



Environment

Prepared for:
SUPERFUND STANDBY PROGRAM
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, New York
August 2017

Three-Year Periodic Review Report
June 2014 – June 2017
Tuxedo Waste Disposal
NYSDEC Site No. 3-36-035
Work Assignment No. D007626-36
FINAL





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Engineering Certification

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

(a) 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 DER;

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

(c) nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control;

(d) access to the site will continue to be provided to DER to evaluate the remedy, including access to evaluate the continued maintenance of this control.

(e) if a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for their intended purpose under the document.

AECOM Technical Services Northeast, Inc.

Daniel Servetas, PE
Registered Professional Engineer
New York License No. 079068

9/5/2017

Date

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Executive Summary

The Tuxedo Waste Disposal Site is located in the Town of Tuxedo, Orange County, New York. The Site is approximately 12 acres in size and is located in a rural area approximately one mile north of the Village of Tuxedo Park, between State Route 17 and the New York State Thruway.

The Site was added to the New York State Department of Environmental Conservation Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site (Site No. 3-36-035) following the discovery of nonexempt waste at an active construction and demolition debris landfill in 1987. The presence of nonexempt waste was in violation of the standards and regulations in place at that time. The Site was ultimately reclassified to Class 4 following the completion of the remedial investigation and feasibility study in 1991. A Record of Decision was issued in February 1992 for impacted soil, refuse, groundwater and landfill gas on the Site and surface water and sediment within the Ramapo River.

Due to the nature of the landfill and contamination of soil, bedrock and the underlying bedrock aquifers with Target Analyte List Metals, the selected remedies in the Record of Decision consisted of: excavation of refuse with consolidation and reclamation of soil; an engineered final cover; a passive gas collection and treatment system; a surface water diversion system; site restrictions to protect the integrity of the final cover; and groundwater, surface water, sediment, and air emissions monitoring.

Based on AECOM's review of available historical and current data and information, the selected remedies at the Site continue to function as intended. Periodic sampling of the groundwater monitoring well network continues to be performed, although, MW-7 is not accessible for sampling due to an obstruction in the well riser.

The three-year costs for one-time operation and maintenance events as well as long-term environmental monitoring and reporting were approximately \$84,450 based on costs incurred between 2014 and 2017.

Recommendations for the Site include: repairs to MW-7; continued analysis of groundwater for TAL Metals and mercury; continue monitoring of combustible gas; assess compliance with the Site Management Plan; and preparation of an triennial, field oversight periodic review report.

1.0 Site Overview

This periodic review report (PRR) covers the period of June 12, 2014 through June 12, 2017 and has been prepared to evaluate the continuing effectiveness of the remedies selected and their implementation at the Site. AECOM services and monitors the Site for the New York State Department of Environmental Conservation (NYSDEC) under Work Assignment D007626-36. The NYSDEC classified the Site (Site No. 3-36-035) as Class 2a in 1987 and reclassified the Site to Class 2 in 1989. In 1996, the NYSDEC reclassified the site again to Class 4 following implementation of the remedial actions. A Class 4 site is defined as having been properly closed, but requires continued monitoring. A Record of Decision (ROD) for the Tuxedo Waste Disposal Site was issued by the NYSDEC in February 1992.

The Site is a former waste disposal facility located in the Town of Tuxedo, Orange County, New York (**Figure 1**). The Site consists of approximately 12 acres along State Route 17, in a rural area approximately one mile north of the Village of Tuxedo Park. The Site is located between State Route 17 (to the west) and an active rail line currently owned by the Metro-North Railroad to the east (refer to **Figure 2**). The NYS Thruway (I-87) is located approximately 250 feet to the east of the rail line. The Site lies on two separate parcels of land with separate landowners. A majority of the Site is situated on a portion of a 12.2-acre parcel owned jointly by Renard Barone and Sarkis Khourouizian. The remainder is located on a portion of a 7.9-acre parcel formerly owned by the Georgia Tech Foundation (the property was sold to Ronald Iazzetti in 1994). For the purpose of this PRR, the two parcels will together be referred to as the Site, and will be distinguished from one another when necessary.

The Site is located in the Ramapo River Valley. The Ramapo River is located between the rail line and the NYS Thruway. The Ramapo River Valley is described as having steep grades with abrupt elevation changes to the west of the Site, where the land rises approximately 300 feet along the Ramapo River Valley wall (NYSDEC ROD, 1992).

The Site is a gentle hillside at the base of a steeply graded slope with dense tree cover. State Route 17 separates the steep slope from the Site. The north-northeast portions of the Site are a gently sloping hillside with bedrock outcrops, which transitions into a steep slope to the rail line. The cap of the landfill has a moderate grade and is covered with tall grasses.

Previous investigation of the Site states that before the remedial actions were implemented, the depth to bedrock ranged from 0 to approximately 70 feet below ground surface (bgs), with bedrock deepest and fill material thickest at the center of the Site (Metcalf & Eddy, 1991). Bedrock outcrops in the northern and eastern portions of the Site, located just west of the rail line, dip to the southwest.

The unconsolidated materials are highly variable in thickness and are comprised of construction and demolition (C&D) debris, recent alluvial deposits, outwash sand and gravel, and glacial till (Metcalf & Eddy, 1991).

Groundwater depth beneath the Site ranges from approximately 8 to 40 feet bgs. Groundwater flow occurs within two separate water-bearing units: unconsolidated soil and weathered bedrock; and unweathered, competent bedrock. Permeability studies from the Phase II Investigation and results from the Remedial Investigation/Feasibility Study (RI/FS) show connectivity between the two water-

bearing units, resulting in one aquifer system. According to the RI/FS Report and the ROD, the natural direction of groundwater flow from the upper unconsolidated water-bearing unit is generally from the relatively high elevations west of the Site to the east, toward the Ramapo River. Groundwater flow direction in the competent bedrock is less defined due to natural irregularities in the bedrock (e.g., joints, fractures, and discontinuities). The water table at the perimeter of the Site is relatively shallow and is present in the unconsolidated soil layer.

1.1 Remedial History

Prior to 1985, the Site was used as a sand and gravel mine, providing aggregate to a bituminous concrete plant. The Thruway Asphalt Company operated the mine and plant through 1985, when parcel number 9-1-11 was sold to Renard Barone and Sarkis Khourouzian (refer to **Figure 2** for location). Beginning in February 1987, Barone and Khourouzian allowed Frank Sacco to use the Site as a construction and demolition debris landfill until the NYS Department of Law terminated dumping activities in October 1987, following inspections and the discovery that nonexempt wastes were being disposed of. These operations violated the solid waste regulations in place at the time. During dumping operations, the Site amassed approximately 500,000 to 600,000 cubic yards of waste. In an effort to abide by a court order and to control objectionable odors emanating from the Site, soil from an industrial site in Mahwah, New Jersey was used as cover material. Subsequent analysis determined the cover material was contaminated with low concentrations of polychlorinated biphenyls (PCBs).

In December 1987, the Site was added to the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site. This designation means that disposal of hazardous waste has been confirmed, and the presence of such hazardous waste or its components or breakdown products represents a significant threat to public health or the environment. The NYSDEC notified the property owners of the Site's classification and stated that a Phase II investigation would be performed, and the property owners would be responsible for the costs. Barone and Khourouzian declined the opportunity to take financial responsibility for the Phase II investigation.

Concurrently, the presence of an illegal landfill on the former Georgia Tech Foundation property, parcel number 9-1-13 (see **Figure 2**) was recognized and incorporated into the investigation and classification of the main parcel. The Georgia Tech Foundation was declared the "responsible party" for this property because the Foundation had been given the parcel in December 1977. The Georgia Tech Foundation was a participating party and agreed to pay for the costs of the investigation associated with the parcel.

The final report for the Phase II investigation was submitted to the NYSDEC in March 1989 by Lawler, Matusky and Skelly Engineers. The following conclusions summarize the results of the Phase II investigation:

- Ambient air sampling indicated off-site migration of methane and hydrogen sulfide. These gases were also detected on-site during intrusive activities. While volatile organic compounds (VOCs) were detected on-site, perimeter readings indicated that VOCs did not mobilize beyond the property boundary. Large quantities of hydrogen sulfide were also detected in the soil gas beneath the cap material.
- Metals were the primary contaminants of concern (COCs) in the groundwater, while VOCs and semi-volatile organic compounds (SVOCs) were not detected in monitoring wells;
- Samples of waste material possessed high concentrations of lead leachate, and the presence of petroleum resulted in the waste being characterized as borderline ignitable hazardous waste;

- Petroleum-related constituents were detected in the soil gas throughout the Site, with the highest concentrations in the central and south-central portions of the landfill;
- Chlorinated solvents such as tetrachloroethene, trichloroethene, and 1,2-dichloroethene were also detected in the soil gas;
- No organic compounds were detected in surface water samples, and metals were not present at levels significantly above background concentrations;
- Downstream river sediment samples contained elevated concentrations of SVOCs and tentatively identified compounds (TICs); these compounds are generally associated with petroleum contamination. Downstream metals concentrations were higher than upstream concentrations, suggesting landfill influence; and
- Permeability studies indicated a hydraulic connection between the groundwater beneath the Site and the Ramapo River.

Based on the results of the Phase II investigation, the Tuxedo Waste Disposal Site was reclassified from Class 2a to Class 2, which indicates that hazardous waste had been confirmed and that action was required to mitigate the threat to human health and the environment. An RI/FS was deemed necessary to expand on the Phase II results, and to further define the nature and extent of contamination to enable development of remedial alternatives.

The final report for the RI/FS was submitted to the NYSDEC in December 1991 by Metcalf & Eddy. Volume I and portions of Volume II of the RI/FS, which contain groundwater, soil gas, ambient air, and surface water data collected during the remedial investigation, were presented as Appendix A of the initial PRR.

A ROD for the Site was issued in February 1992. The selected remedies per the ROD consisted of:

- Excavation of refuse (approximately 14,600 cubic yards) from the southeast corner of the Site with consolidation into the main area and reclamation of the southeast corner;
- Design and installation of an engineered final cover in accordance with applicable regulations and guidance, including a gas collection layer;
- Installation and operation of a passive gas collection and treatment system using activated carbon to remove hydrogen sulfide and VOCs;
- Design and construction of a surface water diversion system to reduce surface run-on, infiltration, and generation of leachate;
- Implementation of site use restrictions to prevent any activities that could damage or compromise the integrity of the remedy; and
- Monitoring of groundwater, surface water and sediment, and air emission sources to determine the effectiveness of the remedial program.

Site-related COCs were identified in the ROD for each media type, including air, soil gas, soil, groundwater, surface water, and sediment. A full list of COCs per media type as presented in the ROD was included as Appendix B in the initial PRR. In accordance with the current NYSDEC work assignment D007626-36, dated May 31, 2014, groundwater samples are only analyzed for Target Analyte List (TAL) Metals and mercury. Per the ROD, the metals of concern in groundwater consist of:

- Aluminum
- Arsenic
- Cadmium
- Copper
- Iron
- Lead

- Magnesium
- Manganese
- Mercury
- Nickel
- Selenium
- Silver
- Sodium
- Zinc

The Site was remediated in accordance with the following design and construction documents:

- NYSDEC. 1992. "New York State Superfund Record of Decision, Tuxedo Waste Disposal Site, Orange County, New York, Site Number 3-36-035." February 1992.
- Clough, Harbour & Associates. 1996. "New York State Superfund Contract Post-Closure Monitoring and Maintenance Manual, Tuxedo Waste Disposal Site, Site No. 3-36-035, Work Assignment No. D002676-3." Revised August 1996.
- Clough, Harbour & Associates. 1998. "Amended New York State Superfund Contract Post-Closure Monitoring and Maintenance Manual, Tuxedo Waste Disposal Site, Site No. 3-36-035, Work Assignment No. D002676-3." Revised August 1998.
- NYSDEC. 2004. "New York State Long Term Monitoring Plan, Tuxedo Waste Disposal Site, Orange County, New York, Site Number 3-36-035." December 2004.

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

- Excavation of refuse, consolidation of refuse and soil, and reclamation of soil from the southeast corner of the Site.
- Construction and maintenance of an engineered final cover with a passive collection layer to prevent human exposure to contaminated soil and fill remaining at the Site.
- A passive gas collection and treatment system using activated carbon was installed after the installation of the engineered final cover. In 1998, active mini-blowers were installed at select gas vent stations and utilized until they were replaced with passive, stainless steel wind turbine ventilators in 2005. Additional ventilators have been installed between 2005 and 2010. The activated carbon drums were removed in August 2008.
- A surface water diversion system was designed and built when the engineered final cover was constructed at the Site.
- In 2007, two areas of slumping were identified on the eastern side of the Site. Site conditions were further investigated and a corrective action was implemented and completed in September 2008.

1.1.1 Remaining Contamination

Source material (waste fill) and contaminated soil were not removed from the Site and are present beneath the cap in thicknesses up to 70 feet. These materials were consolidated and contained beneath the engineered final cover. For the purposes of providing a baseline for post-remedial site conditions, groundwater monitoring data from 2000 and 2001 and landfill gas monitoring data from 2010 were used. The previous long-term monitoring plan established for the site reduced monitoring to metals concentrations in groundwater, and hydrogen sulfide and methane concentrations at the gas ventilation stations (GVS) and perimeter monitoring points (PMP).

1.1.2 Site Management Plan

A site management plan (SMP) was finalized in December 2014. The SMP consists of three components: institutional controls and engineering controls (IC/ECs); maintenance plan; and monitoring plan (AECOM 2014).

1.1.3 Groundwater and Ramapo River Monitoring

The network of monitoring wells was installed to monitor both upgradient and downgradient groundwater conditions at the Site. The network of on-site wells has been designed primarily based on the following criteria:

- Historical analytical results identifying contamination in excess of standards;
- Anticipated contaminant plume migration; and
- Adequate assessment of overburden and bedrock groundwater conditions and contaminant distribution towards the Ramapo River.

The locations of on-site wells are shown on **Figure 2**. Well details are summarized in **Table 1**, along with groundwater elevations recorded in October 2014 and September 2016.

In general, the shallow overburden wells (MW-1, MW-4, MW-5, MW-6, MW-7, and RI-4) are screened within recent alluvial deposits, outwash sand and gravel, and glacial till, with screen depths ranging from 5 to 27 feet bgs in ten-foot lengths. The bedrock wells (MW-2, MW-3, RI-1, and RI-5A) are either open holes with risers (i.e., no screen attached to the riser) or screened, at depths ranging from 12 to 73.2 feet bgs, based on the highly variable bedrock surface elevation.

In 2000 and 2001, groundwater samples were collected from Site monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, RI-1, RI-2, and RI-4) and submitted for laboratory analysis of VOCs, SVOCs, PCBs, and TAL metals. These results represent the baseline post-remedial groundwater quality conditions. Only metals were detected in the groundwater samples above the applicable NYS Ambient Water Quality Standards and Guidance Values (AWQS).

The surface water and sediment of the Ramapo River had not been sampled since the remedial investigation phase in 1990. In order to determine current concentrations of contaminants in the river, surface water and sediment samples were collected and analyzed for VOCs, SVOCs, total organic compounds (TOC), PCBs, pesticides, metals, and mercury during the first groundwater monitoring event only. Surface water and sediment samples were collected at two locations: one upstream and one downstream relative to the Site, for a total of two surface water samples and two sediment samples. See **Figure 2** for sediment and surface water sample locations.

1.1.4 Combustible Gas Monitoring

A post-closure gas monitoring program was initiated to verify that decomposition gases generated at the Site are controlled by the gas collection and ventilation system to avoid hazards to health and safety of the public and the environment or property. The gas monitoring program includes measurement of the concentrations of methane and hydrogen sulfide (measured in % by volume). The baseline or action levels for VOCs, hydrogen sulfide, and methane detected in the ambient air at the site perimeter are 5 ppm, 10 ppm, and greater than 10% of the LEL (0.51% on the meter), respectively.

Upon detection of methane or other explosive gas levels exceeding the LEL (5% methane by volume, 4% hydrogen sulfide by volume) in the ambient air at the Site perimeter or beyond the property boundary, the NYSDEC shall be notified immediately in order to take all steps necessary to ensure the safety and protection of health and property. There is no threshold for acceptable gas concentrations at GVS within the waste boundary.

2.0 Evaluate Remedy Performance, Effectiveness and Protectiveness

2.1 IC/EC Report

The Tuxedo Waste Disposal Site is located in the Town of Tuxedo, Orange County, New York in postal zone 10987. The Site is approximately 12 acres in size and is located in a rural area approximately one mile north of the Village of Tuxedo Park, between State Route 17 and the New York State Thruway. The Site lies on two separate parcels of land with separate landowners. A majority of the Site is situated on a portion of a 12.2-acre parcel (Parcel No. 9-1-11) owned jointly by Renard Barone and Sarkis Khourouzian. The remainder is located on a portion of a 7.9-acre parcel (Parcel No. 9-1-13) owned by Ronald Iazzetti.

During this reporting period (June 2014 through June 2017), the Site property was not sold, subdivided, merged, did not undergo a tax map amendment, and was not issued any federal, state, and/or local permits.

The institutional controls (ICs) reported in this PRR for the Site, specifically for Tax Parcel 9-1-11 and 9-1-13, and listed in the IC/EC Certification Form (**Appendix A**) include:

- Soil Management Plan
- Monitoring Plan
- Site Management Plan
- O&M Plan

The engineering controls (ICs) reported in this PRR for the Site, specifically for Tax Parcel 9-1-11 and 9-1-13, and listed in the IC/EC Certification Form (**Appendix A**) include:

- Cover system;
- Fencing/Access Control (9-1-11 only);
- Gas venting system (9-1-11 only); and
- Surface water diversion system (9-1-11 only).

A cover system is in place on top of the landfill, and chain link fencing exists along portions of the Route 17 (western) side of the Site, limiting unauthorized vehicular access. As shown on **Figure 2**, the engineered landfill cover system is present over portions of both properties.

While not listed in the NYSDEC's database, surface water diversion and gas venting systems are also in place at the Site. The surface water diversion system is located adjacent to the landfill to promote the redirection of precipitation runoff and to prevent infiltration beyond the upper layers of the cap. The gas venting system prevents the buildup of landfill gases in the subsurface.

The ECs employed at the site remain unchanged since the date that the controls were implemented/approved by the NYSDEC. The ability of the controls to protect public health and the environment has not been impaired.

2.1.1 IC/EC Requirements and Compliance

Annual site-wide inspections of the Site were completed during the reporting period by AECOM personnel; except, the annual site-wide inspection for 2017 has not been completed at this time. See **Appendix B** for the Annual Site-Wide Inspection Checklists for 2014 to 2016.

During the time of the last annual site-wide inspection, the landfill cover was in good condition and well-maintained. The passive gas vents and their turbine ventilators were also in good condition. Surface grades were adequate to promote surface drainage to the east, and there were no surface depressions or ponding. The grass cover was thick and was deemed adequate for erosion protection. No significant erosion was observed.

2.2 Monitoring Plan Compliance Report

2.2.1 Confirm Compliance with Site Management Plan and Long Term Monitoring Plan

Activity	Required Frequency (X)			Compliance Dates
	Quarterly	Annual	Biennial	
Groundwater Monitoring			X	Biennially in October 2014 and September 2016
Combustible Gas Monitoring (GVS)	X			Monitored quarterly from 2014 to 2017
Combustible Gas Monitoring (PMP)	X			Monitored quarterly from 2014 to 2017

In accordance with the SMP and reflected in the current work assignment between the NYSDEC and AECOM, groundwater samples were collected every two years (biennially) and analyzed for TAL metals and mercury. In addition, all groundwater results were compared to NYSDEC AWQS.

The wells at the Site were sampled twice (October 2014 and September 2016) between June 2012 and June 2017. Only eleven wells were sampled in October 2014, because an obstruction in the PVC riser precluded sampling of MW-7 and only 10 wells were sampled in September 2016, due to the obstruction in MW-7 and the inability to locate MW-1.

Since 2005, AECOM has monitored the combustible gas and hydrogen sulfide emanating from the landfill and in the PMP. The M&MM states that the landfill gas emissions should be monitored quarterly for the first two years, with one of the four monitoring events performed during the winter months when there is a frost layer and possibility of snow cover. These procedures have since been incorporated into the SMP.

2.2.2 Confirm that Performance Standards are Being Met

2.2.2.1 Groundwater Elevations

Depth-to-groundwater measurements were recorded for 11 monitoring wells in October 2014 and ten monitoring wells in September 2016. These measurements as well as the resultant groundwater elevations and other pertinent information can be found in **Table 1**.

Due to the presence of the waste material prior to well installation, groundwater contour maps for the aquifers beneath the Site could not be developed. The composition and construction of the landfill prohibits the natural flow of groundwater beneath and surrounding the Site. According to the Phase II investigation and RI/FS, the overall direction of groundwater flow in the unconsolidated aquifer beneath the Site and the surrounding area is predominantly to the east toward the Ramapo River. The overall flow direction in the unweathered bedrock is controlled by joints, fractures, and discontinuities in the bedrock.

2.2.2.2 Groundwater Analytical Results

During the October 2014 groundwater sampling event, in addition to collecting samples for TAL Metals and mercury, monitoring wells with a recorded turbidity over 50 NTU are analyzed for both total and dissolved metals.

Data (**Tables 2 and 3**) were reviewed to determine if there are any notable trends in the concentrations of metals in the on-site monitoring wells. Previous investigations indicate that the primary contaminants of concern for this site are aluminum, arsenic, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, sodium, and zinc. **Figure 3** displays a summary of the results of the October 2014 and September 2016 sampling events.

Unfiltered Metals Samples

The results of the most recent groundwater sampling events (October 2014 and September 2016) are displayed in **Figure 3** and summarized as follows:

- The results of the sample collected from monitoring well MW-2 reported relatively low concentrations of metals, none of which exceeded AWQS or GV. Generally, the concentrations decreased relative to the October 2014 sampling event.
- The sample results from monitoring well MW-3 reported iron and sodium in excess of the AWQS, with concentrations reported to be 515 µg/l and 107,000 µg/l, respectively. These results are a decrease from the October 2014 results and the historical data.
- Two metals (iron and sodium) exceeded the AWQS in the sample collected from MW-4, with concentrations reported to be 466 µg/l and 43,100 µg/l, respectively. Recent and historical data from samples collected from MW-4 indicate that iron and sodium are commonly detected at concentrations exceeding the AWQS, including the results of the October 2014 sampling event.
- The sample collected from monitoring well MW-5 contained no analytes in excess of AWQS or GV. Iron, manganese, and sodium have historically been detected at concentrations in excess of the AWQS; while in more recent data, only iron and manganese have been detected at concentrations exceeding the AWQS.
- Only one metal (manganese) exceeded the AWQS or GV in the sample collected from MW-6, with manganese reported to be 1,450 µg/l. These results are consistent with past sampling results.
- The September 2016 sampling results from monitoring well RI-1 reported a sodium concentration of 23,200 µg/l, an exceedance of the 20,000 µg/l AWQS. These results are

consistent with the results of the October 2014 groundwater sampling event, when sodium was reported to be 22,700 µg/l.

- The RI-2 monitoring well sample results reported only one metal (sodium) in excess of the AWQS. Sodium was reported to be 53,400 µg/l, an increase from 51,600 µg/l in October 2014.
- The results of the sample collected from RI-3 in September 2016 reported exceedances of AWQS for three metals: iron (3,780 µg/l), manganese (999 µg/l), and sodium (32,300 µg/l). These results are consistent with the results of the October 2014 groundwater sampling event.
- The results of the sample collected from monitoring well RI-4 are consistent with the October 2014 results, with iron (2,430 µg/l) and manganese (402 µg/l) reported to exceed their respective AWQS. These results are consistent with historical and recent data, except in two previous sampling events. In October 2001, sodium was reported at a concentration exceeding AWQS and in November 2005, magnesium and sodium were reported at concentrations exceeding the GV (35,000 µg/l) for magnesium and the AWQS (20,000 µg/l) for sodium.
- The groundwater sample collected from monitoring well RI-5A reported no metals at concentrations that exceed the AWQS or GV. However, iron and sodium have been historically detected at concentrations in excess of the AWQS.

Overall, TAL metals concentrations in the Site wells remain consistent with historical data, with few notable trends (**Figures 4 to Figure 6**). Mercury continues to not be detected or is detected in the on-site wells only at estimated concentrations (i.e., greater than the instrument detection limit and less than the contract required detection limit).

Filtered Metals Samples

Turbidity is typically correlated with the presence of suspended matter (e.g., entrained soil particles in the sample). Therefore, both total metals (unfiltered) and dissolved metals (laboratory filtered) groundwater samples were collected during the October 2014 sampling event to evaluate the effect of turbidity on the metals concentrations. At the Site, turbidity was greater than 50 NTU at the time of sampling in three (MW-6, RI-1, and RI-3) of the 11 samples.

Table 4 presents a comparison of the total metals and the dissolved metals data for the three filtered/unfiltered sample pairs collected in October 2014. The “percent dissolved” shown in the table is the ratio of the filtered sample concentration to the total (unfiltered) sample concentration.

Concentrations of metals that typically exist primarily in the dissolved phase (e.g., sodium, potassium, and calcium) were generally similar in the filtered and unfiltered samples, regardless of the sample turbidity. The remaining metals showed consistently large decreases in the filtered samples, including iron and manganese.

While iron remained at a concentration greater than the AWQS (300 µg/l) in two the three filter samples (MW-6 and RI-3), the concentrations reduced significantly and the percent of dissolved iron was less than 10%. This indicates the iron was adhering to the suspended particles rather than present in a dissolved phase in the groundwater.

Manganese was detected in two of the three samples at concentrations exceeding AWQS (300 µg/l) in the unfiltered samples and decreased in the filtered samples as well. In monitoring well RI-3,

manganese decreased from 7,120 µg/l to 329 µg/l with 4.6% present in a dissolved phase, indicating manganese was adhering to the suspended particles rather than dissolved in the groundwater in this area of the Site. However, in the filtered sample collected from MW-6, manganese only decreased from 2,200 µg/l to 1,940 µg/l with 88.2% present in the dissolved phase, indicating manganese is not only adhering to the suspended particles and is present in the groundwater in this area of the Site.

The most significant decrease in metals concentrations between an unfiltered and filtered sample was evident in the samples collected from RI-3. Six metals (beryllium, chromium, iron, lead, manganese, and sodium) were reported at concentrations exceeding the GV and AWQS in the unfiltered sample collected from this well. Only three metals (iron, manganese, and sodium) were reported to exceed the AWQS in the results of the filtered sample. The percentage of dissolved iron and manganese calculated between the unfiltered and filtered sample was 1.9% and 4.6%, respectively, indicating these metals are not present in the dissolved phase.

The other three metals (beryllium, chromium, and lead) reduced significantly and the percentage of metals in the dissolved phase indicate these metals were adhering to the suspended particles and are not present in the groundwater in these areas of the Site at concentrations in excess of the water quality standards.

A Conceptual Site Model (CSM) was prepared to illustrate current site conditions, based on available data (**Figure 7**). The CSM shows that the engineered cover and surface water diversion system were designed to eliminate infiltration. Groundwater flows to the east toward the Ramapo River.

2.2.2.3 Surface Water and Sediment Samples

During the October 2014 sampling event, two surface water and two sediment samples were collected from the Ramapo River. These samples were analyzed for volatile organic compounds (VOCs), semi-VOCs (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals (**Table 5**).

The upstream surface water sample (USSW) only contained sodium at a level greater than all standards, criteria and guidances (SCGs) with a concentration of 138,000 µg/L. The AWQS for sodium is 20,000 µg/l. In the downstream surface water sample (DSSW), only sodium was detected at a concentration exceeding SCGs as well, with a concentration reported to be 13,000 µg/L.

The upstream surface sediment sample (USSED) contained seven analytes at concentrations exceeding SCGs, six of which were pesticides. 4,4' DDE, endrin, 4,4' DDD, 4,4' DDT, alpha-chlordane, and gamma-Chlordane were reported to be 6.3 micrograms per kilogram (µg/kg), 5.3 µg/kg, 9.2 µg/kg, 21 µg/kg, 12 µg/kg, and 19 µg/kg, respectively. The other analyte to be detected at a concentration greater than the sediment criteria in USSED was mercury with a concentration of 0.24 µg/kg. The sediment criterion for mercury is 0.15 µg/kg. The downstream surface sediment sample (DSSED) reported two analytes above the sediment criteria, copper (34.4 µg/kg) and mercury (0.4 µg/kg). The sediment criterion for copper is 0.32 µg/kg.

