the use of automated data transfer and reduction systems and laboratory automation techniques.

EDUCATION:

RHODE ISLAND COLLEGE
Providence, Rhode Island
Chemistry, BS
Computer Science, BS

RELATED EXPERIENCE:

2008-Present

MITKEM LABORATORIES,
A Division of Spectrum Analytical Inc.
Warwick, RI
- MIS Senior Systems Analyst

1999-2008

MITKEM CORPORATION
Warwick, RI
- MIS Senior Systems Analyst

1996-1999

MITKEM CORPORATION
Warwick, RI
- Senior Chemist
- Organic Lab Manager

1991-1996

EA LABORATORIES
Sparks, MD
- Supervisor of Organic Chemists

1989-1991

CEIMIC CORPORATION
Narragansett, RI
- Night shift supervisor

1986-1989

RI ANALYTICAL LABORATORIES
Providence, RI
- GC Chemist

MITKEM LABORATORIES

A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

Catherine Mosher
Semi-Volatiles Laboratory Supervisor

Ms. Mosher has experience in a wide variety of analytical chemistry techniques, including GC-FID and GC/MS. Her expertise includes the operation, calibration and maintenance of sophisticated, computer controlled instrumentation. Her expertise also includes analyses and QA review of forensics extended alkylated PAH and Biomarker analyses.

Ms. Mosher is employed as the supervisor in Mitkem's SVOA Laboratory. Ms. Mosher's responsibilities at Mitkem involve the coordination of semi-volatile organics analyses using GC/MS and GC instrumentation following both US EPA CLP and SW846 protocols. Her duties in this role include supervising analysts in the daily calibration, maintenance and troubleshooting of analytical instruments, monitoring schedules and holding times, analysis of samples, review of sample and QC data. She is involved with the implementation of Standard Operating Procedures, documentation of instrument and method QC criteria and development of new methods and implementation of new analytical technology. Ms. Mosher also insures the production of semi-volatile organic data is coordinated with other laboratory sections.

EDUCATION

Community College of Rhode Island
Warwick, Rhode Island
Certificate of Chemical Technology - 1991

RELATED EXPERIENCE

12/2007-Present

Mitkem Laboratories,
A Division of Spectrum Analytical, Inc.
Warwick, RI
-Supervisor, SVOA Laboratory

02/2007 – 12/2007

Mitkem Corporation
Warwick, RI
- Supervisor, SVOA Laboratory
- Senior Scientist, SVOA Laboratory

05/2005 – 12/2006	**Alpha Woods Hole Laboratories** Rahnham, MA - Development of Volatile Air Laboratory - Supervisor for Organics analyses including GC/MS VOA and SVOA, ECD's and FIDs - Forensic Team Leader
03/1997 – 05/2005	**Woods Hole Group Laboratories** Rahnham, MA - Forensic Team Leader - GC/MS Group Leader
04/1996 – 03/1997	**Inchcape Testing** New Bedford and Rahnham, MA - Semivolatile analyst - Volatile analyst
09/1991 – 04/1996	**Energy and Environmental Engineering Inc.** Sommerville, MA - Semivolatile GC/MS Supervisor - GC-Pesticide/PCB analyst
01/1989 – 09/1991	**New England Testing Laboratory** North Providence, RI - Senior Chemical Technician - including Organic, Inorganic, Metals, and Microbiology analyses
10/1987 – 09/1988	**Rhode Island Analytical Laboratory** Warwick, RI - Chemical Technician

HUIYAN HEATHER ZHAO-ANDERSON
Volatiles Laboratory Supervisor

Ms. Zhao-Anderson is employed as the supervisor in Mitkem's VOA Laboratory. Ms. Zhao-Anderson's responsibilities at Mitkem involve the coordination of volatile organics analyses using GC/MS and GC instrumentation following both US EPA CLP and SW846 protocols. Her duties in this role include supervising analysts in the daily calibration, maintenance and troubleshooting of analytical instruments, monitoring schedules and holding times, analysis of samples, review of sample and QC data. She is involved with the implementation of Standard Operating Procedures, documentation of instrument and method QC criteria and development of new methods and implementation of new analytical technology. Ms. Zhao-Anderson also insures the production of volatile organic data is coordinated with other laboratory sections.