2.2.2.4 Combustible Gas Monitoring Results

The combustible gas (i.e., hydrogen sulfide and methane) data collected from the GVS and PMP during the reporting period are presented in **Table 6** and **Table 7**, respectively.

Gas Vent Stations

In March 2017, methane was found in nine of the 12 GVS, with levels ranging from 0.5% to 11.2%, while hydrogen sulfide was detected in five of the GVS, at concentrations of 0.0001% to 0.0005%. There are no action levels associated with GVS emissions. Refer to **Figure 8** for wind turbine

ventilator locations and combustible gas results for March 2017. The figure shows that methane emissions are mainly restricted to the northern portion of the Site.

Perimeter Monitoring Points

The SMP states that the NYSDEC must be contacted when methane or hydrogen sulfide concentrations meet or exceed their respective action levels at any of the PMP. The action levels at the PMP for methane and hydrogen sulfide are defined as 25% of LEL, which equates to 1.28% and 1%, respectively. **Figure 8** shows that the action levels for methane and hydrogen sulfide have not been exceeded, and no action has been warranted.

2.3 Operation and Maintenance Plan Compliance Report

The schedule of maintenance and monitoring events is provided in the SMP and detailed below. The frequency of events will be maintained as specified until otherwise approved by NYSDEC and NYSDOH. Unscheduled inspections and/or sampling may take place when a suspected failure of the remedial systems has been reported or an emergency occurs that is deemed likely to affect the operation of the EC/ICs. Features to be monitored include, but are not limited to, the following:

- Site fence/gate;
- Signage;
- Cover system inspection and grass mowing;
- Runoff control structures;
- Settlement and subsidence control;
- Flexible membrane liner repairs;
- Groundwater monitoring system;
- Gas venting system;
- Vermin and vector observations;
- Access road; and
- Leachate seepage.

2.3.1 O&M Plan Compliance Report

Activity	Required Frequency (X)			Compliance Dates
	Monthly	Quarterly	Annually	
Site Gate Inspection		X		12 inspections between June 2014 and June 2017
Signage Inspection		X		
Cover Inspection, Grass Mowing (seasonal)		X		
Runoff Control Structures Inspection		X		
Flexible Membrane Liner Repairs Inspection (as needed)				
Groundwater Monitoring System Inspection		X		
Gas Venting System Inspection		X		

Leachate Seepage		X		3 inspections between June 2014 and June 2017
Vermin and Vector Observations			X	
Vehicle Access Road			X	
Comprehensive Site-Wide Inspection			X	

2.3.2 Maintenance/Inspection

According to the SMP, maintenance/inspection and monitoring documentation will be completed during each event and provided to NYSDEC as part of future PRRs, unless corrective action is warranted. Documentation shall be as described below:

Report Title	Required Frequency (X)			Date Submitted
	Per Event	Quarterly	Biennially	
October 2014 Biennial Groundwater Monitoring Report			X	December 2014
September 2016 Biennial Groundwater Monitoring Report			X	April 2017

2.3.3 Groundwater Monitoring Reporting

Groundwater monitoring reports will be prepared and submitted subsequent to each groundwater monitoring event. This report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected and list of wells sampled;
- Copies of all field forms completed (e.g., sampling logs, chain-of-custody documentation);
- 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 (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether the groundwater quality and/or conditions have changed since the last reporting event where groundwater monitoring well data was provided.
- All documents and data are to be submitted in electronic format to the NYSDEC Division of Environmental Remediation. The Department will not approve a final report unless, and until, all documents and data generated in support of that report have been submitted in accordance with the electronic submission protocols.

Two groundwater monitoring reports were submitted within this reporting period (**Appendix C** and **Appendix D**). See table in previous section (Section 2.3.2) for details.

2.3.4 Evaluation of O&M Activities

2.3.4.1 Evaluation of Treatment Units and General Maintenance

Within this reporting period, the passive wind turbine ventilators were serviced periodically and were lubricated to decrease surface friction and to prevent seizure when necessary.

2.3.4.2 PMP Replacement

Prior to the August 2014 combustible gas monitoring event, AECOM personnel removed and replaced all existing PMP. Each new point was constructed of a 1-inch PVC riser approximately three feet in length above ground for surface protection with an approximately 2-foot slotted section for below the ground surface. The points were installed utilizing a hand-augured to bore approximately two to three feet bgs and were set in place with sand pack. The PMP were completed with a 5-foot length of 1/4-inch polyethylene tubing for sample extraction.

3.0 Evaluate Costs

3.1 Summary of Costs

Total costs for one-time repairs or facility changes (i.e., PMP replacement), one-time sediment and surface water sampling of the Ramapo River, completion of the required activities associated with groundwater and gas emissions monitoring between June 2014 and July 2017, and two PRRs were approximately \$84,450. Major cost components were allocated as follows:

Task	Quantity/ Frequency	Estimated Cost
1. Landfill Gas Monitoring	12	\$34,129.46
2. PMP Repair and Survey	1	\$9,894.64
3. Groundwater and Ramapo Monitoring	2	\$25,194.70
4. Periodic Review Reports	2	\$12,155.89
5. Site Management Plan Update	1	\$3,077.79
Total:		\$84,452.48

Operations and maintenance costs as shown in Task #2 were one-time capital costs which may occur at irregular intervals in the future.

Two biennial groundwater monitoring events took place (October 2014 and September 2016) during this reporting period (June 2014 to June 2017). The costs associated with the October 2014 include sampling the sediment and surface water of the Ramapo River.

4.0 Conclusions and Recommendations

The periodic review process is used for determining if the selected remedies continue to be properly managed (as set forth in the ROD, LTMP and SMP), and if the remedies continue to be protective of human health and the environment.

4.1 Conclusions

The following conclusions discuss the effectiveness of the Site remedies in comparison to the applicable Site remedial goals presented from the ROD:

1. **Excavation of refuse (approximately 14,600 cubic yards) from the southeast corner of the Site with consolidation into the main area and reclamation of the southeast corner.**

Per the NYSDEC's 2004 LTMP, excavation of refuse, consolidation of refuse and soil, and reclamation of soil from the southeast corner of the site were completed during the remedial program.

2. **Design and installation of an engineered final cover in accordance with applicable regulations and guidance, including a gas collection layer.**

An engineered final cover was installed during the remedial program. The cap was repaired in 2012 due to slumping conditions.

3. **Installation and operation of a passive gas collection and treatment system using activated carbon to remove hydrogen sulfide and VOCs.**

A gas collection layer and a passive gas collection and treatment system using activated carbon were installed along with the engineered final cover. Active mini-blowers were utilized until they were replaced with passive, stainless steel wind turbine ventilators between 2005 and 2010. The activated carbon drums were removed in August 2008. There are no emissions limits for the gas vent stations. Based on the available monitoring data, the Site has not exceeded the limits established for the perimeter monitoring points.

4. **Design and construction of a surface water diversion system to reduce surface run-on, infiltration, and the subsequent generation of leachate.**

A surface water diversion system was designed and built when the engineered final cover was constructed at the Site. The diversion ditches are in good condition.

5. **Site use restrictions to prevent any activities that could damage or compromise the integrity of the remedy.**

There are currently no site use restrictions in the property deed for either parcel on the Site (refer to **Appendix E**); however, fencing along Route 17 somewhat meets the intent of a site use restriction with respect to vehicular access.

6. Monitor groundwater, surface water, surface water sediments, and air emission sources to determine the effectiveness of the remedial program.

Groundwater and air emission sources are routinely monitored (refer to Section 2.0). Surface water and sediment have not been tested since the remedial investigation work in 1990.

4.2 Recommendations

The following recommendations are made for the Site:

1. Groundwater monitoring should be performed at the interval established by the SMP (i.e., biennially) until the NYSDEC determines that either adequate attenuation of contamination has been achieved at the Site, or there is sufficient evidence that a threat of offsite migration of contaminants to the Ramapo River no longer exists. This would be denoted by repeatable groundwater analytical results that meet AWQS, and favorable results from surface water and sediment from the river (recommendation below). Each groundwater monitoring event should include wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, RI-1, RI-2, RI-3, RI-4 and RI-5A, following repairs to MW-7:
 - a. Per the September 2016 Groundwater Sampling Report, MW-7 is no longer accessible for sampling due to an obstruction lodged in the riser.
 - b. All future groundwater monitoring events should continue to include TAL Metals (dissolved and total) and mercury.
2. Combustible gas monitoring should continue at the interval established by the SMP (i.e., quarterly) until the NYSDEC determines that either adequate attenuation of contamination has been achieved at the Site, or there is sufficient evidence that a threat of offsite migration of contaminants.
3. All activities conducted at the Site should comply with the plans outlined in the SMP.
4. In accordance with the SMP, a field oversight PRR should be submitted every three years (i.e., triennially).

Tables

Table 1
Monitoring Well and Groundwater Details
(October 2014 and September 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Well ID	Well Coordinates		Well Construction	Well Type	Measuring Point Elevation (ft.)	Well Depth 2014 (ft. bgs)	Well Depth 2016 (ft. bgs)	October 6, 2014		September 8, 2016	
	Longitude	Latitude						Depth to Water (ft. bgs)	GW Elevation (ft.)	Depth to Water (ft. bgs)	GW Elevation (ft.)
MW-1	41°12.822N	074°11.043W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	468.40	29.83	NM	20.37	448.03	NM	NA
MW-2	41°12.535N	074°11.106W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	480.06	89.65	89.86	27.41	452.65	26.28	453.78
MW-3	41°12.571N	074°10.990W	6" Steel Cutter Casing 3" PVC Riser	Bedrock	459.00	30.11	30.30	17.32	441.68	18.11	440.89
MW-4	41°12.599N	074°10.984W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	460.07	26.14	26.38	18.89	441.18	18.92	441.15
MW-5	41°12.706N	074°10.968W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	448.81	19.40	19.36	10.55	438.26	11.21	437.60
MW-6	41°12.729N	074°10.977W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	456.83	18.39	18.40	9.36	447.47	9.39	447.44
MW-7	41°12.820N	074°11.026W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	466.93	NM	NM	NM	NA	NM	NA
RI-1	41°12.707N	074°10.971W	8" Steel Cutter Casing 2" Steel Riser	Bedrock	459.48	93.36	93.53	12.53	446.95	12.81	446.67
RI-2	41°12.728N	074°10.976W	6" Steel Surface Casing 4" Steel Riser and Screen	Interface	458.02	72.63	70.54	10.59	447.43	11.38	446.64
RI-3	41°12.568N	074°11.092W	6" PVC Surface Casing 2" PVC Riser and Screen	Interface	479.79	44.65	44.66	38.13	441.66	37.92	441.87
RI-4	41°12.777N	074°10.997W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	463.45	15.65	16.87	15.32	448.13	15.95	447.50
RI-5A	41°12.746N	074°11.038W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	495.70	82.65	81.88	41.38	454.32	42.61	453.09

Notes:

Measuring Point Elevation is at top of PVC casing

NA - Not Available

NM - Not Measured; MW-7 is obstructed

bgs - below ground surface

GW - groundwater

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1				MW-2				MW-3				MW-4				MW-5			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																				
Aluminum	NA	NS	130B	U	NS	528	300	92B	NS	1,140	210	260	410	489	U	78B	320	3,900	340	160B	170B
Antimony	3	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	9.2B	U	U	U
Barium	1,000	NS	U	U	NS	14.7B	U	U	NS	28.6B	U	U	U	23.7B	U	U	U	104B	U	U	U
Beryllium	3 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.79B	U	U	U
Cadmium	5	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	NS	18,000	9,700	NS	24,600	29,000	27,000	NS	41,300	22,000	42,000	41,000	39,500	39,000	43,000	40,000	92,000	110,000	99,000	97,000
Chromium	50	NS	U	U	NS	3.0B	U	U	NS	U	U	U	U	U	U	U	U	7.0B	U	U	U
Cobalt	NA	NS	U	U	NS	4.7B	U	U	NS	U	U	U	U	U	U	U	U	5.5B	U	U	U
Copper	200	NS	U	U	NS	2.5B	U	U	NS	5.2B	U	U	U	6.3B	U	U	U	101	63	U	26
Iron	300	NS	330	55B	NS	757	380	160	NS	1,740	180	410	650	830	83B	94B	570	17,400	5,900	2,700	3,700
Lead	25	NS	U	U	NS	2.3B	U	U	NS	2.6B	U	U	U	2.1B	U	U	U	11.7	5.7	U	U
Magnesium	35,000 (GV)	NS	4,700B	2,400B	NS	5,530	7,000	6,200	NS	9,850	5,400	10,000	9,300	10,700	11,000	11,000	10,000	24,000	16,000	25,000	22,000
Manganese	300	NS	26	U	NS	36.2	34	31	NS	81.3	7.5B	42	36	324	71	76	350	3,210	290	3,800	2,600
Mercury	0.7	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.56	U	U	U
Nickel	100	NS	U	U	NS	U	U	U	NS	2.4B	U	U	U	U	U	U	U	6.7B	U	U	U
Potassium	NA	NS	U	U	NS	1,380BE	U	U	NS	3,570BE	U	U	U	3,530BE	U	U	U	8,470E	7,000	6,000	5,700
Selenium	10	NS	U	U	NS	2.8UW	U	U	NS	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	NS	U	U	NS	3.0UN	U	U	NS	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	NS	40,000	29,000	NS	3,560B	5,000B	3,900B	NS	25,200	39,000	32,000	34,000	22,500	39,000	30,000	28,000	22,600	11,000	23,000	21,000
Thallium	0.5 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	NS	U	U	NS	3.1B	U	U	NS	2.3B	U	U	U	U	U	U	U	8.7B	U	U	U
Zinc	2,000 (GV)	NS	U	U	NS	9.7B*	U	U	NS	15.6B*	U	U	U	23.8*	U	U	U	58.8*	10.0B	U	10B

Notes:
All data presented in micrograms per liter (µg/L).
U - Analyte was analyzed for, but not detected.
B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).
E - Indicates an estimated value because of the presence of interference.
W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N - Spiked sample recovery not within control limits.
* - Duplicate analysis not within control limits.
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled
BOLD font in shaded cell - indicates exceedance of AWQS or GV.

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-6				RI-1				RI-2				RI-4			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																
Aluminum	NA	725	U	U	U	718	140B	100B	100B	96.3B	U	U	82B	5,960	3,600	90B	320
Antimony	3	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	11.7	U	U	U	U	U	U	U	U	U	U	U	3.8B	U	U	U
Barium	1,000	47.7B	U	U	U	10.6B	U	U	U	11.2B	U	U	U	101B	U	U	U
Beryllium	3 (GV)	0.21B	U	U	U	U	U	U	U	U	U	U	U	0.24B	U	U	U
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	92,700	110,000	98,000	120,000	50,800	74,000	57,000	54,000	19,700	43,000	32,000	30,000	90,400	64,000	95,000	120,000
Chromium	50	1.2B	U	U	U	3.4B	U	U	U	130	11	U	64	8.3B	U	U	U
Cobalt	NA	U	U	U	U	U	U	U	U	U	U	U	U	16.3B	U	U	U
Copper	200	30.3	U	U	U	13.4B	U	U	U	4.1B	U	U	U	37.4	90	U	U
Iron	300	15,300	8,900	5,900	5,600	752	190	70B	90B	804	260	110	870	11,600	12,000	240	1,200
Lead	25	5	U	U	U	U	U	U	U	U	U	U	U	10	12	U	U
Magnesium	35,000 (GV)	12,800	17,000	15,000	16,000	7,160	11,000	8,800	7,900	6,010	13,000	9,700	8,800	11,600	8,600	11,000	13,000
Manganese	300	2,050	1,600	1,900	2,300	7.9B	8.0B	U	U	79.4	64	43	87	1,500	1,200	390	350
Mercury	0.7	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nickel	100	U	U	U	U	6.2B	U	U	U	41	U	U	U	24.5B	U	U	U
Potassium	NA	3,770BE	U	U	U	2,860BE	U	U	U	1,390BE	U	U	U	28,500E	18,000	19,000	23,000
Selenium	10	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	3.0BN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	3,840	7,000	4,100B	6,500	18,500	28,000	19,000	19,000	25,400	56,000	44,000	43,000	16,400	17,000	18,000	21,000
Thallium	0.5 (GV)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	2.1B	U	U	U	U	U	U	U	U	U	U	U	10.4B	U	U	U
Zinc	2,000 (GV)	25.5*	U	U	U	22*	U	U	U	30.7*	U	U	14B	67.3*	85	U	U

Notes:

All data presented in micrograms per liter (µg/L).

U - Analyte was analyzed for, but not detected.

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

E - Indicates an estimated value because of the presence of interference.

W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled

BOLD font in shaded cell - indicates exceedance of AWQS or GV.

Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1							MW-2							MW-3							MW-4						
Sample Date		5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/8/2014	9/9/2016	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014	9/8/2016	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014	9/9/2016
Analyte (µg/L)	AWQS or GV																												
Aluminum	NA	130J	114J	U	NS	261	337	NS	444	304	U	1060N*	1,330	505	92.3B	11,400	4,180	178	561N*	179B	2,690	292	63.4J	73.7J	U	60.3N*	U	3,090	290
Antimony	3	8.74J	U	U	NS	U	U	NS	5.5J	U	U	U	U	U	U	U	U	U	U	U	U	5.1B	9.19J	U	U	U	U	U	U
Arsenic	25	U	U	U	NS	U	U	NS	U	U	U	U	U	6.3B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	6.9B
Barium	1,000	4.85JN	U	U	NS	3.5B	9.4B	NS	9.96JN	4.4J	U	18.7J	19.4B	15.0B	7.3B	78.3JN	28.9J	13.8 J	17.3 J	10.2B	103B	29.6B	17.1JN	11.7J	10.1 J	21.1 J	12.6B	48.4B	26.7B
Beryllium	3 (GV)	U	U	U	NS	U	U	NS	U	U	U	U	U	U	U	0.58J	0.2J	U	U	U	U	0.084B	U	U	U	U	U	U	0.073B
Cadmium	5	U	U	U	NS	1.5B	U	NS	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	26,600	14,400	12,600	NS	5,580	9,290	NS	19,700	19,800	25,100	23,100	22,400	23,300	23,800	18,000	12,100	39,100	19,300	12,600	95,000	41,400	45,000	35,700	38,400	45,600	28,100	55,100	52,600
Chromium	50	1.16JN	U	1.7 J	NS	1.6B	3.3B	NS	1.02JN	U	U	3.65 J	3.8B	1.8B	0.95B	13N	6.2J	1.5 J	1.92 J	0.73B	3.4B	1.3B	0.343UN	0.79J	1.8 J	2.4 J	U	3.9B	1.1B
Cobalt	NA	U	U	2.3 J	NS	U	1.4B	NS	0.625J	U	U	U	1.8B	1.3B	0.36B	14.3J	1.8J	2.1 J	U	U	3.3B	1.3B	U	U	2.2 J	U	U	5.2B	0.64B
Copper	200	14.9J	U	U	NS	13.7B	5.8B	NS	9.22J	U	U	7.71J	4.8B	U	U	43.1	55.5	U	36.1	3.6B	8.6B	2.9B	U	U	U	8 J	U	15.3B	5.1B
Iron	300	635N	116	46.7 J	NS	962	889	NS	809N	454	U	1,570N*	1,780	671	125B	21,700N	8,350	221	1,110N*	471	4,180	515	150N	U	U	647N*	218	4,980	466
Lead	25	U	U	U	NS	U	U	NS	U	15.2	U	U	U	4.2	U	U	4.5J	U	U	U	U	U	U	U	U	U	U	U	U
Magnesium	35,000 (GV)	6,310	3,450J	2,870	NS	1,300	2,160	NS	5,010	4,730J	6,340	6,170	6,470	6,410	6,390	9,320	4,280	9,430	4,610	3,150	22,900	10,700	10,600	8,660	9,310	9,400	6,370	13,300	11,200
Manganese	300	17.6	4.5J	1.8 J	NS	31.7B	50.4	NS	37.8	7.3J	U	38.6	24.9B	24.1B	4.5B	958	319	19.3	46.5	13.6B	271	80.2	55.2	1.1J	3.1 J	15.2	13.0B	1,310	152
Mercury	0.7	U	0.077J	U	NS	U	U	NS	U	U	U	0.07UN	U	U	0.044B	0.04J	U	U	0.07UN	0.031B	U	U	U	U	U	0.07UN	U	0.062B	U
Nickel	100	U	U	U	NS	1.2B	2.4B	NS	U	U	U	U	2.1B	U	U	22J	8.0J	U	U	U	5.5B	2.1B	U	U	U	U	U	6.1B	2.5B
Potassium	NA	2,420J	1,090JN	589 J	NS	573B	493B	NS	960J	935JN	1,080	1,570	1,540	1,040	1,260	2,700J	1,730JN	1,770	2,030	1,210	3,390	1,970	2,830J	2,930JN	2,140	2,270	2,380	2,880	2,360
Selenium	10	U	U	U	NS	U	U	NS	U	26.9	5.6 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	NS	U	U	NS	U	U	U	U	U	U	U	4.32J	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	42,900	37,500	25,900	NS	36,100	40,600	NS	3,060J	2,910J	3,480	5,530N	4,710	4,090	4,130	35,700	18,300	46,200	68,300N	85,200	379,000	107,000	47,700	41,800	32,100	32,900N	35,900	39,900	43,100
Thallium	0.5 (GV)	U	4.5J	U	NS	U	U	NS	U	23.5	U	U	U	U	U	U	U	U	U	U	6.8B	U	U	U	U	U	U	6.2B	U
Vanadium	NA	4.5J	U	U	NS	1.3B	1.8B	NS	5.28J	U	2.5 J	5.42 J	6.4B	2.4B	2.8B	28.1J	1.9J	U	U	U	6.0B	1.1B	2.9J	U	U	U	U	7.6B	0.70B
Zinc	2,000 (GV)	37.2	23.6	37	NS	19.8B	15.1B	NS	27	11.2J	33	15.7 J	12.2B	U	U	82.9	30.8	34.7	27.4	12.5B	12.7B	6.4B	23.9	15.1J	34.4	23.8	14.1B	17.2B	5.4B

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

U - Analyte was analyzed for, but not detected.

J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

N - Spiked sample recovery not within control limits.

* - Duplicate analysis is not within control limits.

** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-5								MW-6								RI-1								
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014	9/8/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014**		9/8/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014**		9/8/2016
Analyte (µg/L)	AWQS or GV																									
Aluminum	NA	520	83.3J	U	218N*	4,020	U	886	U	137J	79.2J	U	281N*	1,070	U	438	155B	22.0B	58.3J	673	97.6	408N*	1,620	3,210	172B	308
Antimony	3	6.88J	U	U	U	U	U	U	U	6.72J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5.8B
Arsenic	25	8.94J	U	U	4.54 J	U	U	8.1B	U	27.4	U	U	40.9	11.7B	U	24	U	U	U	U	U	U	U	U	U	U
Barium	1,000	98.7JN	67.7J	51.3	72.9	98.7B	64.6B	84.5B	63.0B	76.5JN	39.8J	37.2 J	137	114B	47.2B	99.1B	44.4B	46.8B	4.2JN	17.4J	U	14.7 J	22.0B	21.2B	16.2B	16.2B
Beryllium	3 (GV)	0.18J	U	U	U	0.28B	U	U	0.055B	U	U	U	U	U	U	U	U	0.058B	U	0.12J	U	U	U	U	U	0.15B
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
Calcium	NA	99,200	81,100	94,300	90,500	111,000	109,000	93,300	115,000	87,900	94,300	88,900	92,700	115,000	112,000	108,000	110,000	99,100	24,800	65,500	46,500	52,300	52,800	56,400	53,200	56,100
Chromium	50	2.28JN	1.6J	7.5	2.66 J	6.2B	U	4.0B	1.3B	1.16JN	1.4J	U	5.83	4.5B	U	5.7B	U	0.40B	11.1N	2.6J	3.4 J	11.5	1.6B	5.0B	0.96B	1.3B
Cobalt	NA	7.52J	2.5J	2.6 J	U	5.8B	U	7.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.84B	U	U
Copper	200	105	11.7J	13	45.8	88.3	9.8B	65.7	5.4B	17.3J	U	U	27.3	24.4B	U	31.1	7.8B	U	19.2J	45.3	3.8 J	19.9	5.4B	7.4B	19.1B	1.3B
Iron	300	22,000N	596	35.3 J	5,460N*	15,800	U	16,600	U	37,300N	951	4,510	72,900N*	30,500	U	36,000	1,940	U	223N	408	555	440N*	855	1,360	127B	201
Lead	25	U	U	U	2.43 J	5.9B	U	U	U	U	10.7	U	U	U	U	U	U	U	U	4.1J	U	2.03J	U	U	U	U
Magnesium	35,000 (GV)	15,900	17,200	20,200	10,100	18,400	17,200	22,500	16,600	12,800	10,000	12,000	10,900	12,700	12,100	11,800	12,000	8,530	7,150	11,000	7,740	8,760	9,400	10,500	9,860	9,920
Manganese	300	1,100	1,250	1,160	256	1,350	232	5,400	244	1,540	510	1,350	1,350	1,700	1,270	2,200	1,940	1,450	4.22J	5.4J	1.6J	8.4 J	31.9B	23.6B	18.3B	5.1B
Mercury	0.7	0.28	U	U	0.07UN	0.23	U	U	U	0.04J	U	U	0.15JN	U	U	U	U	U	U	U	U	0.07UN	U	U	0.057B	U
Nickel	100	1.69J	7.5J	5.9 J	U	9.9B	3.7B	7.8B	2.0B	U	U	U	U	1.9B	U	1.4B	U	U	5.62J	U	16.1 J	11.4J	2.6B	4.0B	0.92B	1.5B
Potassium	NA	6,640	6,700N	5,460	4,510	6,890	6,360	3,500	4,920	2,630J	3,330JN	3,850	3,790	5,300	4,950	3,810	3,870	3,840	45,000	2,310JN	5,900	4,230	3,170	2,630	2,550	2,760
Selenium	10	U	U	U	U	U	U	U	11.9B	U	9.0J	U	10.3	U	U	U	U	13.8B	U	U	U	U	U	U	U	U
Silver	50	1.68J	U	U	U	U	U	U	U	2.34J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	12,800	21,800	15,500	5,170N	16,800	17,100	12,500	11,100	3,170J	6,310	3,400	6,380N	12,300	11,400	11,700	14,400	8,300	33,100	25,800	24,800	20,400N	27,500	22,300	22,700	23,200
Thallium	0.5 (GV)	U	U	U	U	U	U	U	5.3B	U	8.2J	U	U	U	U	7.4B	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	8.48J	U	U	U	7.6B	U	3.9B	U	9.25J	U	U	5.73 J	4.7B	U	5.6B	U	U	3.88J	U	U	U	U	1.9B	1.2B	1.3B
Zinc	2,000 (GV)	48.7	41.5	46.1	32	45.8B	14.5B	31.8B	14.8B	24.1	25.3	32.9	36.6	25.6B	12.9B	11.3B	36.4B	U	30.8	17.6J	36.9	164	17.0B	6.0B	119	U

Notes:
All data presented in micrograms per liter (µg/L).
Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.
U - Analyte was analyzed for, but not detected.
J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).
N - Spiked sample recovery not within control limits.
* - Duplicate analysis is not within control limits.
** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled.
BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		RI-2							RI-3							RI-4							RI-5A				
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011**	10/7/2014**	9/9/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	10/11/2011	10/7/2014	9/9/2016		
Analyte (µg/L)	AWQS or GV																										
Aluminum	NA	31.1J	69.3J	U	21.1 JN*	U	U	U	35,800	438	26,400	24,200N*	52,200	U	89,900	2,990	5,630	2,080	2,590	440	654N*	1,080	1,910	912	654	318	152B
Antimony	3	10.2J	U	U	U	U	U	6.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	5.9B	U	U	U		
Arsenic	25	U	U	U	U	U	U	U	15.7	U	5.7 J	16.8	17.3B	U	33.8	U	4.6B	U	U	U	U	U	7.3B	U	U	U	
Barium	1,000	12JN	17.9J	7.0 J	26.1 J	10.5B	14.2B	11.8B	190JN	19.3J	158	140	334	18.5B	710	111B	134B	55.2JN	160J	61.4	62.1	45.8B	59.5B	62.0B	17.6B	17.6B	16.5B
Beryllium	3 (GV)	U	U	U	U	U	U	U	2.32J	U	1.4 J	1.48 J	3.9B	U	8.4	0.51B	1.2B	0.095J	0.25J	U	U	U	0.095B	U	U	U	
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.5J	U	0.626 J	1.2B	U	1.3B	U	U	
Calcium	NA	25,800	40,000	20,100	22,400	18,000	28,800	26,700	36,400	21,100	34,100	35,500	45,700	34,800	74,300	51,700	54,400	70,700	238,000	105,000	82,200	60,300	96,500	90,500	34,300	31,400	36,000
Chromium	50	846N	32.8	27.9	240	13.1B	21	3.0B	47.6N	U	30.2	37.7	70	U	130	4.1B	5.2B	3.1JN	11.9	U	2.61 J	1.9B	4.9B	1.9B	15.3B	6.7B	1.6B
Cobalt	NA	10.3J	U	U	U	U	U	U	40.2J	U	18.1	28.5	46.0B	U	141	5.4B	13.6B	5.12J	14.4J	U	U	2.3B	3.5B	3.3B	0.84B	U	0.42B
Copper	200	22J	U	U	13.8	U	U	U	137	U	62	74.8	168	U	458	49.4	35.6	26.7	47.3	9.1 J	17.2	12.2B	15.2B	22.4B	U	U	U
Iron	300	3,860N	109	160	1,150N*	120B	130B	U	71,500N	712	36,200	51,400N*	94,200	U	158,000	3,070	3,780	4,940N	7,160	1,890	2,030N*	2,850	4,060	2,430	339	173B	74.1B
Lead	25	U	U	U	U	U	U	U	64.5	U	30.3	42.2	55.1	U	203	10.3	9.5B	U	7	2.3 J	2.31 J	U	U	U	U	U	U
Magnesium	35,000 (GV)	7,190	11,200	5,450	4,820	5,070	7,860	6,820	22,200	4,210J	15,300	17,000	27,500	8,680	47,900	13,600	13,600	8,500	40,300	12,700	7,980	7,910	11,100	8,910	1,490	1,910	4,270
Manganese	300	201	60	8.6 J	59.8	28.8B	22.8B	7.4B	2,130	164	830	1,500	2,830	U	7,120	329	999	1,050	3,590	1,680	302	417	580	402	10.1B	U	6.4B
Mercury	0.7	U	U	U	0.1JN	U	U	U	0.25	U	U	0.12JN	0.18B	U	0.28	0.032B	U	U	U	U	0.1 JN	U	U	U	U	U	U
Nickel	100	1,730	39.2J	111	1,740	22.5B	21.2B	28.0B	68.2	U	31.8	51.2	97	U	184	4.9B	10.4B	11.7J	74.6	15.6 J	18.9 J	17.1B	19.8B	36.1B	U	U	U
Potassium	NA	11,300	2,200JN	1,060	7,750	839B	801B	1,230	5,260	1,410JN	6,990	3,930	7,430	1,150	9,890	1,740	2,010	16,700	45,100N	18,700	14,600	10,700	10,600	9,240	9,590	7,390	4,950
Selenium	10	U	U	U	U	U	U	U	U	U	U	U	15.0B	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	U	U	U	U	2.04J	U	3.0 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	47,100	63,700	36,300	36,300N	41,400	51,600	53,400	19,600	17,800	25,500	29,600N	38,300	34,200	31,800	30,300	32,300	13,900	100,000	19,200	10,100N	10,200	10,100	8,180	25,700	17,000	12,200
Thallium	0.5 (GV)	U	U	U	U	U	U	2.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	6.4B	U	U	15.2B	
Vanadium	NA	3.82J	U	U	U	U	U	U	75.3	U	47.6	47.1	104	U	192	6.3B	5.6B	6.55J	U	U	U	2.2B	4.6B	1.6B	3.1B	2.5B	1.8B
Zinc	2,000 (GV)	39.7	20.6	37.9	26.1	14.2B	U	U	305	32.2	159	164	261	11.1B	535	16.6B	37.0B	50.8	101	56.5	41.5	33.1B	31.4B	72.6	12.9B	U	U

Notes:
All data presented in micrograms per liter (µg/L).
Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.
U - Analyte was analyzed for, but not detected.
J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).
N - Spiked sample recovery not within control limits.
* - Duplicate analysis is not within control limits.
** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled.
BOLD font in shaded cell - indicates exce

Table 4
Groundwater Analytical Results -
Unfiltered Vs. Filtered TAL Metals and Mercury

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-6			RI-1			RI-3		
Sample Date		10/7/2014			10/8/2014			10/7/2014		
Unfiltered/Filtered		Unfiltered	Filtered	Percent Dissolved	Unfiltered	Filtered	Percent Dissolved	Unfiltered	Filtered	Percent Dissolved
Analyte (µg/L)	AWQS or GV									
Aluminum	NA	438	155B	35.4%	3,210	172B	5.4%	89,900	2,990	3.3%
Antimony	3	U	U	-	U	U	-	U	U	-
Arsenic	25	24	U	0.0%	U	U	-	33.8	U	0.0%
Barium	1,000	99.1B	44.4B	44.8%	21.2B	16.2B	76.4%	710	111B	15.6%
Beryllium	3 (GV)	U	U	-	U	U	-	8.4	0.51B	6.4%
Cadmium	5	U	U	-	U	U	-	U	U	-
Calcium	NA	108,000	110,000	100%	56,400	53,200	94.3%	74,300	51,700	69.6%
Chromium	50	5.7B	U	0.0%	5.0B	0.96B	19.2%	130	4.1B	3.2%
Cobalt	NA	U	U	-	0.84B	U	0.0%	141	5.4B	3.8%
Copper	200	31.1	7.8B	25.1%	7.4B	19.1B	100%	458	49	10.8%
Iron	300	36,000	1,940	5.4%	1,360	127B	9.3%	158,000	3,070	1.9%
Lead	25	U	U	-	U	U	-	203.0	10.3	5.1%
Magnesium	35,000 (GV)	11,800	12,000	100%	10,500	9,860	93.9%	47,900	13,600	28.4%
Manganese	300	2,200	1,940	88.2%	23.6B	18.3B	77.5%	7,120	329	4.6%
Mercury	0.7	U	U	-	U	0.057B	-	0	0.032B	0.0%
Nickel	100	1.4B	U	0.0%	4.0B	0.92B	23.0%	184	4.9B	2.7%
Potassium	NA	3,810	3,870	100%	2,630	2,550	97.0%	9,890	1,740	17.6%
Selenium	10	U	U	-	U	U	-	U	U	0.0%
Silver	50	U	U	-	U	U	-	U	U	-
Sodium	20,000	11,700	14,400	100%	22,300	22,700	100%	31,800	30,300	95.3%
Thallium	0.5 (GV)	7.4B	U	-	U	U	-	U	U	-
Vanadium	NA	5.6B	U	0.0%	1.9B	1.2B	63.2%	192	6.3B	3.3%
Zinc	2,000 (GV)	11.3B	36.4B	100%	6.0B	119	100%	535	16.6B	3.1%

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

Water quality measurements indicated turbidity greater than 50 NTU for these samples; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

U - Analyte was analyzed for, but not detected.

B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

NA - No standard or guidance value exists for the analyte.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.



Table 5
Surface Water and Sediment Analysis
of the Ramapo River

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Sample ID Sampling Date Matrix	NYSAWQS (µg/L)*	USSW 100814 10/8/2014 Water	DSSW 100814 10/8/2014 Water	USSED 100814 10/8/2014 SEDIMENT	DSSD 100814 10/8/2014 SEDIMENT	Sediment Criteria** (µg/kg)	Sample ID Sampling Date Matrix
				22300	125000		Total Organic Carbon (mg/kg)
VOC		(µg/l)	(µg/l)	(µg/gOC)	(µg/kg)	(µg/gOC)	VOC
Acetone	50	5 U	5 U	0.94 J	21	1.21	Acetone
Dichlorodifluoromethane	5	5 U	5 U	0.04 J	0.81 J	5 U	Dichlorodifluoromethane
SVOC		(µg/l)	(µg/l)	(µg/kg)		(µg/kg)	SVOC
Di-n-butylphthalate	50(GV)	2.5 B	3.7 B	650 B	1,300 B	NS	Di-n-butylphthalate
Fluoranthene	50(GV)	10 U	10 U	440 U	180 J	NS	Fluoranthene
Pyrene	50(GV)	10 U	10 U	96 J	200 J	NS	Pyrene
Pesticides		(µg/l)	(µg/l)	(µg/kg)		(µg/kg)	Pesticides
4,4'-DDE	0.2	1.7 U	1.7 U	6.3	1.7 U	0.62	4,4'-DDE
Endrin	NS	1.7 U	1.7 U	5.3 P	1.7 U	5.2	Endrin
4,4' DDD	0.3	1.7 U	1.7 U	9.2 P	1.7 U	1.4	4,4' DDD
4,4' DDT	0.2	1.7 U	1.7 U	21	1.7 U	0.44	4,4' DDT
alpha-Chlordane	0.5	1.7 U	1.7 U	12 P	1.7 U	0.32	alpha-Chlordane
gamma-Chlordane	0.5	1.7 U	1.7 U	19 P	1.7 U	0.32	gamma-Chlordane
Metals		(µg/l)	(µg/l)	(mg/kg)		(mg/kg)	Metals
Aluminum	NS	191 B	115 B	5,670	8,130	NS	Aluminum
Antimony	NS	9.3 U	9.3 U	0.33 B	0.53 B	NS	Antimony
Arsenic	25	4.3 U	4.3 U	3	6.1	10	Arsenic
Barium	1,000	23.3 B	21.9 B	21	52.8	NS	Barium
Beryllium	3	0.26 U	0.26 U	0.39	0.66	NS	Beryllium
Cadmium	5	0.89 U	0.89 U	0.035 B	0.036 B	1	Cadmium
Calcium	NS	51,600	50,400	2060	2,440	NS	Calcium
Chromium	50	1.2 B	1 B	8.8	12.6	43	Chromium
Cobalt	NS	0.67 U	0.67 U	6.1	7.1	NS	Cobalt
Copper	200	6.3 B	6 B	18.2	34.4	32	Copper
Iron	300	407	229	13,100	15,700	NS	Iron
Lead	25	4.2 U	4.2 U	40.9	42	47	Lead
Magnesium	35,000(GV)	16,500	16,000	2,330	2,800	NS	Magnesium
Manganese	300	98.5	81.8	109	200	NS	Manganese
Mercury	0.7	0.028 U	0.028 U	0.24	0.4	0.15	Mercury
Nickel	100	2.1 B	2.1 B	9.6	13.5	21	Nickel
Potassium	NS	9,380	8,740	368	452	NS	Potassium
Selenium	NS	12 U	12 U	1.3	1.3 B	NS	Selenium
Silver	NS	6.9 U	6.9 U	0.1 B	0.2 B	1	Silver
Sodium	20,000	138,000	13,000	105	246 B	NS	Sodium
Thallium	NS	6.2 U	6.2 U	0.25 B	0.23 U	NS	Thallium
Vanadium	NS	1.2 B	1.1 U	11.9	16.8	NS	Vanadium
Zinc	2,000(GV)	18.3 B	19.2 B	78.5	94.3	150	Zinc

Notes

* AWQS/GV Values - New York State Ambient Water Quality Standards (TOGs 1.1.1) guidance values.

** New York State Sediment Criteria for non-Polar Organic Contaminants, Protection Levels for Human Health Bioaccumulation January 1996

µg/l - micrograms per liter

mg/kg - milligrams per kilogram

µg/gOC - microgram per gram of organic carbon

BOLD - The compound was detected at a concentration greater than the method detection limits.

BOLD/SHADED - The compound was detected above AWQS/GV or Sediment Cleanup Criteria

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

The concentration given is an approximate value.

NA - Not analyzed

NS - No standard, guidance value, or criteria established

B - For organic analyses - compound detected in laboratory method blank. For inorganic analyses - indicates trace concentration below reporting limit and equal to or above the detect

P - This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and

Table 6
Combustible Gas Monitoring - Gas Vent Stations
(2007 - 2016)
Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Date	4/20/07		8/7/07		9/18/07		5/23/08		7/8/08		8/6/08		9/12/08		10/10/08		11/7/08	
Gas Vent Station	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)	LEL%	H ₂ S (ppm)
1	0	0	0	0	0	0	0	0	100	0	5	0	100	0	21	0	0	0
2	0	0	1	0	0	0	0	0	17	0	11	0	100	0	0	0	86	0
3	0	0	0	0	0	0	72	0	100	0	6	3	100	6	100	6	100	0
4	22	0	0	0	27	0	93	0	100	6	3	1	100	0	0	0	100	4
5	0	0	0	0	0	0	0	0	86	0	4	0	0	0	0	0	0	0
6	0	0	0	0	87	0	67	0	100	2	0	0	64	0	12	0	100	2
7	0	0	2	0	0	0	0	0	0	0	0	0	0	0	37	0	100	0
8	10	0	0	0	23	0	0	0	100	2	3	1	0	0	0	0	100	2
9	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	5	0
10	0	0	0	0	0	0	0	0	100	2	3	0	0	0	0	0	100	0
11	0	0	0	0	8	0	20	0	0	0	11	0	16	0	0	0	0	0
12	5	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Date	6/18/09			8/3/09			9/3/09			10/8/09			4/8/2010*			6/7/2010**				9/14/10				
Gas Vent Station	LEL%	H ₂ S		LEL%	H ₂ S		LEL%	H ₂ S		LEL%	H ₂ S		CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	LEL %	H ₂ S (ppm)	H ₂ S %	VOCs (ppm)	CH ₄ %	H ₂ S (ppm)	H ₂ S %	
1	89	0	0	100	0	0	100	0	0	100	0	0	0.0	1	0.0001	3.4	0.0	0.0	0.0	0.0	0.1	12.3	0.0	0.0
2	72	0	0	0	0	0	5	0	0	50	0	0	2.0	1	0.0001	4.4	Max	0.0	0.0	0.6	12.1	2.2	0.0002	
3	100	0	0	100	0	0	100	0	0	0	0	0	24.6	0	0.0	24.6	Max	4.0	0.0004	0.0	24.4	13.0	0.0013	
4	100	0	0	0	0	0	100	0	0	0	0	0	8.1	1	0.0001	8.3	4.0	0.0	0.0	0.0	10.3	2.0	0.0002	
5	0	0	0	100	0	0	100	0	0	100	0	0	0.9	1	0.0001	9.0	Max	2.0	0.0002	0.0	13.0	0.0	0.0	
6	100	0	0	100	0	0	100	5.6	0	0	0	0	5.6	2	0.0002	6.3	0.0	0.0	0.0	0.0	7.7	5.0	0.0005	
7	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1	0.0001	0.0	15.0	0.0	0.0	0.1	2.2	0.0	0.0	
8	84	3	0	0	0	0	100	3	0	0	0	0	4.7	2	0.0002	4.6	3.0	0.0	0.0	0.0	0.6	0.0	0.0	
9	3	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	65	0	0	0	0	0	6	0	0	0	0	0	0.0	0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11	24	0	0	0	0	0	30	0	0	0	0	0	0.1	1	0.0001	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Date	1/7/11			6/2/11			9/9/11			2/16/12			5/10/12			8/14/14			10/6/14		
Gas Vent Station	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %
1	0.0	0.0	0.0	4.9	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	2.0	0.0002	4.7	1.0	0.0001
2	6.7	0.0	0.0	0.1	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.0
3	22.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.6	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	2.0	0.0002
4	10.2	10.0	0.001	1.4	0.0	0.0	10.0	4.0	0.0004	4.3	2.0	0.0002	6.6	1.0	0.0001	7.4	0.0	0.0	7.8	2.0	0.0002
5	0.0	0.0	0.0	7.0	2.0	0.0002	8.3	7.0	0.0007	0.0	0.0	0.0	4.3	0.0	0.0	8.6	6.0	0.0006	8.6	1.0	0.0001
6	7.8	8.0	0.0008	0.2	0.0	0.0	6.8	6.0	0.0006	6.2	2.0	0.0002	5.3	0.0	0.0	0.1	0.0	0.0	8.5	2.0	0.0002
7	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	1.0	0.0001	0.0	0.0	0.0	0.1	0.0	0.0	0.1	1.0	0.0001
8	3.5	6.0	0.0006	0.3	1.0	0.0001	5.8	6.0	0.0006	1.5	0.0	0.0	0.7	0.0	0.0	4.2	1.0	0.0001	2.6	0.0	0.0
9	3.4	5.0	0.0005	0.0	0.0	0.0	0.0	0.0	0.0	3.9	2.0	0.0002	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
10	10.5	2.0	0.0002	7.9	2.0	0.0002	0.1	0.0	0.0	7.5	1.0	0.0001	6.0	0.0	0.0	9.0	3.0	0.0003	11.3	2.0	0.0002
11	1.5	1.3	0.0001	0.0	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
12	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0

Date	1/21/15			6/15/15			9/25/15			12/21/15			3/15/16			6/22/16			9/27/16		
Gas Vent Station	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %
1	0.0	0.0	0.0	8.9	1.0	0.0001	9.4	2.0	0.0002	0.0	0.0	0.0	0.0	0.0	0.0	6.4	5.0	0.0005	1.3	3.0	0.0003
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.1	2.0	0.0002
3	10.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0001	4.1	0.0	0.0	20.1	0.0	0.0	0.1	0.0	0.0	0.5	3.0	0.0003
4	0.0	0.0	0.0	8.6	0.0	0.0	0.0	1.0	0.0001	0.0	0.0	0.0	8.3	2.0	0.0002	2.5	0.0	0.0	2.0	5.0	0.0005
5	0.0	0.0	0.0	7.7	2.0	0.0002	9.0	6.0	0.0006	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.6	4.0	0.0004
6	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	6.8	1.0	0.0001	0.2	0.0	0.0	0.8	3.0	0.0003
7	8.1	0.0	0.0	0.2	0.0	0.0	0.1	1.0	0.0001	8.1	0.0	0.0	10.8	0.0	0.0	0.0	0.0	0.0	0.5	3.0	0.0003
8	0.5	0.0	0.0	0.0	0.0	0.0	5.5	3.0	0.0003	2.9	0.0	0.0	5.6	6.0	0.0006	0.1	0.0	0.0	0.7	3.0	0.0003
9	3.2	3.0	0.0003	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.3	2.0	0.0002
10	11.1	1.0	0.0001	0.0	0.0	0.0	2.0	1.0	0.0001	9.1	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.4	2.0	0.0002
11	1.3	1.0	0.0001	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	1.0	0.0001
12	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	2.0	0.0002

Date	12/28/16			3/30/2017		
Gas Vent Station	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %
1	0.0	NS	NS	0.0	0.0	0.0
2	0.3	NS	NS	1.7	0.0	0.0
3	NA	NS	NS	11.2	0.0	0.0
4	18.3	NS	NS	8.2	5.0	0.0005
5	0.3	NS	NS	0.0	0.0	0.0
6	NA	NS	NS	0.5	0.0	0.0
7	NA	NS	NS	8.4	0.0	0.0
8	9.5	NS	NS	3.0	2.0	0.0002
9	4.0	NS	NS	0.9	3.0	0.0003
10	NA	NS	NS	6.9	1.0	0.0001
11	3.5	NS	NS	1.3	1.0	0.0001
12	3.0	NS	NS	0.0	0.0	0.0

H₂S - Hydrogen Sulfide

ppm - parts per million

CH₄ - methane

Mini-blowers were not reliably operating in 2007 and were removed from the site on August 29, 2007.

* A Gem2000+ Landfill Gas Meter has been used to collect measurements since the April 2010 sampling event.

Prior to the April 2010 sampling event a BW Technologies Gas Alert Micro Meter or similar meter was used to collect measurements.

** A Gem2000+ Landfill Gas Meter and a MultiRae Gas Meter were used to collect measurements during the June 2010 sampling event.

Gas Vent Locations not subject to monitoring action levels

Highlighted stations are equipped with turbine ventilators.

Table 7
Combustible Gas Monitoring - Perimeter Monitoring Points
(2005-2016)
Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Station No. Perimeter Monitoring Point	4/14/05			5/13/05			4/6/10			6/7/10				9/14/10			1/7/11			6/2/11			9/9/11			2/16/12			
	LEL %	H ₂ S (ppm)	H ₂ S %	LEL %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	LEL %	H ₂ S (ppm)	H ₂ S %	VOCs (ppm)	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %			
1	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	NM***	NM***	NM***	0.2	0.0	0.0	0.1	0.0	0.0	NM***	NM***	NM***
2	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	NM	NM	NM	0.0	0.0	0.0	NM	NM	NM	0.0	0.0	0.0
3	0.0	0	0.0	0.0	0	0.0	0.0	1	0.0001	0.0	0.0	1.0	0.0001	1.4	0.0**	0.0**	0.0**	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0.0
4	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.5	NM**	NM**	NM**	NM	NM	NM	NM	NM	NM	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0	0.0	0.0	0	0.0	0.0	1	0.0001	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	NM	NM	NM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0	0.0	0.0	0	0.0	NM	NM	NM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
7	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0	0.0	0.0	0	0.0	NM	NM	NM	0.0*	0.0	0.0*	0.0*	0.0	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*	NM*
11	0.0	0	0.0	0.0	0	0.0	0.1	1	0.0001	0.0	0.0	0.0	0.0	0.0	NM*	NM*	NM*	NM	NM	NM	NM***	NM***	NM***	NM	NM	NM	NM***	NM***	NM***
12	0.0	0	0.0	0.0	0	0.0	1.0	1	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NM	NM	NM	NM***	NM***	NM***
13	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0*	0.0	0.0*	0.0*	0.0	NM*	NM*	NM*	NM***	NM***	NM***	NM***	NM***	NM***	0.0	0.0	0.0	NM***	NM***	NM***

Station No. Perimeter Monitoring Point	5/10/12			8/14/14			10/6/14			1/21/15			6/15/15			9/25/15			12/21/15			3/15/16			6/22/16			9/27/16		
	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %			
1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.0	0.0002	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	2.0	0.0002	
3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	3.0	0.0003	
4	NM*	NM*	NM*	0.1	0.0	0.0	0.0	1.0	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.0	0.0003	
5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.0	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.6	2.0	0.0002	
6	NM**	NM**	NM**	0.1	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	2.0	0.0002	
7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	1.0	0.0001	
8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0001	
9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	
10	NM*	NM*	NM*	0.1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	
11	NM	NM	NM	0.1	0.0	0.0	0.1	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.1	1.0	0.0001	
12	0.0	0.0	0.0	0.1	0.0	0.0	0.1	1.0	0.0001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0001	
13	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0001	

Station No. Perimeter Monitoring Point	12/28/16			3/30/2017		
	CH ₄ %	H ₂ S (ppm)	H ₂ S %	CH ₄ %	H ₂ S (ppm)	H ₂ S %
1	NM	NS	NS	NS	NS	NS
2	0.5	NS	NS	0.0	0.0	0.0
3	0.3	NS	NS	0.0	0.0	0.0
4	0.3	NS	NS	0.0	0.0	0.0
5	0.0	NS	NS	0.0	0.0	0.0
6	0.3	NS	NS	0.0	0.0	0.0
7	0.3	NS	NS	0.0	0.0	0.0
8	0.3	NS	NS	0.0	0.0	0.0
9	0.8	NS	NS	0.0	0.0	0.0
10	0.0	NS	NS	0.0	0.0	0.0
11	0.3	NS	NS	0.0	0.0	0.0
12	0.3	NS	NS	0.0	0.0	0.0
13	0.3	NS	NS	0.0	0.0	0.0

Notes:

LEL - lower explosive limit

H₂S - Hydrogen Sulfide

ppm - parts per million

CH₄ - methane

NM - Not measured due to inability to locate or too saturated

* Water present in sample tube

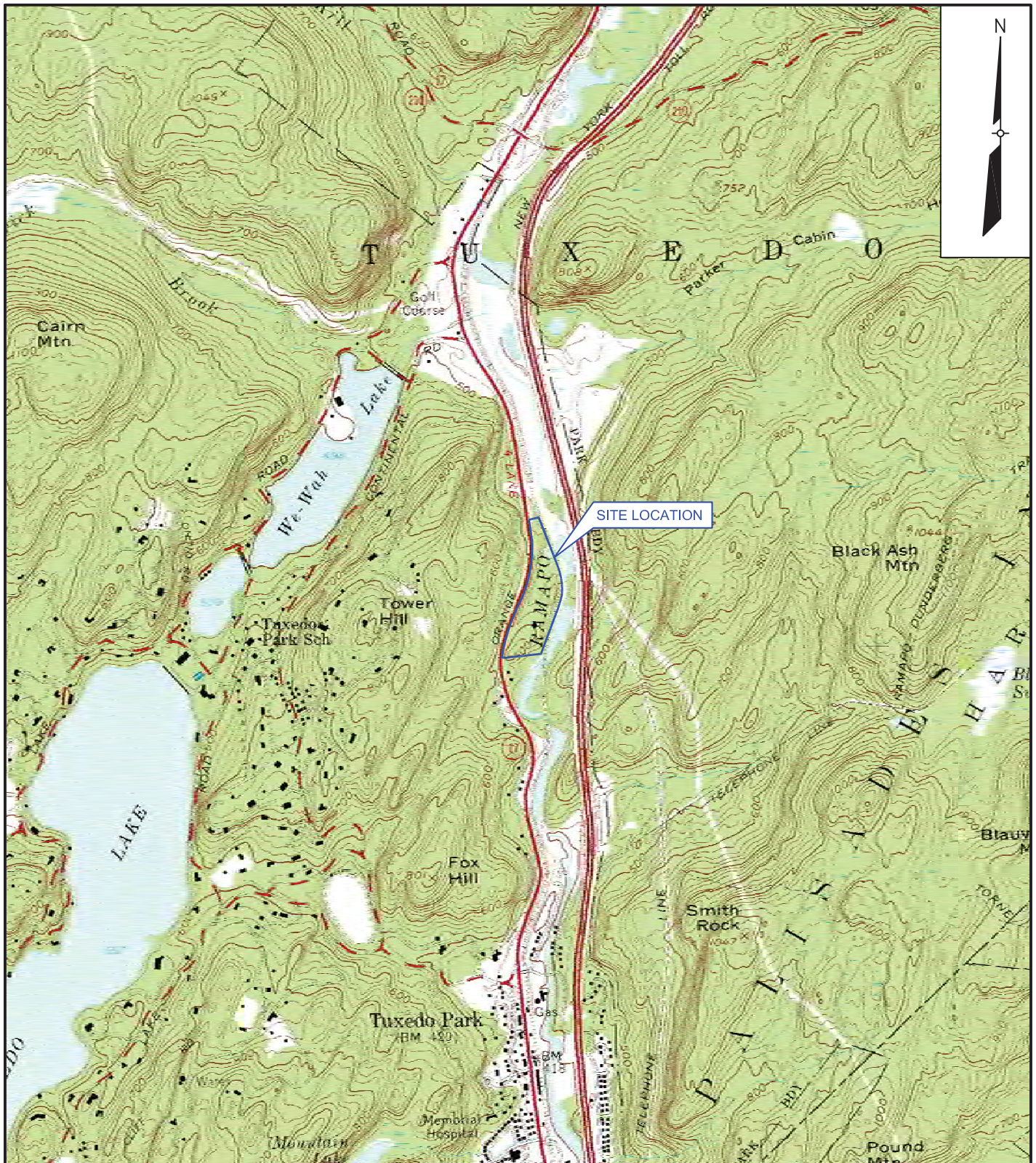
** Impacted by lawn mower

*** No flow

Monitoring action level for Methane is defined as 25% of LEL (5.1%) or 1.28% on the gas meter.

Monitoring action level for Hydrogen Sulfide is defined as 25% of LEL (4%) or 1% on the gas meter.

Figures



0 1000 2000 4000
SCALE IN FEET

NOTE: MAP DERIVED FROM U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, SLOATSBURG, NY-NJ, DATED 1955.