EDUCATION

Yale University
New Haven, CT
School of Forestry and
Environmental Study, MS 2005

Peking University
Beijing, China
Environmental Science and Economics
BS 2002

RELATED EXPERIENCE

12/2007-Present

Mitkem Laboratories,
A Division of Spectrum Analytical, Inc.
Warwick, RI
-Supervisor, VOA Laboratory

09/2005 – 12/2007

Mitkem Corporation
Warwick, RI
- Supervisor, VOA Laboratory
- GC/MS Chemist, VOA Laboratory

SOFYA ZHARKOVA

Pesticides/ PCB Laboratory Supervisor

Sofya Zharkova has had an impressive background in the organic chemistry field, which has spanned over twenty years. She has had nearly seven years of laboratory management experience. Her daily duties include the daily calibration, maintenance, and troubleshooting for various sophisticated computer controlled analytical instrumentation. Ms. Zharkova monitors schedules and holding times for samples. She reviews the analysis of samples and Quality Control data. She is involved in the implementation of Standard Operating Produces, she documents new analytical techniques and ensures that Pesticide/ PCB information is coordinated with other laboratory sections.

Ms. Zharkova has had extensive experience and knowledge in procedures such as multi-step synthesis; isolation, purification and analysis of organic compounds that make her ideally qualified for her current position.

EDUCATION

Institute of Chemical Technology
Russia
Major-Organic Chemistry, BS

RELATED EXPERIENCE

2008-present

Mitkem Laboratories,
A Division of Spectrum Analytical, Inc.
Warwick, Rhode Island
-Pesticides/PCB Laboratory Supervisor

2000-2008

Mitkem Corporation
Warwick, Rhode Island
-Pesticides/PCB Laboratory Supervisor

1997-1999

Ceimic Corporation
Narragansett, Rhode Island
-GC Laboratory Supervisor

1993-1996

Rubezhnoye Chemical Co.

Ukraine
-Senior Chemist

1984-1993

Rubezhnoye Chemical Co.
Ukraine
Chemist

1981-1984

Rubezhnoye Chemical Co.
Ukraine
-Laboratory Technician

ATTACHMENT 2

Table 1

(Analytical Laboratory Testing Program)

Table 1

Analytical Laboratory Testing Program

Quality Assurance Project Plan
225-405 Mt. Hope Avenue
Rochester, New York
(NYSDEC Site ID C828125)

Task	Sample Matrix	Parameter	Field Samples	Trip Blanks	MS/MSD	Field Blanks	Analytical Methods	Reporting Levels	Corresponding SCGs
Long-Term Groundwater Monitoring	Water	TCL VOCs	up to 84 (up to 7 rounds, up to 12 samples/round)	7 (1/round)	7 (1/round)	7 (1/round)	ASP Method OLM04.3	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	Water	TCL SVOCs	up to 84 (up to 7 rounds, up to 12 samples/round)	0	7 (1/round)	7 (1/round)	ASP Method OLM04.3	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	Water	TAL Metals	up to 84 (up to 7 rounds, up to 12 samples/round)	0	7 (1/round)	7 (1/round)	ASP Method ILM04.1	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
In-Situ Remediation Supplemental Performance Monitoring	Water	COD	At least 5 samples during 1 round	0	0	0	SM5220	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	Water	Alkalinity	At least 5 samples during 1 round	0	0	0	SM2320 W	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	Water	Major Cations	At least 5 samples during 1 round	0	0	0	E300IC W SW7470A SW6010B W	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	Water	Major Anions	At least 5 samples during 1 round	0	0	0	E300IC W SW7470A SW6010B W	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values

APPENDIX H

Site-Wide Inspection Form

ANNUAL SITE-WIDE INSPECTION FORM
ERIE HARBOR SITE
205-405 MT. HOPE AVENUE
ROCHESTER, NEW YORK
NYSDEC SITE NUMBER: C828125

Date of Inspection: ______________________________________

Inspected By: ______________________________________

____

____

(Include: name, company, and position of person(s) conducting inspection)

Evidence of damage or blockage of monitoring wells:

☐ Yes ☐ No

Describe damage or blockage if observed: ______________________________________

____

____

____

Additional Comments: ______________________________________

____

____

____

Action Item(s) Required (attach photographs and/or sketches showing the approximate location of any problems or incidents): ______________________________________

____

____

____

____

Action Item(s) completed since last inspection: ______________________________

____

____

____

____

____

Signatures: ____

____