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**FIGURE 1
SITE LOCATION MAP**














NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

December 2014

60323116

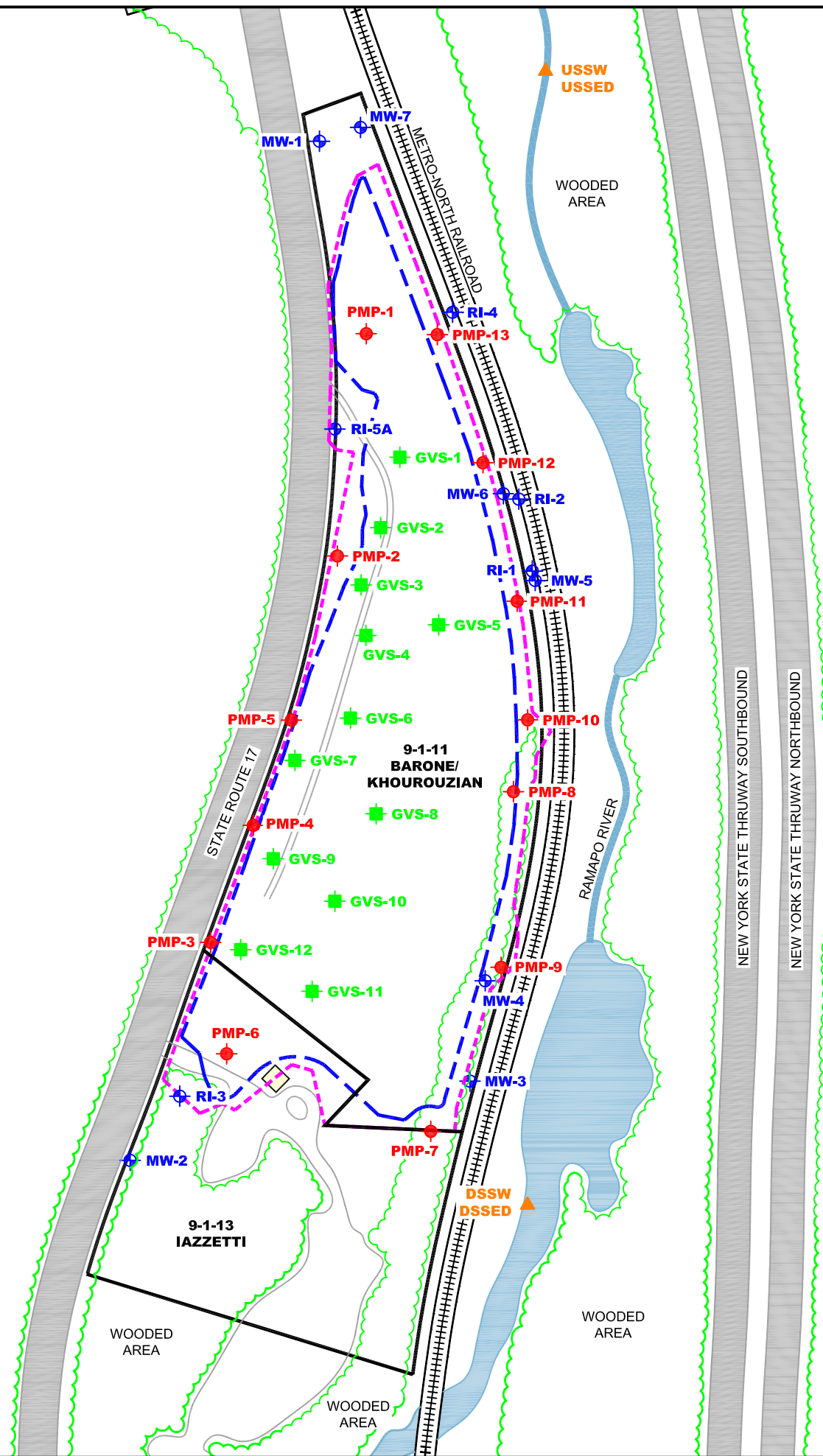
n:\marketing\proposals\nysdec - tuxedo waste\figure 2 - site plan.dwg

LEGEND

- MW-2**  MONITORING WELL LOCATION
- PMP-2**  PERIMETER MONITORING POINT LOCATION (APPROXIMATE)
- GVS-2**  GAS VENT STATION LOCATION (APPROXIMATE)
- USSW**  UPSTREAM AND DOWNSTREAM SURFACE WATER AND SURFACE SEDIMENT SAMPLES (APPROXIMATE)
- USSED**  UPSTREAM AND DOWNSTREAM SURFACE WATER AND SURFACE SEDIMENT SAMPLES (APPROXIMATE)
-  PROPERTY BOUNDARIES (APPROXIMATE)
-  LIMIT OF GRADING (APPROXIMATE)
-  FINAL LIMIT OF WASTE (APPROXIMATE)
-  RAILROAD TRACKS
-  BUILDING
-  ROAD
-  RAMAPO RIVER
-  TREE LINE

NOTE:

1. FINAL LIMIT OF WASTE TAKEN FROM "REMEDIAL CLOSURE DESIGN - WASTE GRADING PLAN", CLOUGH, HARBOUR & ASSOCIATES, MARCH 1994.



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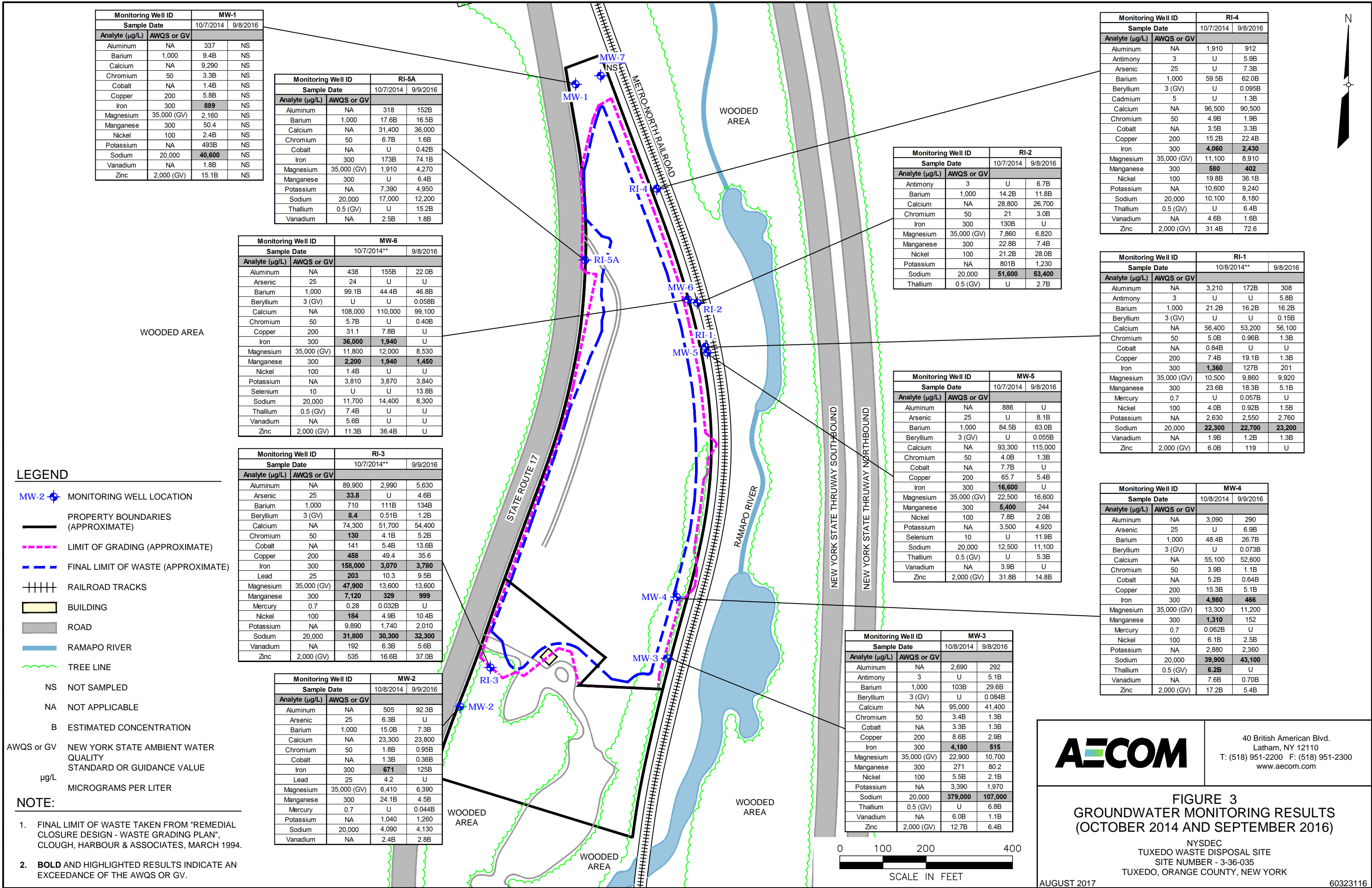
FIGURE 2 SITE PLAN AND MONITORING LOCATIONS

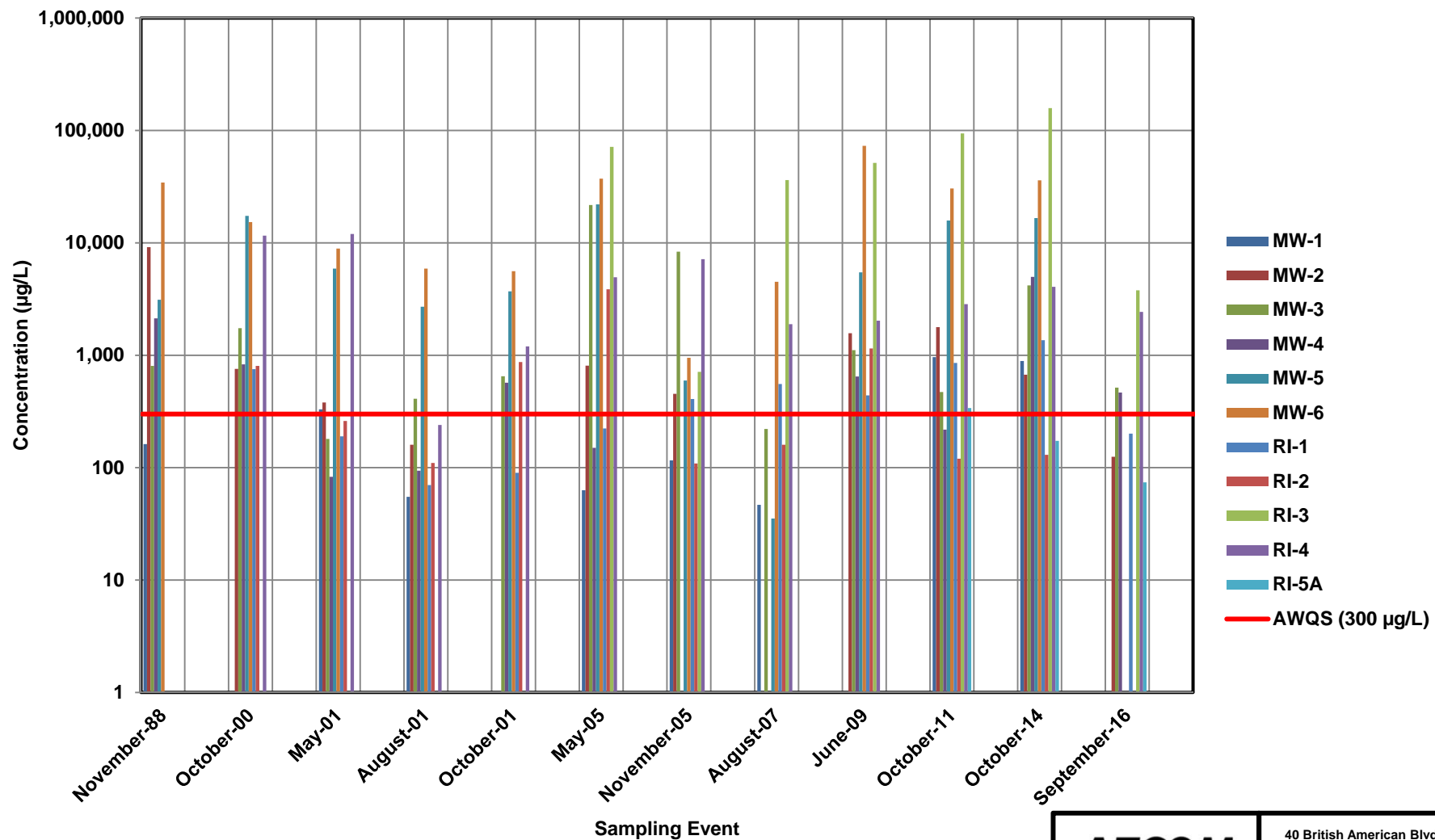
NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

DECEMBER 2014

60323116

n:\marketing\proposals\nysdec - tuxedo waste\prr figure updates - august 2017\figure 3 - gw mon september 2016.dwg.



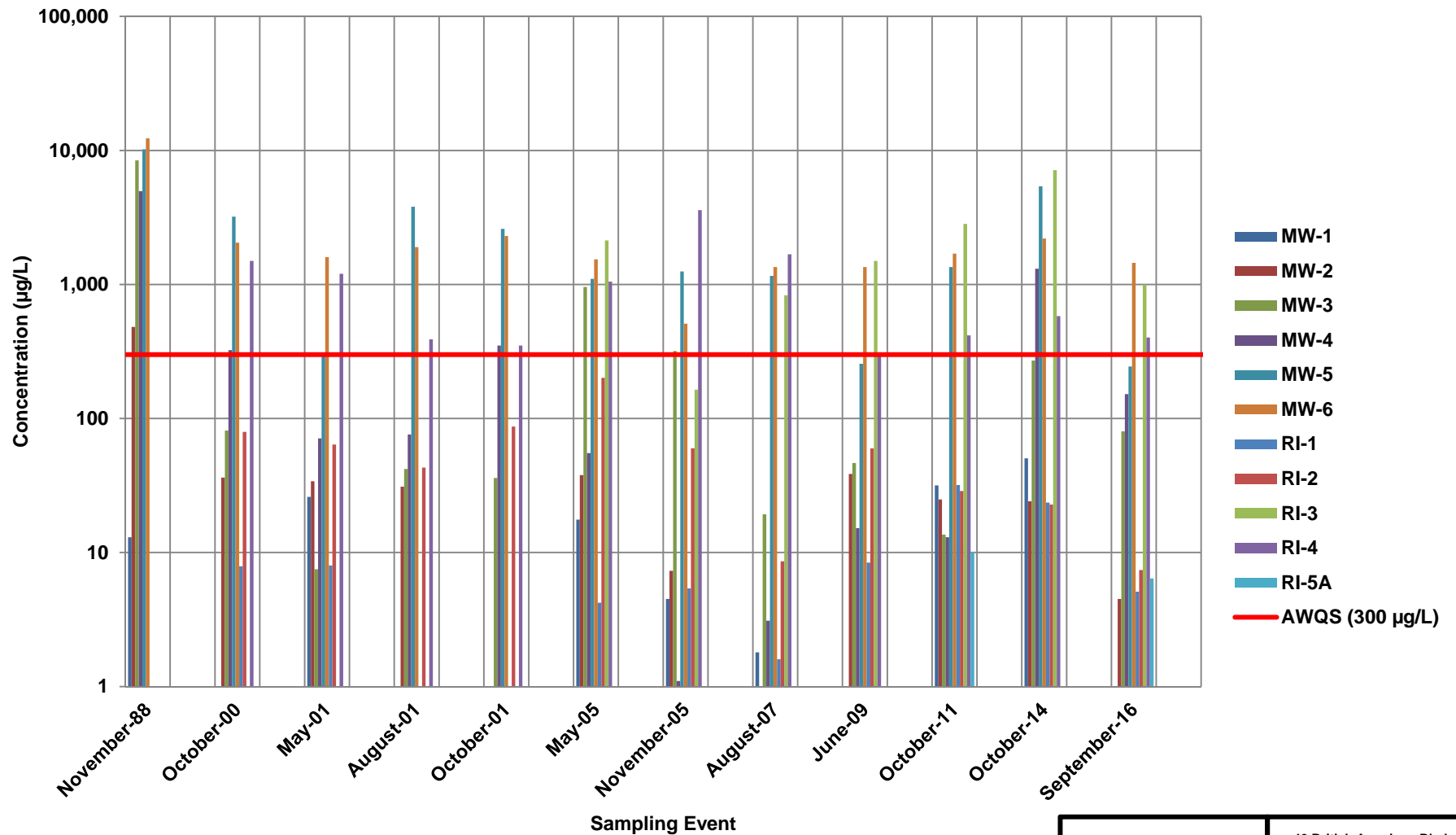


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FIGURE 4
Groundwater Results – Iron (1988-2016)
(Unfiltered)
NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER – 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

AUGUST 2017

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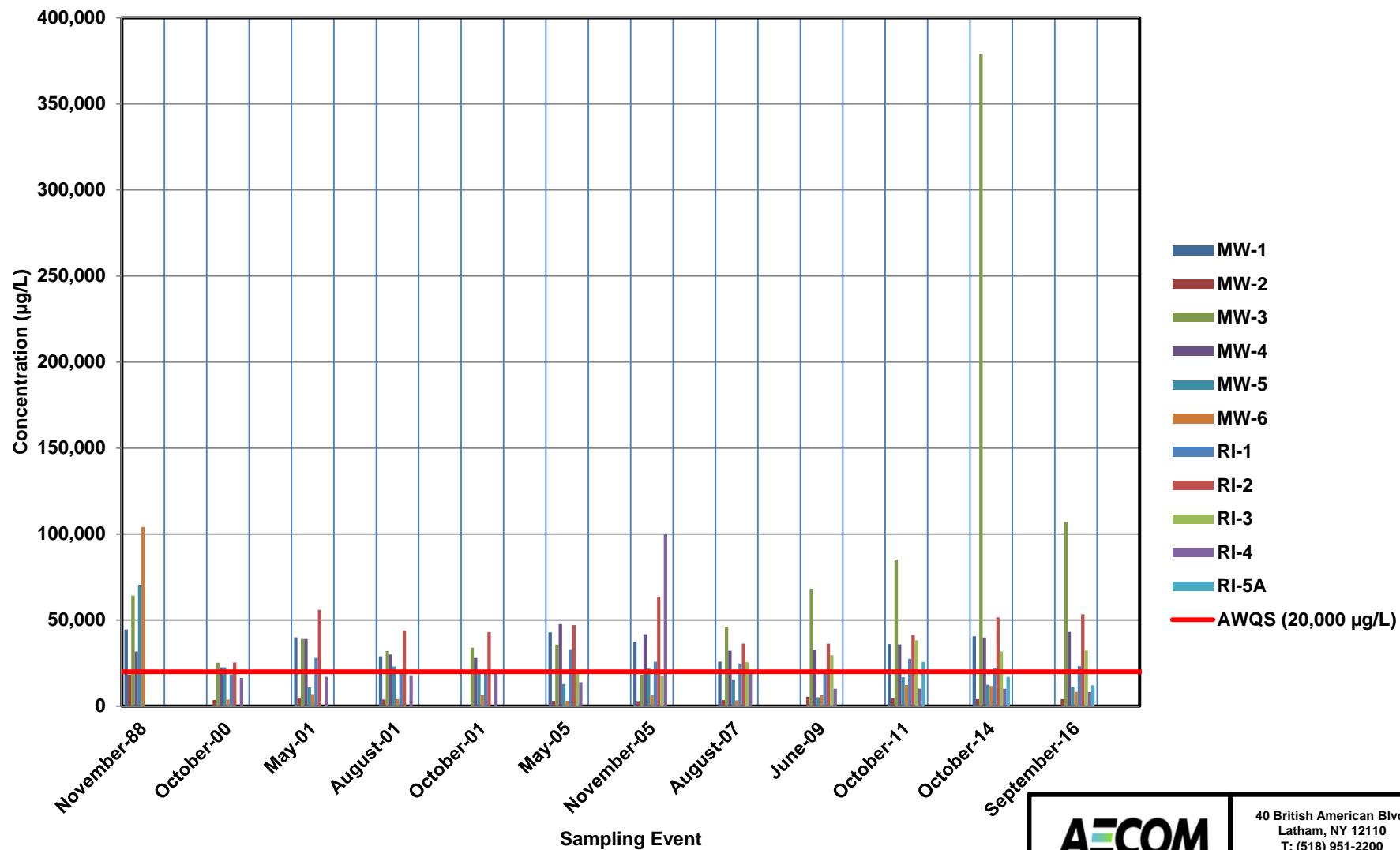


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FIGURE 5
Groundwater Results – Manganese (1988-2016)
(Unfiltered)
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SITE NUMBER – 3-36-035
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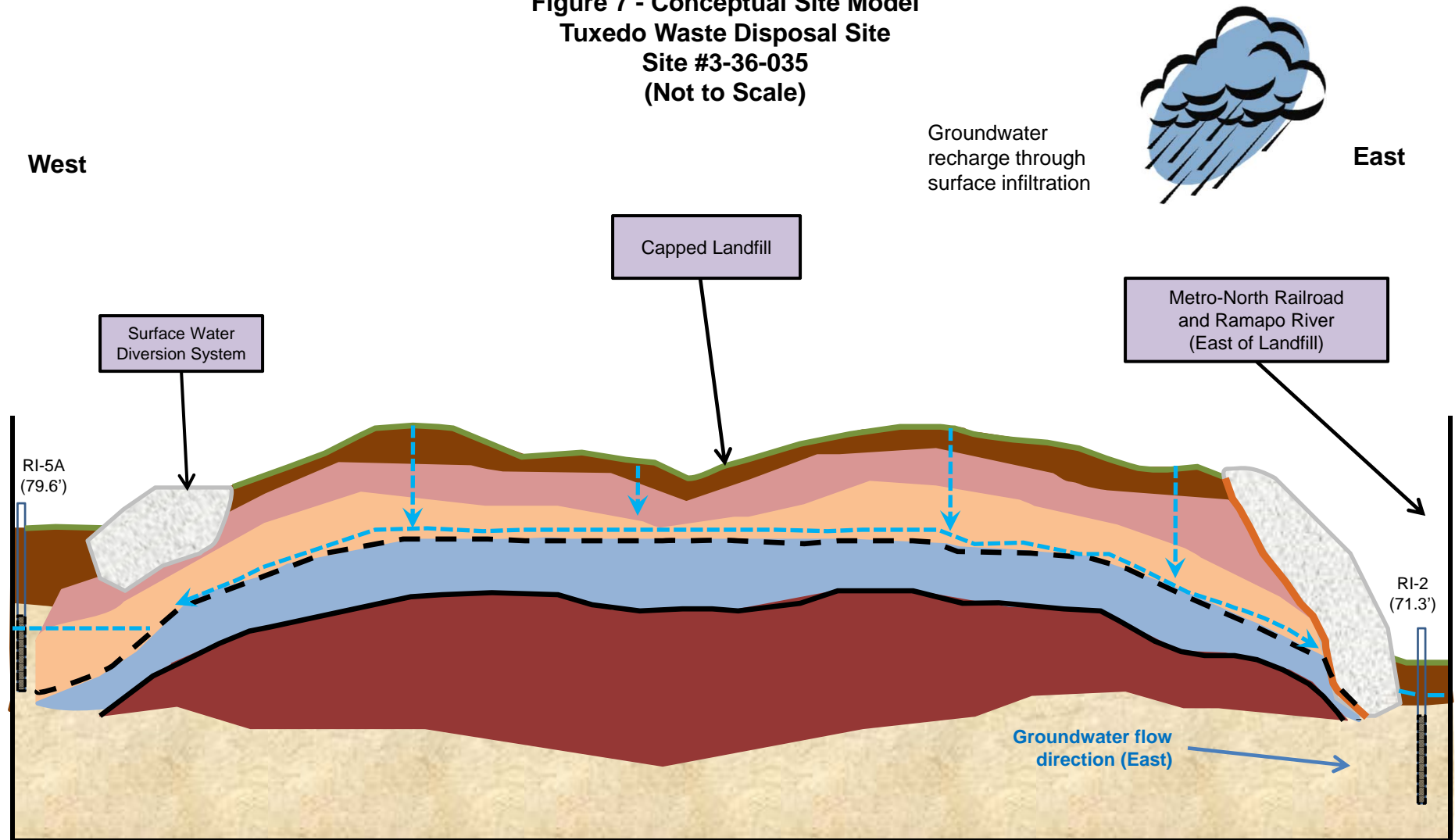
FIGURE 6
Groundwater Results – Sodium (1988-2016)

(Unfiltered)
NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER – 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

AUGUST 2017

60323116

Figure 7 - Conceptual Site Model
Tuxedo Waste Disposal Site
Site #3-36-035
(Not to Scale)



Notes:

1. Developed from information collected during the June 2009 groundwater sampling event and the Remedial Investigation and Feasibility Study (Metcalf & Eddy, December 1991).
2. (79.6') – Indicates original bottom of slotted casing depth (feet below ground surface).

AECOM

---	Infiltration and Diversion	---	Geonet/Geotextile Composite
■	6" Topsoil/Overburden	—	Geotextile
■	12" Select Fill	—	Non-Woven Geotextile
■	12" Barrier Protection Layer	—	Grass
■	12" Gas Vent Layer		
■	Waste (varies from 3-70 feet in depth)		
■	Bedrock - Gneiss		

LEGEND

- PMP-2 PERIMETER MONITORING POINT LOCATION (APPROXIMATE)
- GVS-2 GAS VENT STATION LOCATION (APPROXIMATE)
- PROPERTY BOUNDARIES (APPROXIMATE)
- LIMIT OF GRADING (APPROXIMATE)
- FINAL LIMIT OF WASTE (APPROXIMATE)
- RAILROAD TRACKS
- BUILDING
- ROAD
- RAMAPO RIVER
- TREE LINE
- CH₄ METHANE (%)
- H₂S HYDROGEN SULFIDE (%)
- NM NOT MEASURED
- * COULD NOT LOCATE

NOTES:

1. FINAL LIMIT OF WASTE TAKEN FROM "REMEDIAL CLOSURE DESIGN - WASTE GRADING PLAN", CLOUGH, HARBOUR & ASSOCIATES, MARCH 1994.
2. STATION IDENTIFICATIONS HIGHLIGHTED IN YELLOW INDICATE STATIONS ARE EQUIPPED WITH TURBINE VENTILATORS.

PMP-1*
NM

GVS-1
CH ₄ 0.0
H ₂ S 0.0

GVS-2
CH ₄ 1.7
H ₂ S 0.0

PMP-2
CH ₄ 0.0
H ₂ S 0.0

GVS-3
CH ₄ 11.2
H ₂ S 0.0

GVS-4
CH ₄ 8.2
H ₂ S 0.0005

PMP-5
CH ₄ 0.0
H ₂ S 0.0

GVS-7
CH ₄ 8.4
H ₂ S 0.0

PMP-4
CH ₄ 0.0
H ₂ S 0.0

GVS-9
CH ₄ 0.9
H ₂ S 0.0003

PMP-3
CH ₄ 0.0
H ₂ S 0.0

GVS-12
CH ₄ 0.0
H ₂ S 0.0

PMP-6
CH ₄ 0.0
H ₂ S 0.0

PMP-13
CH ₄ 0.0
H ₂ S 0.0

PMP-12
CH ₄ 0.0
H ₂ S 0.0

PMP-11
CH ₄ 0.0
H ₂ S 0.0

GVS-5
CH ₄ 0.0
H ₂ S 0.0

GVS-6
CH ₄ 0.5
H ₂ S 0.0

PMP-10
CH ₄ 0.0
H ₂ S 0.0

PMP-8
CH ₄ 0.0
H ₂ S 0.0

GVS-8
CH ₄ 3.0
H ₂ S 0.0002

GVS-10
CH ₄ 6.9
H ₂ S 0.0001

PMP-9
CH ₄ 0.0
H ₂ S 0.0

GVS-11
CH ₄ 1.3
H ₂ S 0.0001

PMP-7
CH ₄ 0.0
H ₂ S 0.0



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FIGURE 8
COMBUSTIBLE GAS
MONITORING RESULTS (MARCH 2017)

NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

Appendix A

Institutional and Engineering Controls Certification Form



Enclosure 1
Engineering Controls - Standby Consultant/Contractor Certification Form



Site Details		Box 1
Site No.	336035	
Site Name Tuxedo Waste Disposal Site		
Site Address: Route 17 Zip Code: 10987 City/Town: Tuxedo County: Orange Site Acreage: 12.0		
Reporting Period: June 12, 2014 to June 12, 2017		
		YES NO
1. Is the information above correct?		<input checked="" type="checkbox"/> <input type="checkbox"/>
If NO, include handwritten above or on a separate sheet.		
2. To your knowledge has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?		<input type="checkbox"/> <input checked="" type="checkbox"/>
3. To your knowledge has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?		<input type="checkbox"/> <input checked="" type="checkbox"/>
4. To your knowledge have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?		<input type="checkbox"/> <input checked="" type="checkbox"/>
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. To your knowledge is the site currently undergoing development?		<input type="checkbox"/> <input checked="" type="checkbox"/>
		Box 2
		YES NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill		<input checked="" type="checkbox"/> <input type="checkbox"/>
7. Are all ICs/ECs in place and functioning as designed?		<input checked="" type="checkbox"/> <input type="checkbox"/>
IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.		
Signature of Standby Consultant/Contractor _____		Date _____

Description of Institutional ControlsParcelOwnerInstitutional Control**9-1-11**

Sarkis Khourouzian

Soil Management Plan
Monitoring Plan
Site Management Plan
O&M Plan

ICs in ROD include site use restrictions

9-1-13

Patricia Iazzetti

Monitoring Plan
O&M Plan
Soil Management Plan
Site Management Plan

IC:

1994 Consent Order with owner (Ronald Iazzetti) provides for a land-use restriction such that there is no disturbance or excavation of waste materials on site; no change in use unless written approval is obtained from the NYSDEC; access is granted to the NYSDEC and its agents for the purposes of inspection, sampling, testing and remediation; 60-day prior notification to NYSDEC of any proposed property transfer. The consent agreement is binding on all successors and assigns.

A Deed restriction was required by Consent Order to be filed with the County Clerk for parcel 9-1-13. Verification of placement of this DCR is needed.

A Site Management Plan is in place which specifies requirements for maintaining the Engineering controls and adhering to requirements for or restrictions to land and groundwater use.

Description of Engineering ControlsParcelEngineering Control**9-1-11**

Cover System
Fencing/Access Control

Engineering Controls include fencing, a geotextile and soil cover, and groundwater monitoring well network.

9-1-13

Cover System

Cover system and monitoring wells. A small portion of the landfill cap and two monitoring wells are on this property and must be maintained.

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification, including data and material prepared by previous contractors for the current certifying period, if any;

b) 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 is accurate and compete.

YES NO

☒ ☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) nothing has occurred that would constitute a failure to comply with the Site Management Plan, or equivalent if no Site Management Plan exists.

YES NO

☒ ☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

Signature of Standby Consultant/Contractor

Date

IC/EC CERTIFICATIONS

Professional Engineer Signature

I certify that all information in Boxes 2 through 5 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 Daniel Servetas at AECOM
print name

40 British American Blvd

Latham New York 12110
(print business address)

am certifying as a Professional Engineer.

[Signature]
Signature of Professional Engineer



Stamp
(Required for PE)

9/5/2017

Date

Appendix B

AECOM Annual Site-Wide Inspection Checklists (2014 – 2016)

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Annual Site-Wide Inspection Checklist

"N/A" refers to "not applicable."

I. SITE INFORMATION						
Site name: <u>Tuxedo Waste Disposal</u>	Date of inspection: <u>8/14/14</u>					
Location and Region: <u>Tuxedo, NY / 3</u>	Site ID: <u>3-36-035</u>					
Agency, office, or company leading the annual review: <u>AECOM Latham NY</u>	Weather/temperature: <u>Sunny 70° to 80°</u>					
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> <input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Engineer Ins Controls - Cover System, Chain Link Fence</u> <u>Gas Venting System, Surface Water Diversion System</u> 						
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached						
II. INTERVIEWS (Check all that apply)						
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%; text-align: center;">Name</td> <td style="width: 20%; text-align: center;">Title</td> <td style="width: 40%; text-align: center;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____				Name	Title	Date
Name	Title	Date				
2. O&M staff _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%; text-align: center;">Name</td> <td style="width: 20%; text-align: center;">Title</td> <td style="width: 40%; text-align: center;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____				Name	Title	Date
Name	Title	Date				

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; ☐ Report attached _____

4. **Other interviews (optional)** ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A

IV. O&M COSTS

1. **O&M Organization**

- ☐ State in-house
☐ PRP in-house
☐ Federal Facility in-house
☐ Other _____
- ☒ Contractor for State
☐ Contractor for PRP
☐ Contractor for Federal Facility

2. **O&M Cost Records**

- ☒ Readily available ☐ Up to date
☒ Funding mechanism/agreement in place
 Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available *See Section 3.0*

From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

*OF 2014
PRR*

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons:

At MIT
2012 Cap Repair / Good Condition / Grass Cover
Separate CWA
Grown In

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A
- Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
- Remarks *Located on Gate*

C. Institutional Controls (ICs)**1. Implementation and enforcement**

Site conditions imply ICs not properly implemented

☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced

☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____

Name

Title

Date

Phone no.

Reporting is up-to-date

☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency

☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met

☐ Yes ☐ No ☐ N/A

Violations have been reported

☐ Yes ☐ No ☐ N/AOther problems or suggestions: ☐ Report attached**2. Adequacy**☒ ICs are adequate☐ ICs are inadequate☐ N/A

Remarks _____

D. General**1. Vandalism/trespassing**☐ Location shown on site map☒ No vandalism evident

Remarks _____

2. Land use changes on site ☒ N/A

Remarks _____

3. Land use changes off site ☒ N/A

Remarks _____

VI. GENERAL SITE CONDITIONS**A. Roads**☒ Applicable☐ N/A**1. Roads damaged**☐ Location shown on site map☒ Roads adequate☐ N/A

Remarks _____

B. Other Site Conditions

Remarks

*No***VII. LANDFILL COVERS** ☒ Applicable ☐ N/A**A. Landfill Surface**1. **Settlement** (Low spots)☐ Location shown on site map☒ Settlement not evident

Areal extent _____

Depth _____

Remarks _____

2. **Cracks**☐ Location shown on site map☒ Cracking not evident

Lengths _____

Widths _____ Depths _____

Remarks _____

3. **Erosion**☐ Location shown on site map☒ Erosion not evident

Areal extent _____

Depth _____

Remarks _____

4. **Holes**☐ Location shown on site map☒ Holes not evident

Areal extent _____

Depth _____

Remarks _____

5. **Vegetative Cover**☒ Grass☒ Cover properly established☒ No signs of stress☐ Trees/Shrubs (indicate size and locations on a diagram)

Remarks _____

6. **Alternative Cover** (armored rock, concrete, etc.)☐ N/ARemarks *part of surface-water diversion system - No damage*7. **Bulges**☐ Location shown on site map☒ Bulges not evident

Areal extent _____

Height _____

Remarks _____

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____
9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of slope instability
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
C. Letdown Channels <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement <input type="checkbox"/> Location shown on site map Areal extent _____ Depth _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of settlement
2.	Material Degradation <input type="checkbox"/> Location shown on site map Material type _____ Areal extent _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of degradation
3.	Erosion <input type="checkbox"/> Location shown on site map Areal extent _____ Depth _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of erosion

4.	Undercutting Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of undercutting	
5.	Obstructions Type _____ <input type="checkbox"/> Location shown on site map Size _____ Remarks _____	<input checked="" type="checkbox"/> No obstructions Areal extent _____	
6.	Excessive Vegetative Growth Type <u>1</u> <input checked="" type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Remarks _____	Areal extent _____	
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents <input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Passive <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Monitored Quarterly</u>		
2.	Gas Monitoring Probes <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Replaced in August 2014 - Permanent Points May Not Apply Here</u>		
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____		
4.	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____		
5.	Settlement Monuments Remarks _____	<input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A	

E. Gas Collection and Treatment			<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ NA			
2.	Gas Collection Wells, Manifolds and Piping <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____			
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ Replaced August 2014			
F. Cover Drainage Layer			<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Outlet Pipes Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
2.	Outlet Rock Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
G. Detention/Sedimentation Ponds			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____			
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____			
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			

H. Retaining Walls		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input checked="" type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A

1.	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____ _____
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____

3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____ _____
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____ _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>MV-7 is obstructed</u> _____ _____
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

*Increasing the Amount of Gas Vent Stations and
Wind Turbines.*

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Cover - Functioning as Designed
Surface Water Diversion - Functioning as Designed
Gas Vent Stations - Working Properly

Remedy Functioning As designed

No Issues Observed

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

No Issues Observed

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None Observed

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Annual Site-Wide Inspection Checklist

"N/A" refers to "not applicable."

I. SITE INFORMATION						
Site name: <u>Tuxedo Waste Disposal</u>		Date of inspection: <u>9/24/15</u>				
Location and Region: <u>Tuxedo, NY / 3</u>		Site ID: <u>3-36-035</u>				
Agency, office, or company leading the annual review: <u>ECOM Latham NY</u>		Weather/temperature: <u>cloudy, 60°</u>				
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> <input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Engineering Controls - Cover system, Chainlink fence, Gas venting system, Surface water Diversion system</u> 						
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached						
II. INTERVIEWS (Check all that apply)						
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%; text-align: center;">Name</td> <td style="width: 20%; text-align: center;">Title</td> <td style="width: 40%; text-align: center;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____				Name	Title	Date
Name	Title	Date				
2. O&M staff _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%; text-align: center;">Name</td> <td style="width: 20%; text-align: center;">Title</td> <td style="width: 40%; text-align: center;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____				Name	Title	Date
Name	Title	Date				

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____

Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____			

Agency _____
Contact _____

Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____			

Agency _____
Contact _____

Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____			

Agency _____
Contact _____

Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____			

[illegible]

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A

IV. O&M COSTS															
1.	O&M Organization <input type="checkbox"/> State in-house <input type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other _____	<input checked="" type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility													
2.	O&M Cost Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached <div style="text-align: right; margin-right: 50px;"><i>* See Section 3.0 of 2014 PRP</i></div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Total annual cost by year for review period if available</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Total cost</td> <td></td> <td></td> </tr> </table> </div> <div style="width: 50%;"> <input type="checkbox"/> Breakdown attached </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>From _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"> <p>To _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"></div> <div style="width: 20%; text-align: center;">Total cost</div> <div style="width: 20%;"> <input type="checkbox"/> Breakdown attached </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>From _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"> <p>To _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"></div> <div style="width: 20%; text-align: center;">Total cost</div> <div style="width: 20%;"> <input type="checkbox"/> Breakdown attached </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>From _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"> <p>To _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"></div> <div style="width: 20%; text-align: center;">Total cost</div> <div style="width: 20%;"> <input type="checkbox"/> Breakdown attached </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>From _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"> <p>To _____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 20%;"></div> <div style="width: 20%; text-align: center;">Total cost</div> <div style="width: 20%;"> <input type="checkbox"/> Breakdown attached </div> </div>			From _____	To _____					Date	Date		Total cost		
From _____	To _____														
Date	Date		Total cost												
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: _____ _____ _____ _____ _____														
V. ACCESS AND INSTITUTIONAL CONTROLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A															
A. Fencing															
1.	Fencing damaged Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A												
B. Other Access Restrictions															
1.	Signs and other security measures Remarks <u>located on Gate</u>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A												

C. Institutional Controls (ICs)																																								
1.	Implementation and enforcement Site conditions imply ICs not properly implemented Site conditions imply ICs not being fully enforced Type of monitoring (e.g., self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____	<input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A <input type="checkbox"/> N/A																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Name</th> <th style="width: 20%;">Title</th> <th style="width: 20%;">Date</th> <th style="width: 20%;">Phone no.</th> </tr> </thead> <tbody> <tr> <td>Reporting is up-to-date</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Reports are verified by the lead agency</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Specific requirements in deed or decision documents have been met</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Violations have been reported</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">Other problems or suggestions: <input type="checkbox"/> Report attached</td> </tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="4"> </td></tr> </tbody> </table>	Name	Title	Date	Phone no.	Reporting is up-to-date				Reports are verified by the lead agency				Specific requirements in deed or decision documents have been met				Violations have been reported				Other problems or suggestions: <input type="checkbox"/> Report attached																<input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
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Other problems or suggestions: <input type="checkbox"/> Report attached																																								
2.	Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks _____ _____ _____																																							
D. General																																								
1.	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks _____ _____																																							
2.	Land use changes on site <input checked="" type="checkbox"/> N/A Remarks _____ _____																																							
3.	Land use changes off site <input checked="" type="checkbox"/> N/A Remarks _____ _____																																							
VI. GENERAL SITE CONDITIONS																																								
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A																																								
1.	Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks _____ _____																																							

B. Other Site Conditions			
	Remarks	None	
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Settlement not evident
2.	Cracks Lengths _____ Widths _____ Depths _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident	
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Erosion not evident
4.	Holes Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Holes not evident
5.	Vegetative Cover <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____		
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks: <u>Surface water Diversion system in good condition</u>		
7.	Bulges Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Height _____	<input checked="" type="checkbox"/> Bulges not evident

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____
9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of slope instability
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
C. Letdown Channels <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement Areal extent _____ <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of settlement Depth _____ Remarks _____	
2.	Material Degradation <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____	
3.	Erosion Areal extent _____ <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of erosion Depth _____ Remarks _____	

4.	Undercutting Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of undercutting	
5.	Obstructions Type _____ <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____	<input checked="" type="checkbox"/> No obstructions	
6.	Excessive Vegetative Growth Type <u>1</u> <input checked="" type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____		
D. Cover Penetrations <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents <input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Passive <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Monitored Quarterly</u>		
2.	Gas Monitoring Probes <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____		
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____		
4.	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____		
5.	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A Remarks _____		

E. Gas Collection and Treatment		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ N/A		
2.	Gas Collection Wells, Manifolds and Piping <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____		
F. Cover Drainage Layer		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Outlet Pipes Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
2.	Outlet Rock Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
G. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____		
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		

H. Retaining Walls		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident Depth _____
2.	Vegetative Growth <input checked="" type="checkbox"/> Vegetation does not impede flow Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Settlement Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident Depth _____
2.	Performance Monitoring <input type="checkbox"/> Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____ <input type="checkbox"/> Evidence of breaching	
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A

1.	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____ _____
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Treatment Train (Check components that apply) <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Metals removal <input type="checkbox"/> Air stripping <input type="checkbox"/> Filters <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) <input type="checkbox"/> Others _____ </div> <div> <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ </div> <div> <input type="checkbox"/> Bioremediation </div> </div> Remarks _____ _____ _____
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____

3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

over-Functioning properly
Surface water circulation - Functioning as designed
Gas Vent Stations - working properly
Remedy functioning as designed
No Issues observed

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

No Issues observed

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

No Issues observed

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Increasing amount of Gas vent stations
Wind turbines

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Annual Site-Wide Inspection Checklist

"N/A" refers to "not applicable."

I. SITE INFORMATION				
Site name: <u>Tuxedo Waste Disposal</u>	Date of inspection: <u>3/15/16</u>			
Location and Region: <u>Tuxedo, NY / 3</u>	Site ID: <u>3-36-035</u>			
Agency, office, or company leading the annual review: <u>Aecom Latham NY</u>	Weather/temperature: <u>Sunny, 50°</u>			
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> <input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Engineering Controls, Cover system, Chain link fence, 23 Venting system,</u> 				
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached				
II. INTERVIEWS (Check all that apply)				
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 40%;">Name</td> <td style="text-align: center; width: 30%;">Title</td> <td style="text-align: center; width: 30%;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____		Name	Title	Date
Name	Title	Date		
2. O&M staff _____ <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 40%;">Name</td> <td style="text-align: center; width: 30%;">Title</td> <td style="text-align: center; width: 30%;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____		Name	Title	Date
Name	Title	Date		

3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.				
Agency _____ Contact _____				
	Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____				
Agency _____ Contact _____				
	Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____				
Agency _____ Contact _____				
	Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____				
Agency _____ Contact _____				
	Name	Title	Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____				
4. Other interviews (optional) <input type="checkbox"/> Report attached.				

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A

IV. O&M COSTS																																											
1.	O&M Organization <input type="checkbox"/> State in-house <input checked="" type="checkbox"/> Contractor for State <input type="checkbox"/> PRP in-house <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Contractor for Federal Facility <input type="checkbox"/> Other _____																																										
2.	O&M Cost Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached <div style="text-align: right; color: blue; font-style: italic;">See Section 3.0</div> <div style="text-align: center;">Total annual cost by year for review period if available</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 40%;"></td> <td style="width: 20%; text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> </table>			From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost	
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C. Institutional Controls (ICs)																																								
1.	Implementation and enforcement Site conditions imply ICs not properly implemented Site conditions imply ICs not being fully enforced Type of monitoring (e.g., self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____	<input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A <input type="checkbox"/> N/A																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">Name</th> <th style="width: 20%;">Title</th> <th style="width: 20%;">Date</th> <th style="width: 20%;">Phone no.</th> </tr> <tr> <td>Reporting is up-to-date</td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td>Reports are verified by the lead agency</td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td>Specific requirements in deed or decision documents have been met</td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td>Violations have been reported</td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td colspan="4">Other problems or suggestions: <input type="checkbox"/> Report attached</td> </tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="4"> </td></tr> </table>	Name	Title	Date	Phone no.	Reporting is up-to-date		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	Reports are verified by the lead agency		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	Specific requirements in deed or decision documents have been met		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	Violations have been reported		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	Other problems or suggestions: <input type="checkbox"/> Report attached																		
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Other problems or suggestions: <input type="checkbox"/> Report attached																																								
2.	Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks _____ _____ _____																																							
D. General																																								
1.	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks _____ _____																																							
2.	Land use changes on site <input checked="" type="checkbox"/> N/A Remarks _____ _____																																							
3.	Land use changes off site <input checked="" type="checkbox"/> N/A Remarks _____ _____																																							
VI. GENERAL SITE CONDITIONS																																								
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A																																								
1.	Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks _____ _____																																							

B. Other Site Conditions			
Remarks <u>None</u> <hr/> <hr/> <hr/> <hr/>			
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident	
2.	Cracks Lengths _____ Widths _____ Depths _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident	
3.	Erosion Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident	
4.	Holes Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Holes not evident	
5.	Vegetative Cover <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____		
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks <u>Part of surface water Diversion system - No damage</u>		
7.	Bulges Areal extent _____ Height _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident	

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____
9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of slope instability
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay
C. Letdown Channels <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement Areal extent _____ <input type="checkbox"/> Location shown on site map Depth _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of settlement
2.	Material Degradation Material type _____ <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of degradation
3.	Erosion Areal extent _____ <input type="checkbox"/> Location shown on site map Depth _____ Remarks _____	<input checked="" type="checkbox"/> No evidence of erosion

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	<input checked="" type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type <u>1</u>	
	<input checked="" type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Passive	
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks <u>Monitored Quarterly</u>		
2.	Gas Monitoring Probes	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Good condition
	<input checked="" type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks <u>Replaced in August 2014</u>		
3.	Monitoring Wells (within surface area of landfill)		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> N/A
	Remarks _____		
4.	Leachate Extraction Wells		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> N/A
	Remarks _____		
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A
	Remarks _____		

E. Gas Collection and Treatment		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ N/A		
2.	Gas Collection Wells, Manifolds and Piping <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ Replaced August 2014		
F. Cover Drainage Layer		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Outlet Pipes Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
2.	Outlet Rock Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
G. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____		
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		

H. Retaining Walls		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Deformation not evident	Vertical displacement _____
2.	Degradation Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Degradation not evident	
I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Siltation not evident	Depth _____
2.	Vegetative Growth <input checked="" type="checkbox"/> Vegetation does not impede flow Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A	Type _____
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident	Depth _____
4.	Discharge Structure Remarks _____	<input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A	
VIII. VERTICAL BARRIER WALLS		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident	Depth _____
2.	Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks _____		
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A

1.	Pumps, Wellhead Plumbing, and Electrical	<input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A	Remarks _____ _____ _____
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance	Remarks _____ _____ _____
3.	Spare Parts and Equipment	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided	Remarks _____ _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Collection Structures, Pumps, and Electrical	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance	Remarks _____ _____ _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance	Remarks _____ _____ _____
3.	Spare Parts and Equipment	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided	Remarks _____ _____ _____
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Treatment Train (Check components that apply) <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Metals removal <input type="checkbox"/> Air stripping <input type="checkbox"/> Filters <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) <input type="checkbox"/> Others _____ </div> <div> <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ </div> <div> <input type="checkbox"/> Bioremediation </div> </div> Remarks _____ _____ _____		
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____		

3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>MW-7 is obstructed</u>
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Cover - Functioning as Designed
Surface-Water Diversion - Functioning as Designed
Gas Vent Stations - Working Properly
Remedy Functioning as Designed
No Issues Observed

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

No Issues Observed

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None Observed

Appendix C

AECOM Biennial Groundwater Monitoring Report (October 2014)



Environment

Prepared for:
SUPERFUND STANDBY PROGRAM
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, New York
February 2015

Biennial Groundwater Monitoring Report
October 2014
Tuxedo Waste Disposal Site
Site No. 3-36-035
Work Assignment No. D007626-36



Environment

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October 2014
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Prepared By: Matthew Dean, Geologist

Reviewed By: Mark Howard, Project Manager

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Executive Summary

The Tuxedo Waste Disposal Site is located in the Town of Tuxedo, Orange County, New York. The Site is approximately 12 acres in size and is located in a rural area approximately one mile north of the Village of Tuxedo Park, between State Route 17 and the New York State Thruway.

The Site was added to the New York State Department of Environmental Conservation Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site (Site No. 3-36-035) following the discovery of nonexempt waste at an active construction and demolition debris landfill in 1987. The presence of nonexempt waste was in violation of the standards and regulations in place at that time. The Site was reclassified to Class 4 following the completion of the remedial investigation and feasibility study in 1991. A Record of Decision was issued in February 1992 for impacted soil, refuse, groundwater, landfill gas, and surface water and sediment within the Ramapo River.

Due to the nature of the landfill and contamination of soil, bedrock, and the underlying bedrock aquifers with Target Analyte List metals and mercury, the selected remedies in the Record of Decision consisted of: excavation of refuse with consolidation and reclamation of soil; an engineered final cover; a passive gas collection and treatment system; a surface water diversion system; site restrictions to protect the integrity of the final cover; and groundwater, surface water, sediment, and air emissions monitoring.

Based on AECOM's review, the concentration of Target Analyte List metals and mercury reported in the samples collected from the Tuxedo Waste Disposal Site during the October 2014 biennial sampling event remained consistent with historical (October 2000 to October 2001) and recent (May 2005 to October 2011) data. The filtered groundwater samples indicate several of the metals detected in the samples are not present in a dissolved phase in the groundwater at the Site, but rather can be attributed to suspended matter (e.g., soil particles) recovered in the groundwater samples with high turbidity (i.e., greater than 50 NTU).

All available data indicate that the selected remedies established in the 1992 Record of Decision to design and install an engineered, final cover and to design and construct a surface water diversion system to reduce surface run-on, infiltration, and subsequent generation of leachate continue to be protective of human health and the environment (including the Ramapo River) by containing more harmful metals.

Groundwater will continue to be monitored on a biennial basis to document the concentration of TAL metals and mercury in the groundwater at the Site in accordance with the final Site Management Plan issued in December 2014. The next groundwater sampling event will be completed in 2016.

Prior to the next scheduled sampling event (2016), the obstruction in MW-7 should be addressed. All attempts should be made to remove the obstruction from within the riser and rehabilitate the existing monitoring well. If MW-7 cannot be rehabilitated, the groundwater monitoring well should be properly decommissioned and a new monitoring well should be installed.

1.0 Introduction

In accordance with the July 2011 draft Site Management Plan (SMP; since finalized in December 2014), developed for the Tuxedo Waste Disposal Site (the "Site"), and per New York State Department of Environmental Conservation (NYSDEC) instruction, AECOM conducted a biennial groundwater sampling event under NYSDEC Work Assignment No. D007626-36 at the Site. This report describes and presents the results of the groundwater sampling event and the additional surface water and sediment sampling of the Ramapo River conducted on October 7 – 8, 2014. As part of the evaluation process for the Site, available historical data provided by the NYSDEC is presented and compared to the most recent data.

1.1 Site Description

The Site is a former waste disposal facility located in the Town of Tuxedo, Orange County, New York (**Figure 1**). The Site consists of approximately 12 acres along State Route 17, in a rural area approximately one mile north of the Village of Tuxedo Park. The Site is located between State Route 17 (to the west) and an active rail line currently owned by the Metro-North Railroad to the east (**Figure 2**). The NYS Thruway (I-87) is located approximately 250 feet to the east of the rail line. The Site lies on two separate parcels of land with separate landowners. A majority of the Site is situated on a portion of a 12.2-acre parcel owned jointly by Renard Barone and Sarkis Khourouzian. The remainder is located on a portion of a 7.9-acre parcel formerly owned by the Georgia Tech Foundation (the property was sold to Ronald Iazzetti in 1994).

The Site is located in the Ramapo River Valley. The Ramapo River Valley is described as having steep grades with abrupt elevation changes (seen to the west of the Site), where the land rises approximately 300 feet along the Ramapo River Valley wall (NYSDEC ROD, 1992). The Ramapo River, located between the rail line and the NYS Thruway, is a Class A stream and a hydraulic connection has been determined to exist between the Site and the river. However, surface water and sediment samples collected from the river during the remedial investigation indicate that dumping activities had no measurable impact on the river at that time.

The Tuxedo Waste Disposal Site is a gentle hillside at the base of a steeply graded slope with dense tree cover. State Route 17 separates the steep slope from the Site. The north-northeast portions of the Site are a gently sloping hillside with bedrock outcrops, which transitions into a steep slope to the rail line. The cap of the landfill has a moderate grade and is covered with tall grasses.

Previous investigation of the Site states that before the remedial actions were implemented, the depth to bedrock ranged from 0 to approximately 70 feet below ground surface (bgs), with bedrock deepest and fill material thickest at the center of the Site (Metcalf & Eddy, 1991). Bedrock outcrops in the northern and eastern portions of the Site, located just west of the rail line, dip to the southwest.

The unconsolidated materials are highly variable in thickness and are comprised of construction and demolition (C&D) debris, recent alluvial deposits, outwash sand and gravel, and glacial till (Metcalf & Eddy, 1991).

Groundwater depth beneath the Site ranges from approximately 8 to 40 feet bgs. Groundwater flow occurs within two separate water-bearing units: unconsolidated soil and weathered bedrock; and unweathered, competent bedrock. Permeability studies from the Phase II Investigation and results from the Remedial Investigation/Feasibility Study (RI/FS) show connectivity between the two water-

bearing units, resulting in one aquifer system. According to the RI/FS Report and the Record of Decision (ROD), the natural direction of groundwater flow from the upper unconsolidated water-bearing unit is generally from the relatively high elevations west of the Site to the east, toward the Ramapo River. Groundwater flow direction in the competent bedrock is less defined due to natural irregularities in the bedrock (e.g., joints, fractures, and discontinuities). The water table at the perimeter of the Site is relatively shallow and is present in the unconsolidated soil layer.

The Site was added to the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site (Site No. 3-36-035) following the discovery of nonexempt waste at an active C&D debris landfill in 1987. The presence of nonexempt waste was in violation of the standards and regulations in place at that time. The RI/FS report was completed and submitted to the NYSDEC in 1989, and the Site was reclassified to Class 4. The ROD for this site was issued in February of 1992.

The selected remedy for the Site included 1) excavation of fill from the southeast corner of the Site and the reclamation of this area, 2) design and installation of a cover on the landfill, including a gas collection layer, 3) installation of a passive gas collection and treatment system, 4) installation of a surface water diversion system, 5) implementation of site-use restrictions to protect the integrity of the remedy and 6) environmental monitoring to determine the effectiveness of the remedy.

An operation and maintenance (O&M) program was initiated in December 1996 and amended in January 1998. Presently, the Site is a capped landfill that utilizes wind turbine ventilators at selected locations to actively vent landfill gas under breezy conditions. In addition, monitoring for combustible gas and hydrogen sulfide is performed at the gas vents distributed across the landfill cap. Previous groundwater sampling events were performed in May 2005, November 2005, August 2007, June 2009, and October 2011 to monitor the impacts of the landfill on the underlying aquifer.

2.0 Sampling

2.1 Sample Locations and Field Observations

Groundwater monitoring, which includes measuring and recording depth-to-groundwater, total well depth, and water quality parameters, is conducted on a biennial basis for twelve on-site wells. Depth-to-groundwater measurements are then utilized to calculate groundwater elevations in each of the wells (**Table 1**). During the October 2014 sampling event, the riser in MW-7 was obstructed and therefore, only eleven wells were sampled along with two surface water and sediment samples from the Ramapo River. The overall conditions of all other wells were acceptable. The obstruction in MW-7 should be addressed before the next sampling event.

Due to the presence of the waste material prior to well installation, groundwater contour maps for the aquifer beneath the Site could not be developed. The composition and construction of the waste material and the landfill prohibits the natural flow of groundwater beneath and surrounding the Site. According to the Phase II investigation and RI/FS, the overall direction of groundwater flow in the unconsolidated aquifer beneath the Site and the surrounding area is predominantly to the east toward the Ramapo River, and the overall flow direction in the unweathered bedrock is controlled by joints, fractures, and discontinuities in the bedrock.

2.2 Groundwater Sampling Methodology

Prior to sampling each well, depth-to-groundwater and depth-to-bottom measurements are taken using a water level indicator. The indicator is decontaminated with a Liquinox® and spring water rinse and sprayed with distilled water before each use. Each monitoring well is purged of three water column volumes prior to sampling. Dependent on the purge volume, dedicated, polyethylene tubing and a submersible pump (e.g., Grundfos™) or a dedicated, polyethylene bailer is utilized. The pump is decontaminated between each monitoring well in a Liquinox® and spring water bath and then in a distilled water bath.

Water quality parameters, which include temperature, conductivity, specific conductivity, dissolved oxygen (DO), oxygen-reduction potential (ORP), pH, turbidity, color, and odor, are measured and recorded on the monitoring well sampling observation logs (**Appendix A**). A total of four sets of parameters are measured and recorded; one for the initial discharge removed from the well and one for each of the subsequent three water column volumes removed prior to sampling.

Each sample recording a turbidity measurement less than 50 nephelometric turbidity units (NTU) is analyzed for Target Analyte List (TAL) metals by United States Environmental Protection Agency (US EPA) Method 6010 and mercury by US EPA Method 7470. Samples recording a turbidity measurement greater than 50 NTU are filtered by the laboratory and analyzed for dissolved metals as well.

All samples are collected in laboratory supplied bottles and shipped to Mitkem Laboratories of Warwick, Rhode Island. Samples are packed in a cooler on ice and submitted under standard chain-of-custody procedure.

2.3 Analytical Results

A cumulative summary of the analytical data collected by AECOM to date, including the October 2014

sampling event, is presented as **Table 2** and compared to the New York State Ambient Water Quality Standards (AWQS) and Guidance Values (GV) for groundwater as a drinking water source. Analytes detected and reported above the applicable AWQS or GV are presented in bold font in a shaded cell. A copy of the analytical results and chains-of-custody are included as **Appendix B**.

2.4 Historical Analytical Results

Historical data made available to AECOM by the NYSDEC are presented in **Table 3**. The available historical data for the Site included groundwater sampling events in October 2000 and May, August and October 2001. No other data for the Site were made available to AECOM at this time.

3.0 Summary of Analytical Results

Present and available historical data (**Tables 2 and 3**) were reviewed to determine if there are any notable trends in the concentrations of metals in the on-site monitoring wells. Previous investigations indicate that the primary contaminants of concern for this Site are aluminum, arsenic, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, sodium, and zinc. **Figure 3** displays a summary of the results of the October 2014 sampling event.

3.1 Unfiltered Metals Samples

During the October 2014 sampling event, MW-7 was not sampled due to an obstruction in the riser. The overall conditions of all other wells were acceptable.

Analytical results from the October 2014 sampling event reported several detections of TAL metals in the sample collected from MW-1. Two analytes (iron and sodium) exceeded the AWQS with concentrations reported to be 889 micrograms per liter ($\mu\text{g/l}$) and 40,600 $\mu\text{g/l}$, respectively. The AWQS for iron and sodium are 300 $\mu\text{g/l}$ and 20,000 $\mu\text{g/l}$, respectively. The results of the October 2014 sampling event are consistent with the historical data (October 2000 to October 2001) and the more recent results (May 2005 to October 2011).

The results of the sample collected from monitoring well MW-2, a bedrock well located at the southern end of the Site, reported relatively low concentrations of metals. Only iron was reported at a concentration (671 $\mu\text{g/l}$) exceeding the AWQS, which is a decrease from the October 2011 concentration of 1,780 $\mu\text{g/l}$.

The October 2014 results for the sample collected from monitoring well MW-3 reported iron and sodium in excess of the AWQS with concentrations reported to be 4,180 $\mu\text{g/l}$ and 379,000 $\mu\text{g/l}$, respectively. These results are an increase from the October 2011 analytical results and the historical data.

Four metals (iron, manganese, sodium, and thallium) were reported to exceed the AWQS in the sample collected from MW-4 with concentrations reported to be 4,980 $\mu\text{g/l}$, 1,310 $\mu\text{g/l}$, 39,900 $\mu\text{g/l}$, and 6.2 $\mu\text{g/l}$, respectively. Recent and historical data from samples collected from MW-4 indicate sodium is consistently detected at concentrations exceeding the AWQS, including the results of the October 2011 sampling event. In October 2011, the sample collected from MW-4 reported an iron concentration of 218 $\mu\text{g/l}$, which was not in excess of the AWQS. In all available data, this is the first time thallium was detected in a sample collected from MW-4 at a concentration greater than the GV (0.5 $\mu\text{g/l}$) and the first time since 2001 for manganese. The AWQS for manganese is 300 $\mu\text{g/l}$.

The sample collected from monitoring well MW-5 contained two analytes (iron and manganese) that were reported in excess of the respective AWQS, which were 16,600 $\mu\text{g/l}$ and 5,400 $\mu\text{g/l}$, respectively. Iron, manganese (AWQS of 300 $\mu\text{g/l}$), and sodium have been historically detected at concentrations in excess of the AWQS, but in more recent data only iron and manganese have been detected at concentrations exceeding the AWQS.

Only two metals (iron and manganese) exceeded the AWQS in the sample collected from MW-6 during the October 2014 sampling event with reported concentrations of 36,000 $\mu\text{g/l}$ and 2,200 $\mu\text{g/l}$, respectively. The results of the October 2014 sampling event are consistent with past sampling results.

The October 2014 sampling results from monitoring well RI-1 reported iron and sodium at concentrations (1,360 µg/l and 22,300 µg/l, respectively) in excess of the AWQS. These results are consistent with the results of the October 2011 groundwater sampling event, when iron and sodium were reported to 855 µg/l and 27,500 µg/l, respectively.

At monitoring well RI-2, the analytical results of this sampling event (October 2014) reported only one metal in excess of the AWQS. Sodium was reported to be 51,600 µg/l, which is an increase from 41,400 µg/l reported in October 2011.

The results of the sample collected from RI-3 in October 2014 reported exceedances of ten metals, including arsenic, beryllium, chromium, copper, iron, lead, magnesium, manganese, nickel, and sodium. These results are consistent with the results of the October 2011 groundwater sampling event with the addition of arsenic, copper, and magnesium, which were all detected at a concentration less than AWQS and GV.

The results of the sample collected from monitoring well RI-4 are consistent with the October 2011 results with iron and manganese reported to exceed the AWQS with concentrations at 4,060 µg/l and 580 µg/l, respectively. These results are consistent with historical and recent data, except in two previous sampling events. In October 2001, sodium was reported at a concentration exceeding AWQS and in November 2005, magnesium and sodium were reported at concentrations exceeding the GV for magnesium (35,000 µg/l) and the AWQS for sodium.

The groundwater sample collected from monitoring well RI-5A reported two metals (iron and sodium) at concentrations that exceed the AWQS, which were reported to be 173 µg/l and 17,000 µg/l, respectively. During the October 2011 sampling event, RI-5A reported similar results with iron and sodium reported to 339 µg/l and 25,700 µg/l, respectively.

Overall, TAL metals and mercury concentrations in the Site wells remain consistent with historical data, with few notable trends.

3.2 Filtered Metals Samples

Turbidity is typically correlated with the presence of suspended matter (e.g., entrained soil particles in the sample). Therefore, both total metals (unfiltered) and dissolved metals (laboratory filtered) groundwater samples were collected during the October 2014 sampling event to evaluate the effect of turbidity on the metals concentrations. At the Site, turbidity was greater than 50 NTU at the time of sampling in three (MW-6, RI-1, and RI-3) of the 11 samples.

Table 4 presents a comparison of the total metals and the dissolved metals data for the three filtered/unfiltered sample pairs collected in October 2014. The “percent dissolved” shown in the table is the ratio of the filtered sample concentration to the total (unfiltered) sample concentration.

Concentrations of metals that typically exist primarily in the dissolved phase (e.g., sodium, potassium, and calcium) were generally similar in the filtered and unfiltered samples, regardless of the sample turbidity. The remaining metals showed consistently large decreases in the filtered samples, including iron and manganese.

While iron remained at a concentration greater than the AWQS (300 µg/l) in two the three filter samples (MW-6 and RI-3), the concentrations reduced significantly and the percent of dissolved iron was less than 10%. This indicates the iron was adhering to the suspended particles rather than present in a dissolved phase in the groundwater.

Manganese was detected in two of the three samples at concentrations exceeding AWQS (300 µg/l) in the unfiltered samples and decreased in the filtered samples as well. In monitoring well RI-3, manganese decreased from 7,120 µg/l to 329 µg/l with 4.6% present in a dissolved phase, indicating

manganese was adhering to the suspended particles rather than dissolved in the groundwater in this area of the Site. However, in the filtered sample collected from MW-6, manganese only decreased from 2,200 µg/l to 1,940 µg/l with 88.2% present in the dissolved phase, indicating manganese is not only adhering to the suspended particles and is present in the groundwater in this area of the Site.

The most significant decrease in metals concentrations between an unfiltered and filtered sample was evident in the samples collected from RI-3. Six metals (beryllium, chromium, iron, lead, manganese, and sodium) were reported at concentrations exceeding the GV and AWQS in the unfiltered sample collected from this well. Only three metals (iron, manganese, and sodium) were reported to exceed the AWQS in the results of the filtered sample. The percentage of dissolved iron and manganese calculated between the unfiltered and filtered sample was 1.9% and 4.6%, respectively, indicating these metals are not present in the dissolved phase.

The other three metals (beryllium, chromium, and lead) reduced significantly and the percentage of metals in the dissolved phase indicate these metals were adhering to the suspended particles and are not present in the groundwater in these areas of the Site at concentrations in excess of the water quality standards.

3.3 Surface Water and Sediment Samples

During the October 2014 sampling event, two surface water and two sediment samples were collected from the Ramapo River. These samples were analyzed for volatile organic compounds (VOCs), semi-VOCs (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals (**Table 5**).

The upstream surface water sample (USSW) only contained sodium at a level greater than all standards, criteria and guidances (SCGs) with a concentration of 138,000 µg/L. The AWQS for sodium is 20,000 µg/l. In the downstream surface water sample (DSSW), only sodium was detected at a concentration exceeding SCGs as well, with a concentration reported to be 13,000 µg/L.

The upstream surface sediment sample (USSED) contained seven analytes at concentrations exceeding SCGs, six of which were pesticides. 4,4' DDE, endrin, 4,4' DDD, 4,4' DDT, alpha-chlordane, and gamma-Chlordane were reported to be 6.3 micrograms per kilogram (µg/kg), 5.3 µg/kg, 9.2 µg/kg, 21 µg/kg, 12 µg/kg, and 19 µg/kg, respectively. The other analyte to be detected at a concentration greater than the sediment criteria in USSED was mercury with a concentration of 0.24 µg/kg. The sediment criterion for mercury is 0.15 µg/kg. The downstream surface sediment sample (DSSSED) reported two analytes above the sediment criteria, copper (34.4 µg/kg) and mercury (0.4 µg/kg). The sediment criterion for copper is 0.32 µg/kg.

4.0 Conclusions

This report presents the activities completed by AECOM on behalf of the NYSDEC under Work Assignment No. D007626-36 at the Tuxedo Waste Disposal Site in Tuxedo, New York during the 2014 biennial groundwater sampling event, and the additional surface water and sediment sampling of the Ramapo River.

4.1 Groundwater

As demonstrated in a summary of the October 2014 groundwater sampling event results (**Table 6**), the metals detected at concentrations greater than SCGs most frequently were: iron (ten wells), sodium (seven wells), and manganese (five wells). The metal with the maximum concentration detected most frequently was sodium (six wells). Magnesium was detected at a maximum concentration in three wells, however, these concentrations were not greater than the GV (35,000 µg/l).

Additionally, the filtered groundwater samples collected during October 2011 and October 2014 sampling events indicate several of the metals detected in the samples are not present in a dissolved phase in the groundwater at the Site, but rather can be attributed to suspended matter (e.g., soil particles) recovered in the groundwater samples with high turbidity (i.e., greater than 50 NTU).

Overall, the concentration of TAL metals and mercury reported in the groundwater samples collected in October 2014 from the Site remained consistent with historical (October 2000 to October 2001) and recent (May 2005 to October 2014) data.

4.2 Surface Water and Sediment Sampling

The concentration of analytes reported in the surface water samples indicate that the selected remedies established in the 1992 ROD to design and install an engineered, final cover and to design and construct a surface water diversion system to reduce surface run-on, infiltration, and subsequent generation of leachate continue to be protective of human health and the environment (including the Ramapo River) by containing more harmful metals.

However, according to the NYSDEC 2014 screening criteria, the elevated concentrations of pesticides and mercury in the upstream sediment sample and the elevated concentrations of mercury and copper in the downstream sample constitute a Class B categorization for these sediment samples. Class B sediments are defined as being slightly to moderately contaminated and additional testing is required to evaluate the potential risks to aquatic life. It should be noted that pesticides were not detected at any concentration greater than the method detection limits in the downstream sample and mercury was not detected above AWQS in any of the monitoring wells during the 2014 groundwater sampling event. Therefore, the Site is not considered to be the source of the elevated concentrations of mercury or pesticides detected in the sediment samples collected from the Ramapo River.

5.0 Planned Activities and Recommendations

Groundwater will continue to be monitored on a biennial basis to document the concentration of TAL metals and mercury in the groundwater at the Site in accordance with the final SMP (AECOM, 2014). The next groundwater sampling event will be completed in 2016.

Due to the nature of the Site (capped landfill), its current status (post-remedial), and the fact that the Class B sediments observed in the Ramapo River are not associated with the Site, no additional testing, including toxicity or benthic, is recommended at this time.

Additionally, prior to the next scheduled sampling event (2016), the obstruction in MW-7 should be addressed. All attempts should be made to remove the obstruction from within the riser and rehabilitate the existing monitoring well. If MW-7 cannot be rehabilitated, the groundwater monitoring well should be properly decommissioned and a new monitoring well should be installed.

Tables

Table 1
Depth-to-Groundwater Measurements
and Groundwater Elevations (October 2014)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Well ID	Well Coordinates		Well Construction	Well Type	Measuring Point Elevation (ft.)	Well Depth (ft. bgs)	October 6, 2014	
	Longitude	Latitude					Depth to Water (ft. bgs)	GW Elevation (ft.)
MW-1	41°12.822N	074°11.043W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	468.40	29.83	20.37	448.03
MW-2	41°12.535N	074°11.106W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	480.06	89.65	27.41	452.65
MW-3	41°12.571N	074°10.990W	6" Steel Cutter Casing 3" PVC Riser	Bedrock	459.00	30.11	17.32	441.68
MW-4	41°12.599N	074°10.984W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	460.07	26.14	18.89	441.18
MW-5	41°12.706N	074°10.968W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	448.81	19.40	10.55	438.26
MW-6	41°12.729N	074°10.977W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	456.83	18.39	9.36	447.47
MW-7	41°12.820N	074°11.026W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	466.93	NM	NM	NA
RI-1	41°12.707N	074°10.971W	8" Steel Cutter Casing 2" Steel Riser	Bedrock	459.48	93.36	12.53	446.95
RI-2	41°12.728N	074°10.976W	6" Steel Surface Casing 4" Steel Riser and Screen	Interface	458.02	72.63	10.59	447.43
RI-3	41°12.568N	074°11.092W	6" PVC Surface Casing 2" PVC Riser and Screen	Interface	479.79	44.65	38.13	441.66
RI-4	41°12.777N	074°10.997W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	463.45	15.65	15.32	448.13
RI-5A	41°12.746N	074°11.038W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	495.70	82.65	41.38	454.32

Notes:

Measuring Point Elevation is at top of PVC casing

NA - Not Available

NM - Not Measured; MW-7 is obstructed

bgs - below ground surface

GW - groundwater

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2014)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1						MW-2						MW-3						MW-4					
Sample Date		5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/7/2014	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/8/2014	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014
Analyte (µg/L)	AWQS or GV																								
Aluminum	NA	130J	114J	U	NS	261	337	444	304	U	1060N*	1,330	505	11,400	4,180	178	561N*	179B	2,690	63.4J	73.7J	U	60.3N*	U	3,090
Antimony	3	8.74J	U	U	NS	U	U	5.5J	U	U	U	U	U	U	U	U	U	U	U	9.19J	U	U	U	U	U
Arsenic	25	U	U	U	NS	U	U	U	U	U	U	U	6.3B	U	U	U	U	U	U	U	U	U	U	U	U
Barium	1,000	4.85JN	U	U	NS	3.5B	9.4B	9.96JN	4.4J	U	18.7J	19.4B	15.0B	78.3JN	28.9J	13.8 J	17.3 J	10.2B	103B	17.1JN	11.7J	10.1 J	21.1 J	12.6B	48.4B
Beryllium	3 (GV)	U	U	U	NS	U	U	U	U	U	U	U	U	0.58J	0.2J	U	U	U	U	U	U	U	U	U	U
Cadmium	5	U	U	U	NS	1.5B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	26,600	14,400	12,600	NS	5,580	9,290	19,700	19,800	25,100	23,100	22,400	23,300	18,000	12,100	39,100	19,300	12,600	95,000	45,000	35,700	38,400	45,600	28,100	55,100
Chromium	50	1.16JN	U	1.7 J	NS	1.6B	3.3B	1.02JN	U	U	3.65 J	3.8B	1.8B	13N	6.2J	1.5 J	1.92 J	0.73B	3.4B	0.343UN	0.79J	1.8 J	2.4 J	U	3.9B
Cobalt	NA	U	U	2.3 J	NS	U	1.4B	0.625J	U	U	U	1.8B	1.3B	14.3J	1.8J	2.1 J	U	U	3.3B	U	U	2.2 J	U	U	5.2B
Copper	200	14.9J	U	U	NS	13.7B	5.8B	9.22J	U	U	7.71J	4.8B	U	43.1	55.5	U	36.1	3.6B	8.6B	U	U	U	8 J	U	15.3B
Iron	300	635N	116	46.7 J	NS	962	889	809N	454	U	1,570N*	1,780	671	21,700N	8,350	221	1,110N*	471	4,180	150N	U	U	647N*	218	4,980
Lead	25	U	U	U	NS	U	U	U	15.2	U	U	U	4.2	U	4.5J	U	U	U	U	U	U	U	U	U	U
Magnesium	35,000 (GV)	6,310	3,450J	2,870	NS	1,300	2,160	5,010	4,730J	6,340	6,170	6,470	6,410	9,320	4,280	9,430	4,610	3,150	22,900	10,600	8,660	9,310	9,400	6,370	13,300
Manganese	300	17.6	4.5J	1.8 J	NS	31.7B	50.4	37.8	7.3J	U	38.6	24.9B	24.1B	958	319	19.3	46.5	13.6B	271	55.2	1.1J	3.1 J	15.2	13.0B	1,310
Mercury	0.7	U	0.077J	U	NS	U	U	U	U	U	0.07UN	U	U	0.04J	U	U	0.07UN	0.031B	U	U	U	U	0.07UN	U	0.062B
Nickel	100	U	U	U	NS	1.2B	2.4B	U	U	U	U	2.1B	U	22J	8.0J	U	U	U	5.5B	U	U	U	U	U	6.1B
Potassium	NA	2,420J	1,090JN	589 J	NS	573B	493B	960J	935JN	1,080	1,570	1,540	1,040	2,700J	1,730JN	1,770	2,030	1,210	3,390	2,830J	2,930JN	2,140	2,270	2,380	2,880
Selenium	10	U	U	U	NS	U	U	U	26.9	5.6 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	NS	U	U	U	U	U	U	U	U	4.32J	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	42,900	37,500	25,900	NS	36,100	40,600	3,060J	2,910J	3,480	5,530N	4,710	4,090	35,700	18,300	46,200	68,300N	85,200	379,000	47,700	41,800	32,100	32,900N	35,900	39,900
Thallium	0.5 (GV)	U	4.5J	U	NS	U	U	U	23.5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	6.2B
Vanadium	NA	4.5J	U	U	NS	1.3B	1.8B	5.28J	U	2.5 J	5.42 J	6.4B	2.4B	28.1J	1.9J	U	U	U	6.0B	2.9J	U	U	U	U	7.6B
Zinc	2,000 (GV)	37.2	23.6	37	NS	19.8B	15.1B	27	11.2J	33	15.7 J	12.2B	U	82.9	30.8	34.7	27.4	12.5B	12.7B	23.9	15.1J	34.4	23.8	14.1B	17.2B

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

U - Analyte was analyzed for, but not detected.

J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

N - Spiked sample recovery not within control limits.

* - Duplicate analysis is not within control limits.

** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2014)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-5							MW-6							RI-1							
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014**	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014**		
Analyte (µg/L)	AWQS or GV																						
Aluminum	NA	520	83.3J	U	218N*	4,020	U	886	137J	79.2J	U	281N*	1,070	U	438	155B	58.3J	673	97.6	408N*	1,620	3,210	172B
Antimony	3	6.88J	U	U	U	U	U	U	6.72J	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	8.94J	U	U	4.54 J	U	U	U	27.4	U	U	40.9	11.7B	U	24	U	U	U	U	U	U	U	U
Barium	1,000	98.7JN	67.7J	51.3	72.9	98.7B	64.6B	84.5B	76.5JN	39.8J	37.2 J	137	114B	47.2B	99.1B	44.4B	4.2JN	17.4J	U	14.7 J	22.0B	21.2B	16.2B
Beryllium	3 (GV)	0.18J	U	U	U	0.28B	U	U	U	U	U	U	U	U	U	U	U	0.12J	U	U	U	U	U
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	99,200	81,100	94,300	90,500	111,000	109,000	93,300	87,900	94,300	88,900	92,700	115,000	112,000	108,000	110,000	24,800	65,500	46,500	52,300	52,800	56,400	53,200
Chromium	50	2.28JN	1.6J	7.5	2.66 J	6.2B	U	4.0B	1.16JN	1.4J	U	5.83	4.5B	U	5.7B	U	11.1N	2.6J	3.4 J	11.5	1.6B	5.0B	0.96B
Cobalt	NA	7.52J	2.5J	2.6 J	U	5.8B	U	7.7B	U	U	U	U	U	U	U	U	U	U	U	U	0.84B	U	U
Copper	200	105	11.7J	13	45.8	88.3	9.8B	65.7	17.3J	U	U	27.3	24.4B	U	31.1	7.8B	19.2J	45.3	3.8 J	19.9	5.4B	7.4B	19.1B
Iron	300	22,000N	596	35.3 J	5,460N*	15,800	U	16,600	37,300N	951	4,510	72,900N*	30,500	U	36,000	1,940	223N	408	555	440N*	855	1,360	127B
Lead	25	U	U	U	2.43 J	5.9B	U	U	U	10.7	U	U	U	U	U	U	U	4.1J	U	2.03J	U	U	U
Magnesium	35,000 (GV)	15,900	17,200	20,200	10,100	18,400	17,200	22,500	12,800	10,000	12,000	10,900	12,700	12,100	11,800	12,000	7,150	11,000	7,740	8,760	9,400	10,500	9,860
Manganese	300	1,100	1,250	1,160	256	1,350	232	5,400	1,540	510	1,350	1,350	1,700	1,270	2,200	1,940	4.22J	5.4J	1.6 J	8.4 J	31.9B	23.6B	18.3B
Mercury	0.7	0.28	U	U	0.07UN	0.23	U	U	0.04J	U	U	0.15JN	U	U	U	U	U	U	U	0.07UN	U	U	0.057B
Nickel	100	1.69J	7.5J	5.9 J	U	9.9B	3.7B	7.8B	U	U	U	U	1.9B	U	1.4B	U	5.62J	U	16.1 J	11.4J	2.6B	4.0B	0.92B
Potassium	NA	6,640	6,700N	5,460	4,510	6,890	6,360	3,500	2,630J	3,330JN	3,850	3,790	5,300	4,950	3,810	3,870	45,000	2,310JN	5,900	4,230	3,170	2,630	2,550
Selenium	10	U	U	U	U	U	U	U	U	9.0J	U	10.3	U	U	U	U	U	U	U	U	U	U	U
Silver	50	1.68J	U	U	U	U	U	U	2.34J	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	12,800	21,800	15,500	5,170N	16,800	17,100	12,500	3,170J	6,310	3,400	6,380N	12,300	11,400	11,700	14,400	33,100	25,800	24,800	20,400N	27,500	22,300	22,700
Thallium	0.5 (GV)	U	U	U	U	U	U	U	U	8.2J	U	U	U	U	7.4B	U	U	U	U	U	U	U	U
Vanadium	NA	8.48J	U	U	U	7.6B	U	3.9B	9.25J	U	U	5.73 J	4.7B	U	5.6B	U	3.88J	U	U	U	U	1.9B	1.2B
Zinc	2,000 (GV)	48.7	41.5	46.1	32	45.8B	14.5B	31.8B	24.1	25.3	32.9	36.6	25.6B	12.9B	11.3B	36.4B	30.8	17.6J	36.9	164	17.0B	6.0B	119

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

U - Analyte was analyzed for, but not detected.

J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

N - Spiked sample recovery not within control limits.

* - Duplicate analysis is not within control limits.

** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2014)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		RI-2						RI-3						RI-4						RI-5A			
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011**		10/7/2014**		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	10/11/2011	10/7/2014
Analyte (µg/L)	AWQS or GV																						
Aluminum	NA	31.1J	69.3J	U	21.1 JN*	U	U	35,800	438	26,400	24,200N*	52,200	U	89,900	2,990	2,080	2,590	440	654N*	1,080	1,910	654	318
Antimony	3	10.2J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	U	U	U	U	U	U	15.7	U	5.7 J	16.8	17.3B	U	33.8	U	U	U	U	U	U	U	U	U
Barium	1,000	12JN	17.9J	7.0 J	26.1 J	10.5B	14.2B	190JN	19.3J	158	140	334	18.5B	710	111B	55.2JN	160J	61.4	62.1	45.8B	59.5B	17.6B	17.6B
Beryllium	3 (GV)	U	U	U	U	U	U	2.32J	U	1.4 J	1.48 J	3.9B	U	8.4	0.51B	0.095J	0.25J	U	U	U	U	U	U
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.5J	U	0.626 J	1.2B	U	U	U
Calcium	NA	25,800	40,000	20,100	22,400	18,000	28,800	36,400	21,100	34,100	35,500	45,700	34,800	74,300	51,700	70,700	238,000	105,000	82,200	60,300	96,500	34,300	31,400
Chromium	50	846N	32.8	27.9	240	13.1B	21	47.6N	U	30.2	37.7	70	U	130	4.1B	3.1JN	11.9	U	2.61 J	1.9B	4.9B	15.3B	6.7B
Cobalt	NA	10.3J	U	U	U	U	U	40.2J	U	18.1	28.5	46.0B	U	141	5.4B	5.12J	14.4J	U	U	2.3B	3.5B	0.84B	U
Copper	200	22J	U	U	13.8	U	U	137	U	62	74.8	168	U	458	49.4	26.7	47.3	9.1 J	17.2	12.2B	15.2B	U	U
Iron	300	3,860N	109	160	1,150N*	120B	130B	71,500N	712	36,200	51,400N*	94,200	U	158,000	3,070	4,940N	7,160	1,890	2,030N*	2,850	4,060	339	173B
Lead	25	U	U	U	U	U	U	64.5	U	30.3	42.2	55.1	U	203	10.3	U	7	2.3 J	2.31 J	U	U	U	U
Magnesium	35,000 (GV)	7,190	11,200	5,450	4,820	5,070	7,860	22,200	4,210J	15,300	17,000	27,500	8,680	47,900	13,600	8,500	40,300	12,700	7,980	7,910	11,100	1,490	1,910
Manganese	300	201	60	8.6 J	59.8	28.8B	22.8B	2,130	164	830	1,500	2,830	U	7,120	329	1,050	3,590	1,680	302	417	580	10.1B	U
Mercury	0.7	U	U	U	0.1JN	U	U	0.25	U	U	0.12JN	0.18B	U	0.28	0.032B	U	U	U	0.1 JN	U	U	U	U
Nickel	100	1,730	39.2J	111	1,740	22.5B	21.2B	68.2	U	31.8	51.2	97	U	184	4.9B	11.7J	74.6	15.6 J	18.9 J	17.1B	19.8B	U	U
Potassium	NA	11,300	2,200JN	1,060	7,750	839B	801B	5,260	1,410JN	6,990	3,930	7,430	1,150	9,890	1,740	16,700	45,100N	18,700	14,600	10,700	10,600	9,590	7,390
Selenium	10	U	U	U	U	U	U	U	U	U	U	15.0B	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	U	U	U	2.04J	U	3.0 J	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	47,100	63,700	36,300	36,300N	41,400	51,600	19,600	17,800	25,500	29,600N	38,300	34,200	31,800	30,300	13,900	100,000	19,200	10,100N	10,200	10,100	25,700	17,000
Thallium	0.5 (GV)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	3.82J	U	U	U	U	U	75.3	U	47.6	47.1	104	U	192	6.3B	6.55J	U	U	U	2.2B	4.6B	3.1B	2.5B
Zinc	2,000 (GV)	39.7	20.6	37.9	26.1	14.2B	U	305	32.2	159	164	261	11.1B	535	16.6B	50.8	101	56.5	41.5	33.1B	31.4B	12.9B	U

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

U - Analyte was analyzed for, but not detected.

J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

N - Spiked sample recovery not within control limits.

* - Duplicate analysis is not within control limits.

** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled.

BOLD font in shaded cell - indicates excc

Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1				MW-2				MW-3				MW-4				MW-5			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																				
Aluminum	NA	NS	130B	U	NS	528	300	92B	NS	1,140	210	260	410	489	U	78B	320	3,900	340	160B	170B
Antimony	3	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	9.2B	U	U	U
Barium	1,000	NS	U	U	NS	14.7B	U	U	NS	28.6B	U	U	U	23.7B	U	U	U	104B	U	U	U
Beryllium	3 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.79B	U	U	U
Cadmium	5	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	NS	18,000	9,700	NS	24,600	29,000	27,000	NS	41,300	22,000	42,000	41,000	39,500	39,000	43,000	40,000	92,000	110,000	99,000	97,000
Chromium	50	NS	U	U	NS	3.0B	U	U	NS	U	U	U	U	U	U	U	U	7.0B	U	U	U
Cobalt	NA	NS	U	U	NS	4.7B	U	U	NS	U	U	U	U	U	U	U	U	5.5B	U	U	U
Copper	200	NS	U	U	NS	2.5B	U	U	NS	5.2B	U	U	U	6.3B	U	U	U	101	63	U	26
Iron	300	NS	330	55B	NS	757	380	160	NS	1,740	180	410	650	830	83B	94B	570	17,400	5,900	2,700	3,700
Lead	25	NS	U	U	NS	2.3B	U	U	NS	2.6B	U	U	U	2.1B	U	U	U	11.7	5.7	U	U
Magnesium	35,000 (GV)	NS	4,700B	2,400B	NS	5,530	7,000	6,200	NS	9,850	5,400	10,000	9,300	10,700	11,000	11,000	10,000	24,000	16,000	25,000	22,000
Manganese	300	NS	26	U	NS	36.2	34	31	NS	81.3	7.5B	42	36	324	71	76	350	3,210	290	3,800	2,600
Mercury	0.7	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.56	U	U	U
Nickel	100	NS	U	U	NS	U	U	U	NS	2.4B	U	U	U	U	U	U	U	6.7B	U	U	U
Potassium	NA	NS	U	U	NS	1,380BE	U	U	NS	3,570BE	U	U	U	3,530BE	U	U	U	8,470E	7,000	6,000	5,700
Selenium	10	NS	U	U	NS	2.8UW	U	U	NS	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	NS	U	U	NS	3.0UN	U	U	NS	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	NS	40,000	29,000	NS	3,560B	5,000B	3,900B	NS	25,200	39,000	32,000	34,000	22,500	39,000	30,000	28,000	22,600	11,000	23,000	21,000
Thallium	0.5 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	NS	U	U	NS	3.1B	U	U	NS	2.3B	U	U	U	U	U	U	U	8.7B	U	U	U
Zinc	2,000 (GV)	NS	U	U	NS	9.7B*	U	U	NS	15.6B*	U	U	U	23.8*	U	U	U	58.8*	10.0B	U	10B

Notes:
All data presented in micrograms per liter (µg/L).
U - Analyte was analyzed for, but not detected.
B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).
E - Indicates an estimated value because of the presence of interference.
W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N - Spiked sample recovery not within control limits.
* - Duplicate analysis not within control limits.
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled
BOLD font in shaded cell - indicates exceedance of AWQS or GV.



Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-6				RI-1				RI-2				RI-4			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																
Aluminum	NA	725	U	U	U	718	140B	100B	100B	96.3B	U	U	82B	5,960	3,600	90B	320
Antimony	3	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	11.7	U	U	U	U	U	U	U	U	U	U	U	3.8B	U	U	U
Barium	1,000	47.7B	U	U	U	10.6B	U	U	U	11.2B	U	U	U	101B	U	U	U
Beryllium	3 (GV)	0.21B	U	U	U	U	U	U	U	U	U	U	U	0.24B	U	U	U
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	92,700	110,000	98,000	120,000	50,800	74,000	57,000	54,000	19,700	43,000	32,000	30,000	90,400	64,000	95,000	120,000
Chromium	50	1.2B	U	U	U	3.4B	U	U	U	130	11	U	64	8.3B	U	U	U
Cobalt	NA	U	U	U	U	U	U	U	U	U	U	U	U	16.3B	U	U	U
Copper	200	30.3	U	U	U	13.4B	U	U	U	4.1B	U	U	U	37.4	90	U	U
Iron	300	15,300	8,900	5,900	5,600	752	190	70B	90B	804	260	110	870	11,600	12,000	240	1,200
Lead	25	5	U	U	U	U	U	U	U	U	U	U	U	10	12	U	U
Magnesium	35,000 (GV)	12,800	17,000	15,000	16,000	7,160	11,000	8,800	7,900	6,010	13,000	9,700	8,800	11,600	8,600	11,000	13,000
Manganese	300	2,050	1,600	1,900	2,300	7.9B	8.0B	U	U	79.4	64	43	87	1,500	1,200	390	350
Mercury	0.7	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nickel	100	U	U	U	U	6.2B	U	U	U	41	U	U	U	24.5B	U	U	U
Potassium	NA	3,770BE	U	U	U	2,860BE	U	U	U	1,390BE	U	U	U	28,500E	18,000	19,000	23,000
Selenium	10	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	3.0BN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	3,840	7,000	4,100B	6,500	18,500	28,000	19,000	19,000	25,400	56,000	44,000	43,000	16,400	17,000	18,000	21,000
Thallium	0.5 (GV)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	2.1B	U	U	U	U	U	U	U	U	U	U	U	10.4B	U	U	U
Zinc	2,000 (GV)	25.5*	U	U	U	22*	U	U	U	30.7*	U	U	14B	67.3*	85	U	U

Notes:

All data presented in micrograms per liter (µg/L).

U - Analyte was analyzed for, but not detected.

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

E - Indicates an estimated value because of the presence of interference.

W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled

BOLD font in shaded cell - indicates exceedance of AWQS or GV.

Table 4
Groundwater Analytical Results -
Unfiltered Vs. Filtered TAL Metals and Mercury

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-6			RI-1			RI-3		
Sample Date		10/7/2014			10/8/2014			10/7/2014		
Unfiltered/Filtered		Unfiltered	Filtered	Percent Dissolved	Unfiltered	Filtered	Percent Dissolved	Unfiltered	Filtered	Percent Dissolved
Analyte (µg/L)	AWQS or GV									
Aluminum	NA	438	155B	35.4%	3,210	172B	5.4%	89,900	2,990	3.3%
Antimony	3	U	U	-	U	U	-	U	U	-
Arsenic	25	24	U	0.0%	U	U	-	33.8	U	0.0%
Barium	1,000	99.1B	44.4B	44.8%	21.2B	16.2B	76.4%	710	111B	15.6%
Beryllium	3 (GV)	U	U	-	U	U	-	8.4	0.51B	6.4%
Cadmium	5	U	U	-	U	U	-	U	U	-
Calcium	NA	108,000	110,000	101.9%	56,400	53,200	94.3%	74,300	51,700	69.6%
Chromium	50	5.7B	U	0.0%	5.0B	0.96B	19.2%	130	4.1B	3.2%
Cobalt	NA	U	U	-	0.84B	U	0.0%	141	5.4B	3.8%
Copper	200	31.1	7.8B	25.1%	7.4B	19.1B	258.1%	458	49	10.8%
Iron	300	36,000	1,940	5.4%	1,360	127B	9.3%	158,000	3,070	1.9%
Lead	25	U	U	-	U	U	-	203.0	10.3	5.1%
Magnesium	35,000 (GV)	11,800	12,000	101.7%	10,500	9,860	93.9%	47,900	13,600	28.4%
Manganese	300	2,200	1,940	88.2%	23.6B	18.3B	77.5%	7,120	329	4.6%
Mercury	0.7	U	U	-	U	0.057B	-	0	0.032B	0.0%
Nickel	100	1.4B	U	0.0%	4.0B	0.92B	23.0%	184	4.9B	2.7%
Potassium	NA	3,810	3,870	101.6%	2,630	2,550	97.0%	9,890	1,740	17.6%
Selenium	10	U	U	-	U	U	-	U	U	0.0%
Silver	50	U	U	-	U	U	-	U	U	-
Sodium	20,000	11,700	14,400	123.1%	22,300	22,700	101.8%	31,800	30,300	95.3%
Thallium	0.5 (GV)	7.4B	U	-	U	U	-	U	U	-
Vanadium	NA	5.6B	U	0.0%	1.9B	1.2B	63.2%	192	6.3B	3.3%
Zinc	2,000 (GV)	11.3B	36.4B	322.1%	6.0B	119	1983.3%	535	16.6B	3.1%

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

Water quality measurements indicated turbidity greater than 50 NTU for these samples; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

U - Analyte was analyzed for, but not detected.

B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

NA - No standard or guidance value exists for the analyte.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.



Table 5
Surface Water and Sediment Analysis

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Sample ID Sampling Date Matrix	NYSAWQS (µg/L)*	USSW 100814 10/8/2014 Water	DSSW 100814 10/8/2014 Water	USSED 100814 10/8/2014 SEDIMENT	DSSD 100814 10/8/2014 SEDIMENT	Sediment Criteria** (µg/kg)	Sample ID Sampling Date Matrix	
				22300	125000		Total Organic Carbon (mg/kg)	
VOC		(µg/l)	(µg/l)	(µg/gOC)	(µg/kg)	(µg/gOC)	(µg/kg)	VOC
Acetone	50	5 U	5 U	0.94 J	21 J	1.21 U	27 U	Acetone
Dichlorodifluoromethane	5	5 U	5 U	0.04 J	0.81 J	5 U	5 U	Dichlorodifluoromethane
SVOC		(µg/l)	(µg/l)	(µg/kg)		(µg/kg)		SVOC
Di-n-butylphthalate	50(GV)	2.5 BJ	3.7 BJ	650 B	1,300 B	NS		Di-n-butylphthalate
Fluoranthene	50(GV)	10 U	10 U	440 U	180 J	NS		Fluoranthene
Pyrene	50(GV)	10 U	10 U	96 J	200 J	NS		Pyrene
Pesticides		(µg/l)	(µg/l)	(µg/kg)		(µg/kg)		Pesticides
4,4'-DDE	0.2	1.7 U	1.7 U	6.3		1.7 U	0.62	4,4'-DDE
Endrin	NS	1.7 U	1.7 U	5.3 P		1.7 U	5.2	Endrin
4,4' DDD	0.3	1.7 U	1.7 U	9.2 P		1.7 U	1.4	4,4' DDD
4,4' DDT	0.2	1.7 U	1.7 U	21		1.7 U	0.44	4,4' DDT
alpha-Chlordane	0.5	1.7 U	1.7 U	12 P		1.7 U	0.32	alpha-Chlordane
gamma-Chlordane	0.5	1.7 U	1.7 U	19 P		1.7 U	0.32	gamma-Chlordane
Metals		(µg/l)	(µg/l)	(mg/kg)		(mg/kg)		Metals
Aluminum	NS	191 B	115 BJ	5,670		8,130	NS	Aluminum
Antimony	NS	9.3 U	9.3 U	0.33 B		0.53 B	NS	Antimony
Arsenic	25	4.3 U	4.3 U	3		6.1	10	Arsenic
Barium	1,000	23.3 B	21.9 B	21		52.8	NS	Barium
Beryllium	3	0.26 U	0.26 U	0.39		0.66	NS	Beryllium
Cadmium	5	0.89 U	0.89 U	0.035 B		0.036 B	1	Cadmium
Calcium	NS	51,600	50,400	2060		2,440	NS	Calcium
Chromium	50	1.2 B	1 B	8.8		12.6	43	Chromium
Cobalt	NS	0.67 U	0.67 U	6.1		7.1	NS	Cobalt
Copper	200	6.3 B	6 B	18.2		34.4	32	Copper
Iron	300	407	229	13,100		15,700	NS	Iron
Lead	25	4.2 U	4.2 U	40.9		42	47	Lead
Magnesium	35,000(GV)	16,500	16,000	2,330		2,800	NS	Magnesium
Manganese	300	98.5	81.8	109		200	NS	Manganese
Mercury	0.7	0.028 U	0.028 U	0.24		0.4	0.15	Mercury
Nickel	100	2.1 B	2.1 B	9.6		13.5	21	Nickel
Potassium	NS	9,380	8,740	368		452	NS	Potassium
Selenium	NS	12 U	12 U	1.3		1.3 B	NS	Selenium
Silver	NS	6.9 U	6.9 U	0.1 B		0.2 B	1	Silver
Sodium	20,000	138,000	13,000	105		246 B	NS	Sodium
Thallium	NS	6.2 U	6.2 U	0.25 B		0.23 U	NS	Thallium
Vanadium	NS	1.2 B	1.1 U	11.9		16.8	NS	Vanadium
Zinc	2,000(GV)	18.3 B	19.2 B	78.5		94.3	150	Zinc

Notes

* AWQS/GV Values - New York State Ambient Water Quality Standards (TOGS 1.1.1) guidance values.

** New York State Sediment Criteria for non-Polar Organic Contaminants, Protection Levels for Human Health Bioaccumulation January 1996

µg/l - micrograms per liter

mg/kg - milligrams per kilogram

µg/gOC - microgram per gram of organic carbon

BOLD - The compound was detected at a concentration greater than the method detection limits.

BOLD/SHADED - The compound was detected above AWQS/GV or Sediment Cleanup Criteria

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

The concentration given is an approximate value.

NA - Not analyzed

NS - No standard, guidance value, or criteria established

B - For organic analyses - compound detected in laboratory method blank. For inorganic analyses - indicates trace concentration below reporting limit and equal to or above the detect

P - This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and

Table 6
Summary of Groundwater
Analytical Results and Exceedances
(October 2014)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	RI-1	RI-2	RI-3	RI-4	RI-5A	Number of Exceedances
Sample Date		10/7/2014	10/8/2014	10/8/2014	10/8/2014	10/7/2014	10/7/2014	10/8/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	
Analyte (µg/L)	AWQS or GV												
Arsenic	25	U	6.3B	U	U	U	24	U	U	33.8	U	U	1
Beryllium	3 (GV)	U	U	U	U	U	U	U	U	8.4	U	U	1
Chromium	50	3.3B	1.8B	3.4B	3.9B	4.0B	5.7B	5.0B	21	130	4.9B	6.7B	1
Copper	200	5.8B	U	8.6B	15.3B	65.7	31.1	7.4B	U	458	15.2B	U	1
Iron	300	889	671	4,180	4,980	16,600	36,000	1,360	130B	158,000	4,060	173B	10
Lead	25	U	4.2	U	U	U	U	U	U	203	U	U	1
Magnesium	35,000 (GV)	2,160	6,410	22,900	13,300	22,500	11,800	10,500	7,860	47,900	11,100	1,910	1
Manganese	300	50.4	24.1B	271	1,310	5,400	2,200	23.6B	22.8B	7,120	580	U	5
Nickel	100	2.4B	U	5.5B	6.1B	7.8B	1.4B	4.0B	21.2B	184	19.8B	U	1
Sodium	20,000	40,600	4,090	379,000	39,900	12,500	11,700	22,300	51,600	31,800	10,100	17,000	7
Thallium	0.5 (GV)	U	U	U	6.2B	U	7.4B	U	U	U	U	U	1
Maximum Concentration (Metal)		40,600 (Sodium)	6,410 (Magnesium)	379,000 (Sodium)	39,900 (Sodium)	22,500 (Magnesium)	36,000 (Iron)	22,300 (Sodium)	51,600 (Sodium)	158,000 (Iron)	11,100 (Magnesium)	17,000 (Sodium)	30

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010.

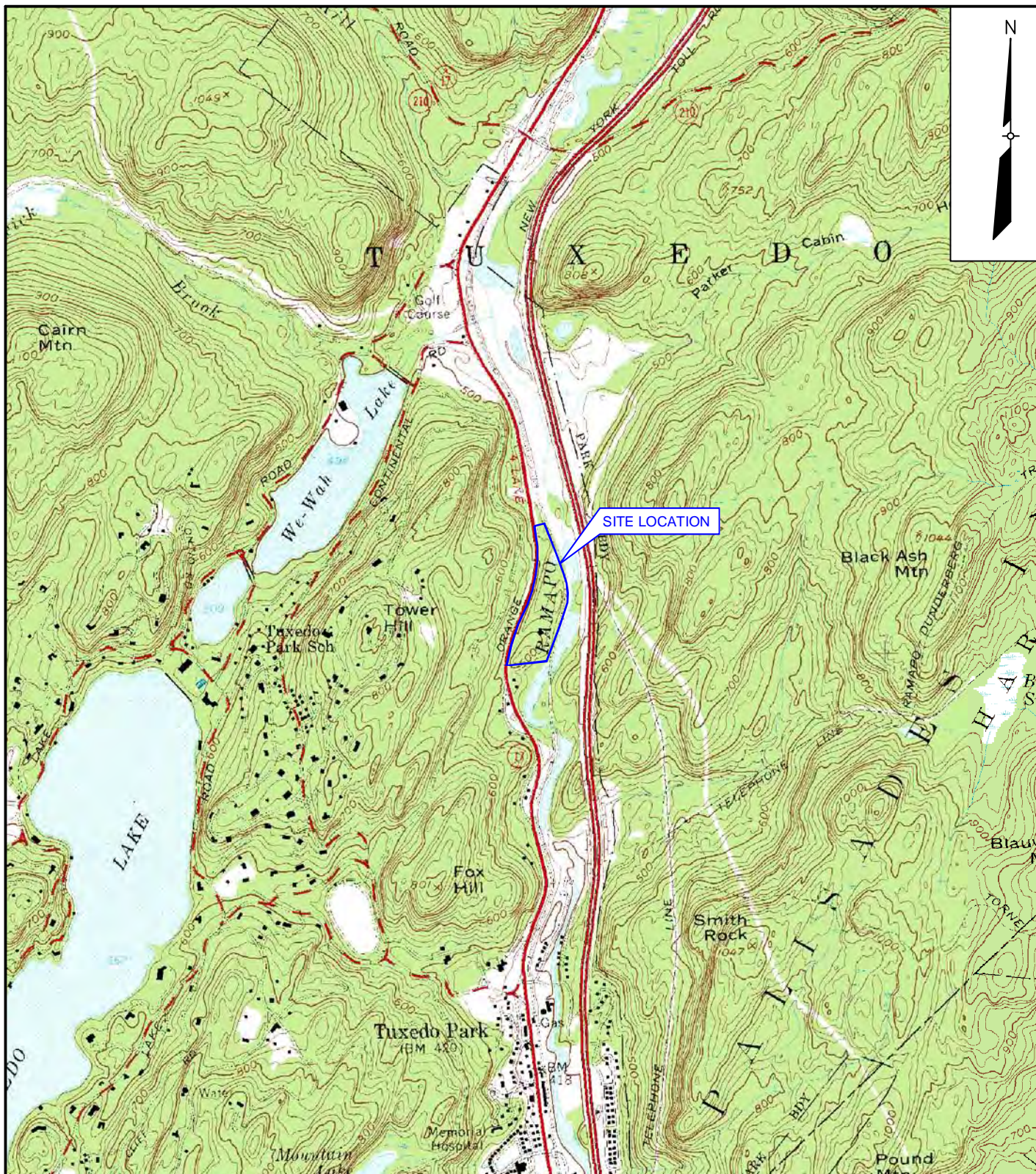
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

U - Analyte was analyzed for, but not detected.

B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Figures



0 1000 2000 4000



SCALE IN FEET

NOTE: MAP DERIVED FROM U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, SLOATSBURG, NY-NJ, DATED 1955.

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**FIGURE 1
SITE LOCATION MAP**














NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

DECEMBER 2010

60135721

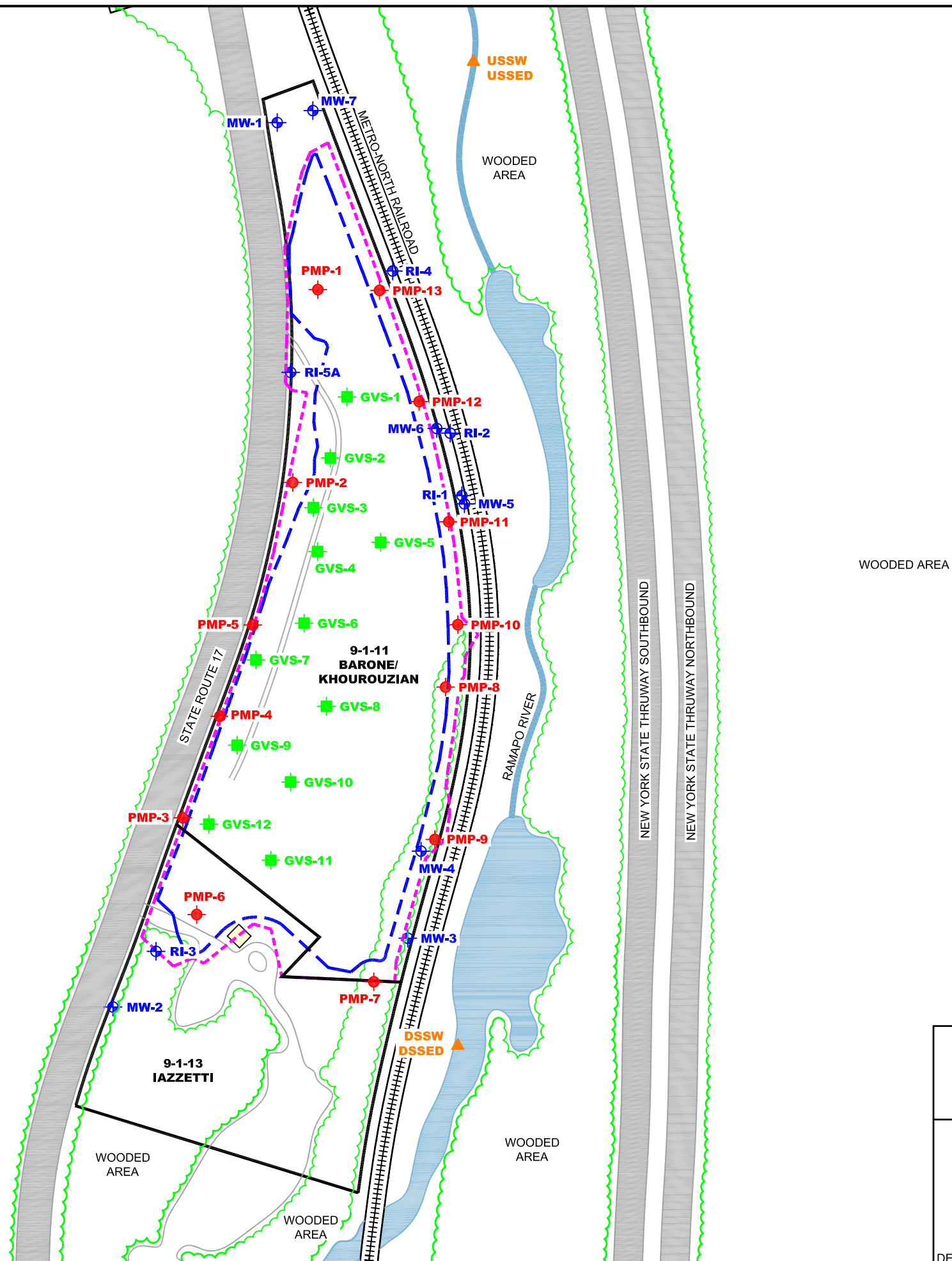
n:\marketing\proposals\nysdec - tuxedo waste\figure 2 - site plan.dwg

LEGEND

- MW-2**  MONITORING WELL LOCATION
- PMP-2**  PERIMETER MONITORING POINT LOCATION (APPROXIMATE)
- GVS-2**  GAS VENT STATION LOCATION (APPROXIMATE)
- USSW**  UPSTREAM AND DOWNSTREAM SURFACE WATER AND SURFACE SEDIMENT SAMPLES (APPROXIMATE)
- USSED**  UPSTREAM AND DOWNSTREAM SURFACE WATER AND SURFACE SEDIMENT SAMPLES (APPROXIMATE)
-  PROPERTY BOUNDARIES (APPROXIMATE)
-  LIMIT OF GRADING (APPROXIMATE)
-  FINAL LIMIT OF WASTE (APPROXIMATE)
-  RAILROAD TRACKS
-  BUILDING
-  ROAD
-  RAMAPO RIVER
-  TREE LINE

NOTE:

1. FINAL LIMIT OF WASTE TAKEN FROM "REMEDIAL CLOSURE DESIGN - WASTE GRADING PLAN", CLOUGH, HARBOUR & ASSOCIATES, MARCH 1994.



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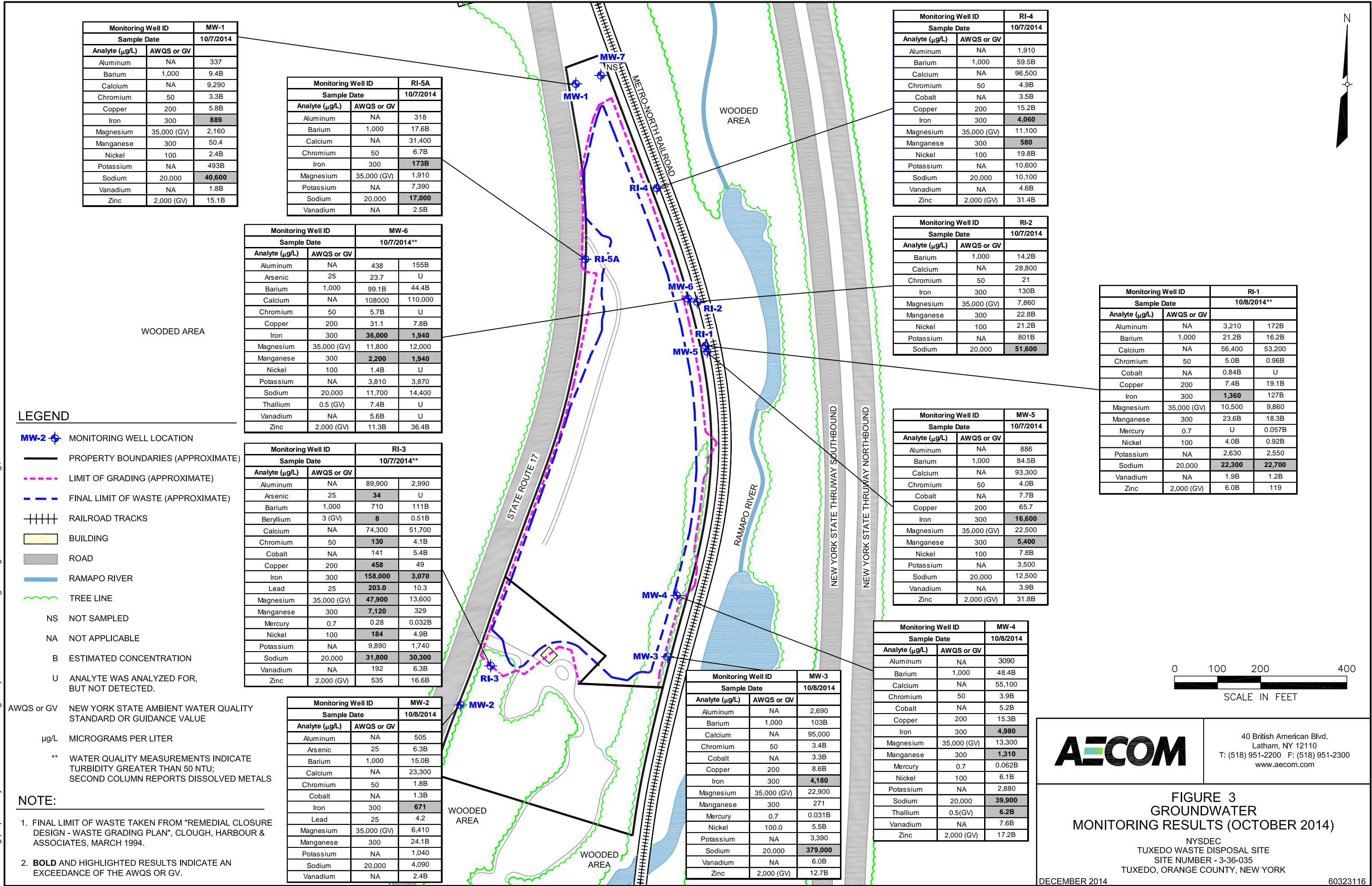
FIGURE 2 SITE PLAN AND MONITORING LOCATIONS

NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

DECEMBER 2014

60323116

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FIGURE 3
GROUNDWATER
MONITORING RESULTS (OCTOBER 2014)

NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

Appendix A

Monitoring Well Sampling Observation Logs

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-1 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-1 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:	<u>29.98</u>	feet	D (inches)	D (feet)
2. D = Riser Diameter (I.D.):	<u>0.17</u>	feet	1-inch	0.08
3. W = Depth to Water:	<u>20.37</u>	feet	2-inch	0.17
4. C = Column of Water in Well:	<u>9.61</u>	feet	3-inch	0.25
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$	<u>1.6</u>	gal	4-inch	0.33
6. 3(V) = Target Purge Volume	<u>4.9</u>	gal	6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>10:35</u>	<u>10:38</u>	<u>10:42</u>	<u>10:45</u>			
Water Level (0.33)	feet	<u>20.37</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>1.6</u>	<u>3.2</u>	<u>5.0</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>5.68</u>	<u>35.9</u>	<u>16.4</u>	<u>13.9</u>			
Dissolved Oxygen (+/- 10%)	%	<u>61.9</u>	<u>66.7</u>	<u>67.3</u>	<u>60.2</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>6.72</u>	<u>7.49</u>	<u>7.50</u>	<u>6.71</u>			
Eh / ORP (+/- 10)	MeV	<u>594.7</u>	<u>467.0</u>	<u>318.5</u>	<u>236.6</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.305</u>	<u>0.273</u>	<u>0.269</u>	<u>0.269</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.230</u>	<u>0.200</u>	<u>0.197</u>	<u>0.196</u>			
pH (+/- 0.1)	pH unit	<u>6.81</u>	<u>6.55</u>	<u>6.53</u>	<u>6.38</u>			
Temp (+/- 0.5)	C°	<u>12.04</u>	<u>11.11</u>	<u>11.30</u>	<u>10.74</u>			
Color	Visual	<u>clear</u>	<u>Plant Material</u>	<u>Plenty</u>	<u>Plenty</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 10:45

↓ 50 NTU Metals i Merc = 1 bottle 1 50 NTU n 50, filter i preserve

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-2 Date: 10/8/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-2 100814 QA/QC Collected? No

Purging / Sampling Method: Hand Bailor, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:	<u>89.73</u> feet	D (inches)	D (feet)
2. D = Riser Diameter (I.D.):	<u>0.17</u> feet	1-inch	0.08
3. W = Depth to Water:	<u>27.41</u> feet	2-inch	0.17
4. C = Column of Water in Well:	<u>62.32</u> feet	3-inch	0.25
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$	<u>10.6</u> gal	4-inch	0.33
6. 3(V) = Target Purge Volume	<u>32</u> gal	6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>14:30</u>	<u>14:40</u>	<u>14:50</u>	<u>15:00</u>			
Water Level (0.33)	feet	<u>27.41</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>11</u>	<u>22</u>	<u>33</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>22.9</u>	<u>34</u>	<u>56</u>	<u>19</u>			
Dissolved Oxygen (+/- 10%)	%	<u>69.3</u>	<u>56.8</u>	<u>63.9</u>	<u>49.1</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>7.26</u>	<u>6.27</u>	<u>7.20</u>	<u>5.45</u>			
Eh / ORP (+/- 10)	MeV	<u>135.7</u>	<u>190.0</u>	<u>179.9</u>	<u>152.4</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.110</u>	<u>0.086</u>	<u>0.092</u>	<u>0.149</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.087</u>	<u>0.063</u>	<u>0.067</u>	<u>0.110</u>			
pH (+/- 0.1)	pH unit	<u>6.73</u>	<u>6.17</u>	<u>6.17</u>	<u>6.57</u>			
Temp (+/- 0.5)	C°	<u>14.33</u>	<u>11.19</u>	<u>11.28</u>	<u>11.10</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 15:00

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-3 Date: 10/8/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-3 100814 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

30.06 feet
0.37 feet
17.32 feet
12.74 feet
4.7 gal
14 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	15:30	15:35	15:41	15:50			
Water Level (0.33)	feet	17.32	-	-	-			
Volume Purged	gal	0	5	10	15			
Flow Rate	mL/min	-	-	-	-			
Turbidity (+/- 10%)	NTU	17.6	47.5	43.0	43.0			
Dissolved Oxygen (+/- 10%)	%	68.2	39.4	32.7	31.1			
Dissolved Oxygen (+/- 10%)	mg/L	6.79	4.35	3.37	3.41			
Eh / ORP (+/- 10)	MeV	141.6	148.2	151.2	170.2			
Specific Conductivity (+/- 3%)	mS/cm ^c	0.568	1.971	2.495	2.571			
Conductivity (+/- 3%)	mS/cm	0.449	1.519	1.974	1.984			
pH (+/- 0.1)	pH unit	6.83	6.56	6.28	6.37			
Temp (+/- 0.5)	C°	14.14	13.13	13.22	13.09			
Color	Visual	clear	clear	clear	clear			
Odor	Olfactory	NO	NO	NO	NO			

Comments:

Sampled @ 15:50

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-4 Date: 10/08/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-4/100814 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

26.14 feet
0.17 feet
18.89 feet
7.25 feet
1.2 gal
3.7 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>16:00</u>	<u>16:09</u>	<u>16:11</u>	<u>16:13</u>			
Water Level (0.33)	feet	<u>18.89</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>1.2</u>	<u>2.4</u>	<u>3.7</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>13.1</u>	<u>25.4</u>	<u>25.0</u>	<u>32.4</u>			
Dissolved Oxygen (+/- 10%)	%	<u>13.6</u>	<u>15.0</u>	<u>19.2</u>	<u>25.7</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>1.50</u>	<u>2.03</u>	<u>2.19</u>	<u>2.89</u>			
Eh / ORP (+/- 10)	MeV	<u>101.2</u>	<u>102.8</u>	<u>112.9</u>	<u>126.7</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.585</u>	<u>0.525</u>	<u>0.521</u>	<u>0.522</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.459</u>	<u>0.408</u>	<u>0.404</u>	<u>0.404</u>			
pH (+/- 0.1)	pH unit	<u>6.36</u>	<u>6.37</u>	<u>6.46</u>	<u>6.40</u>			
Temp (+/- 0.5)	C°	<u>13.75°</u>	<u>13.53°</u>	<u>13.25</u>	<u>13.21</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>No</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>			

Comments:

Sampled @ 16:13

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-5 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-5 100714 QA/QC Collected? No

Purging / Sampling Method: Hand Bailor, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

19.38 feet
6.17 feet
10.55 feet
8.82 feet
1.5 gal
4.5 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>14:13</u>	<u>14:15</u>	<u>14:18</u>	<u>14:25</u>			
Water Level (0.33)	feet	<u>10.55</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>1.5</u>	<u>3.0</u>	<u>4.5</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>22.1</u>	<u>14.0</u>	<u>53.4</u>	<u>29.2</u>			
Dissolved Oxygen (+/- 10%)	%	<u>12.8</u>	<u>24.1</u>	<u>33.0</u>	<u>31.2</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>1.32</u>	<u>2.46</u>	<u>3.51</u>	<u>3.49</u>			
Eh / ORP (+/- 10)	MeV	<u>155.6</u>	<u>131.8</u>	<u>143.1</u>	<u>184.4</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.643</u>	<u>0.649</u>	<u>0.654</u>	<u>0.645</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.532</u>	<u>0.524</u>	<u>0.518</u>	<u>0.516</u>			
pH (+/- 0.1)	pH unit	<u>4.12</u>	<u>3.97</u>	<u>4.50</u>	<u>4.29</u>			
Temp (+/- 0.5)	C°	<u>15.86</u>	<u>14.79</u>	<u>14.12</u>	<u>13.84</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>Reddish</u>	<u>clear</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 14.25

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-7 Date: 10/ /14

Samplers: Chris French & Ross McCredy

Sample Number: MW-7 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:	_____	feet			
2. D = Riser Diameter (I.D.):	_____	feet			
3. W = Depth to Water:	_____	feet			
4. C = Column of Water in Well:	_____	feet			
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$	_____	gal			
6. 3(V) = Target Purge Volume	_____	gal			

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr							
Water Level (0.33)	feet							
Volume Purged	gal							
Flow Rate	mL/min							
Turbidity (+/- 10%)	NTU							
Dissolved Oxygen (+/- 10%)	%							
Dissolved Oxygen (+/- 10%)	mg/L							
Eh / ORP (+/- 10)	MeV							
Specific Conductivity (+/- 3%)	mS/cm ^c							
Conductivity (+/- 3%)	mS/cm							
pH (+/- 0.1)	pH unit							
Temp (+/- 0.5)	C°							
Color	Visual							
Odor	Olfactory							

Comments:

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: MW-6 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: MW-6 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

18.40 feet
0.17 feet
9.36 feet
9.04 feet
1.5 gal
4.6 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	13:18	13:20	13:23	13:25			
Water Level (0.33)	feet	9.36	-	-	-			
Volume Purged	gal	0	1.5	3.0	4.5			
Flow Rate	mL/min	-	-	-	-			
Turbidity (+/- 10%)	NTU	11.3	18.9	95.9	68.5			
Dissolved Oxygen (+/- 10%)	%	11.0	18.0	14.8	16.0			
Dissolved Oxygen (+/- 10%)	mg/L	1.08	1.86	1.54	1.89			
Eh / ORP (+/- 10)	MeV	-62.4	-67.3	-70.2	-66.8			
Specific Conductivity (+/- 3%)	mS/cm ^c	0.675	0.691	0.697	0.690			
Conductivity (+/- 3%)	mS/cm	0.572	0.573	0.569	0.557			
pH (+/- 0.1)	pH unit	7.71	7.60	7.92	7.56			
Temp (+/- 0.5)	C°	16.98	16.11	15.31	14.92			
Color	Visual	clear	clear	clear	clear			
Odor	Olfactory	No	No	No	No			

Comments:

Sampled @ 13:25

NTU > 50, filter & Preserve, 2 bottles collected

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: RI-1 Date: 10/8 /14

Samplers: Chris French & Ross McCredy

Sample Number: RI-1 100814 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

93.53 feet
0.17 feet
12.53 feet
81.00 feet
13.8 gal
41.0 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings					
Time	24 hr	<u>10:02</u>	<u>10:20</u>	<u>10:42</u>	<u>11:00</u>		
Water Level (0.33)	feet	<u>12.53</u>	<u>-</u>	<u>-</u>	<u>-</u>		
Volume Purged	gal	<u>0</u>	<u>14</u>	<u>28</u>	<u>42</u>		
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>		
Turbidity (+/- 10%)	NTU	<u>17.8</u>	<u>26.2</u>	<u>1355</u>	<u>51.3</u>		
Dissolved Oxygen (+/- 10%)	%	<u>16.4</u>	<u>27.8</u>	<u>23.6</u>	<u>15.5</u>		
Dissolved Oxygen (+/- 10%)	mg/L	<u>1.12</u>	<u>3.09</u>	<u>2.58</u>	<u>1.71</u>		
Eh / ORP (+/- 10)	MeV	<u>120.0</u>	<u>51.4</u>	<u>-5.0</u>	<u>46.0</u>		
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.486</u>	<u>0.482</u>	<u>0.489</u>	<u>0.477</u>		
Conductivity (+/- 3%)	mS/cm	<u>0.371</u>	<u>0.367</u>	<u>0.370</u>	<u>0.357</u>		
pH (+/- 0.1)	pH unit	<u>7.47</u>	<u>9.08</u>	<u>8.48</u>	<u>7.98</u>		
Temp (+/- 0.5)	C°	<u>12.52</u>	<u>12.46</u>	<u>12.23</u>	<u>11.76</u>		
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>cloudy</u>		
Odor	Olfactory	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>		

Comments:

Sampled @ 11:00

Turbidity > 50, took two samples

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: RI-2 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: RI-2 100714 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

70.54 feet
0.65 feet
10.59 feet
59.95 feet
39 gal
117 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>13:50</u>	<u>14:04</u>	<u>14:22</u>	<u>14:38</u>			
Water Level (0.33)	feet	<u>10.59</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>40</u>	<u>80</u>	<u>120</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>13.2</u>	<u>4.58</u>	<u>4.31</u>	<u>3.97</u>			
Dissolved Oxygen (+/- 10%)	%	<u>56.7</u>	<u>29.1</u>	<u>28.0</u>	<u>31.6</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>5.96</u>	<u>3.07</u>	<u>2.80</u>	<u>3.42</u>			
Eh / ORP (+/- 10)	MeV	<u>-18.6</u>	<u>158.7</u>	<u>197.7</u>	<u>187.4</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.187</u>	<u>0.501</u>	<u>0.509</u>	<u>0.505</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.145</u>	<u>0.392</u>	<u>0.395</u>	<u>0.386</u>			
pH (+/- 0.1)	pH unit	<u>4.54</u>	<u>0.01</u>	<u>3.55</u>	<u>3.55</u>			
Temp (+/- 0.5)	C°	<u>13.12</u>	<u>12.78</u>	<u>13.60</u>	<u>12.57</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 14:38

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: RI-3 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: RI-3 160714 QA/QC Collected? No

Purging / Sampling Method: Hand Bailers, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

47.56 feet
0.17 feet
38.13 feet
6.45 feet
1.10 gal
3.3 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>16:03</u>	<u>16:06</u>	<u>16:10</u>	<u>16:15</u>			
Water Level (0.33)	feet	<u>38.13</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>1.10</u>	<u>2.20</u>	<u>3.30</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>44.6</u>	<u>2357</u>	<u>Limit</u>	<u>Limit</u>			
Dissolved Oxygen (+/- 10%)	%	<u>29.2</u>	<u>41.0</u>	<u>31.8</u>	<u>36.6</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>3.17</u>	<u>4.89</u>	<u>3.57</u>	<u>4.39</u>			
Eh / ORP (+/- 10)	MeV	<u>220.9</u>	<u>219.7</u>	<u>217.1</u>	<u>217.3</u>			
Specific Conductivity (+/- 3%)	mS/cm°	<u>0.463</u>	<u>0.461</u>	<u>0.470</u>	<u>0.472</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.352</u>	<u>0.343</u>	<u>0.349</u>	<u>0.349</u>			
pH (+/- 0.1)	pH unit	<u>5.70</u>	<u>5.41</u>	<u>5.30</u>	<u>5.32</u>			
Temp (+/- 0.5)	C°	<u>12.42</u>	<u>12.21</u>	<u>11.55</u>	<u>11.56</u>			
Color	Visual	<u>clear</u>	<u>Murky</u>	<u>Muddy</u>	<u>Muddy</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 16:15
collected 2 bottles, filter & preserve

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: RI-4 Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: RI-4 100714 QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

16.67 feet
~~0.17~~ 15.32 feet
1.25 feet
.23 gal
.68 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings						
Time	24 hr	<u>11:22</u>	<u>11:25</u>	<u>11:27</u>	<u>11:30</u>			
Water Level (0.33)	feet	<u>15.32</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Volume Purged	gal	<u>0</u>	<u>0.3</u>	<u>0.6</u>	<u>0.75</u>			
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
Turbidity (+/- 10%)	NTU	<u>11.3</u>	<u>45.1</u>	<u>45.3</u>	<u>32.3</u>			
Dissolved Oxygen (+/- 10%)	%	<u>18.4</u>	<u>16.4</u>	<u>16.3</u>	<u>16.4</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>1.84</u>	<u>1.72</u>	<u>1.65</u>	<u>1.66</u>			
Eh / ORP (+/- 10)	MeV	<u>76.7</u>	<u>40.6</u>	<u>15.4</u>	<u>9.7</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.581</u>	<u>0.575</u>	<u>0.577</u>	<u>0.571</u>			
Conductivity (+/- 3%)	mS/cm	<u>0.470</u>	<u>0.475</u>	<u>0.480</u>	<u>0.475</u>			
pH (+/- 0.1)	pH unit	<u>6.21</u>	<u>6.24</u>	<u>6.24</u>	<u>6.23</u>			
Temp (+/- 0.5)	C°	<u>16.51</u>	<u>16.68</u>	<u>16.15</u>	<u>16.09</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			

Comments:

Sampled @ 11:30

** Cut lock, Master Key did not work*

Monitoring Well Purging / Sampling Form

Project Name and Number: Tuxedo Waste Disposal 60323116

Monitoring Well Number: RI-5A Date: 10/7/14

Samplers: Chris French & Ross McCredy

Sample Number: RI-5A QA/QC Collected? No

Purging / Sampling Method: Hand Bailer, Grundfos, Whale or Waterra Pump/3 Well Volumes

1. L = Well Depth:
2. D = Riser Diameter (I.D.):
3. W = Depth to Water:
4. C = Column of Water in Well:
5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$
6. 3(V) = Target Purge Volume

81.21 feet
0.17 feet
41.38 feet
39.83 feet
6.7 gal
20 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using YSI 556 MPS & Lamotte 2020 WE

Parameter	Units	Readings							
Time	24 hr	<u>12:13</u>	<u>12:18</u>	<u>12:30</u>	<u>12:38</u>				
Water Level (0.33)	feet	<u>41.38</u>	41.38	<u>-</u>	<u>-</u>				
Volume Purged	gal	<u>0</u>	<u>7</u>	<u>14</u>	<u>15</u>				
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>				
Turbidity (+/- 10%)	NTU	<u>14.6</u>	<u>39.2</u>	<u>16.58</u>	<u>10.15</u>				
Dissolved Oxygen (+/- 10%)	%	<u>70.0</u>	<u>68.5</u>	<u>62.2</u>	<u>71.9</u>				
Dissolved Oxygen (+/- 10%)	mg/L	<u>7.33</u>	<u>7.25</u>	<u>6.54</u>	<u>7.56</u>				
Eh / ORP (+/- 10)	MeV	<u>99.0</u>	<u>101.6</u>	<u>97.8</u>	<u>119.1</u>				
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.288</u>	<u>0.258</u>	<u>0.270</u>	<u>0.266</u>				
Conductivity (+/- 3%)	mS/cm	<u>0.227</u>	<u>0.200</u>	<u>0.210</u>	<u>0.210</u>				
pH (+/- 0.1)	pH unit	<u>9.26</u>	<u>9.53</u>	<u>9.43</u>	<u>8.95</u>				
Temp (+/- 0.5)	C°	<u>14.00</u>	<u>13.20</u>	<u>13.43</u>	<u>14.15</u>				
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>				
Odor	Olfactory	<u>no</u>	<u>No</u>	<u>NO</u>	<u>No</u>				

Comments: - purged dry @ 12:32, waited for Well to recharge, then took sample @

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo Waste

Monitoring Well Number:

Upstream Surface

Date: 10/8/14

Samplers:

RM ; CF

Sample Number:

US 100814

QA/QC Collected? No

Purging / Sampling Method:

1. L = Well Depth:

2. D = Riser Diameter (I.D.):

3. W = Depth to Water:

4. C = Column of Water in Well:

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

6. 3(V) = Target Purge Volume

_____ feet
_____ feet
_____ feet
_____ feet
_____ gal
_____ gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using _____

Parameter	Units	Readings						
Time	24 hr	<u>11:30</u>						
Water Level (0.33)	feet	<u>-</u>						
Volume Purged	gal	<u>-</u>						
Flow Rate	mL/min	<u>-</u>						
Turbidity (+/- 10%)	NTU	<u>9.69</u>						
Dissolved Oxygen (+/- 10%)	%	<u>63.1</u>						
Dissolved Oxygen (+/- 10%)	mg/L	<u>5.75</u>						
Eh / ORP (+/- 10)	MeV	<u>1180</u>						
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>1.015</u>						
Conductivity (+/- 3%)	mS/cm	<u>0.932</u>						
pH (+/- 0.1)	pH unit	<u>7.23</u>						
Temp (+/- 0.5)	C°	<u>20.75</u>						
Color	Visual	<u>clear</u>						
Odor	Olfactory	<u>No</u>						

Comments:

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

DSSW

Date: 10/8/14

Samplers:

RM/CF

Sample Number:

DSSW1008M

QA/QC Collected? _____

Purging / Sampling Method:

1. L = Well Depth:

_____ feet

2. D = Riser Diameter (I.D.):

_____ feet

3. W = Depth to Water:

_____ feet

4. C = Column of Water in Well:

_____ feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

_____ gal

6. 3(V) = Target Purge Volume

_____ gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using _____

Parameter	Units	Readings						
Time	24 hr	<u>12:45</u>						
Water Level (0.33)	feet	<u>-</u>						
Volume Purged	gal	<u>-</u>						
Flow Rate	mL/min	<u>-</u>						
Turbidity (+/- 10%)	NTU	<u>5.16</u>						
Dissolved Oxygen (+/- 10%)	%	<u>82.2</u>						
Dissolved Oxygen (+/- 10%)	mg/L	<u>7.35</u>						
Eh / ORP (+/- 10)	MeV	<u>63.5</u>						
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>1.041</u>						
Conductivity (+/- 3%)	mS/cm	<u>0.962</u>						
pH (+/- 0.1)	pH unit	<u>9.51</u>						
Temp (+/- 0.5)	C°	<u>20.85</u>						
Color	Visual	<u>clear</u>						
Odor	Olfactory	<u>No</u>						

Comments:

Appendix B

Laboratory Data

Report Date:
27-Oct-14 16:28



- ☒ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

AECOM Technical Services, Inc.
40 British American Blvd.
Latham, NY 12110

Work Order: N1893
Project : Tuxedo Waste Disposal
Project #:

Attn: Mark Howard

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
N1893-01	MW-1 100714	Aqueous	07-Oct-14 10:45	09-Oct-14 10:25
N1893-02	RI-4 100714	Aqueous	07-Oct-14 11:30	09-Oct-14 10:25
N1893-03	RI-5A 100714	Aqueous	07-Oct-14 12:38	09-Oct-14 10:25
N1893-04	MW-6 100714	Aqueous	07-Oct-14 13:25	09-Oct-14 10:25
N1893-05	MW-5 100714	Aqueous	07-Oct-14 14:25	09-Oct-14 10:25
N1893-06	RI-2 100714	Aqueous	07-Oct-14 14:38	09-Oct-14 10:25
N1893-07	RI-3 100714	Aqueous	07-Oct-14 16:15	09-Oct-14 10:25
N1893-08	RI-1 100814	Aqueous	08-Oct-14 11:00	09-Oct-14 10:25
N1893-09	MW-2 100814	Aqueous	08-Oct-14 15:00	09-Oct-14 10:25
N1893-10	MW-3 100814	Aqueous	08-Oct-14 15:50	09-Oct-14 10:25

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the samples(s) as received. This report may not be reproduced, except in full, without written approval from Spectrum Analytical.

All applicable NELAC or USEPA CLP requirements have been met.

Spectrum Analytical (Rhode Island) is accredited under the National Environmental Laboratory Approval Program (NELAP) and DoD Environmental Laboratory Accreditation Program (ELAP), holds Organic and Inorganic contracts under the USEPA CLP Program and is certified under several states. The current list of our laboratory approvals and certifications is available on the Certifications page on our web site at www.spectrum-analytical.com.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Department of Defense	N/A
Connecticut	PH-0153
Delaware	N/A
Florida	E87664
Maine	2007037
Massachusetts	M-RI907
New Hampshire	2631
New Jersey	RI001
New York	11522
Rhode Island	LAI00301
USDA	P330-08-00023
USEPA - ISM	EP-W-09-039
USEPA - SOM	EP-W-11-033



Authorized by:

Yihai Ding
Laboratory Director

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Identification and Analytical Requirements Summary

Project Name : Tuxedo Waste Disposal

SDG : N1893

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		MSVOA Method #	MSSEMI Method #	GC* Method #	ME	Other
MW-1 100714	N1893-01				SW6010_W	
MW-1 100714	N1893-01				SW7470	
RI-4 100714	N1893-02				SW6010_W	
RI-4 100714	N1893-02				SW7470	
RI-5A 100714	N1893-03				SW6010_W	
RI-5A 100714	N1893-03				SW7470	
MW-6 100714	N1893-04				SW6010_W	
MW-6 100714	N1893-04				SW6010_W	
MW-6 100714	N1893-04				SW7470	
MW-6 100714	N1893-04				SW7470	
MW-5 100714	N1893-05				SW6010_W	
MW-5 100714	N1893-05				SW7470	
RI-2 100714	N1893-06				SW6010_W	
RI-2 100714	N1893-06				SW7470	
RI-3 100714	N1893-07				SW6010_W	
RI-3 100714	N1893-07				SW6010_W	
RI-3 100714	N1893-07				SW7470	
RI-3 100714	N1893-07				SW7470	
RI-1 100814	N1893-08				SW6010_W	
RI-1 100814	N1893-08				SW6010_W	
RI-1 100814	N1893-08				SW7470	
RI-1 100814	N1893-08				SW7470	
MW-2 100814	N1893-09				SW6010_W	
MW-2 100814	N1893-09				SW7470	
MW-3 100814	N1893-10				SW6010_W	
MW-3 100814	N1893-10				SW7470	

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary ME

Project Name : Tuxedo Waste Disposal

SDG : N1893

Laboratory Sample ID	Matrix	Metals Requested	Date Received By Lab	Date Analyzed
SW6010_W				
N1893-01A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-02A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-03A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-04A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-04B	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-05A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-06A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-07A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-07B	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-08A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-08B	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-09A	AQ	SW6010_W	10/9/2014	10/18/2014
N1893-10A	AQ	SW6010_W	10/9/2014	10/18/2014
SW7470				
N1893-01A	AQ	SW7470	10/9/2014	10/22/2014
N1893-02A	AQ	SW7470	10/9/2014	10/22/2014
N1893-03A	AQ	SW7470	10/9/2014	10/22/2014
N1893-04A	AQ	SW7470	10/9/2014	10/22/2014
N1893-04B	AQ	SW7470	10/9/2014	10/22/2014
N1893-05A	AQ	SW7470	10/9/2014	10/22/2014
N1893-06A	AQ	SW7470	10/9/2014	10/24/2014
N1893-07A	AQ	SW7470	10/9/2014	10/24/2014
N1893-07B	AQ	SW7470	10/9/2014	10/24/2014
N1893-08A	AQ	SW7470	10/9/2014	10/24/2014
N1893-08B	AQ	SW7470	10/9/2014	10/24/2014
N1893-09A	AQ	SW7470	10/9/2014	10/24/2014
N1893-10A	AQ	SW7470	10/9/2014	10/24/2014

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1893

Client ID: AECOM_LATHAM

Project: Tuxedo Waste Disposal

WO Name: Tuxedo Waste Disposal

Location: AECOM_TUXEDO,

Comments: N/A

Case:

SDG:

HC Due: 10/21/14

Fax Due:

Fax Report: ☐

Report Level: ASP-A

Special Program:

EDD:

PO: 60323116.3

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1893-01A	MW-1 100714	10/07/2014 10:45	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-01A	MW-1 100714	10/07/2014 10:45	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-02A	RI-4 100714	10/07/2014 11:30	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-02A	RI-4 100714	10/07/2014 11:30	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-03A	RI-5A 100714	10/07/2014 12:38	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-03A	RI-5A 100714	10/07/2014 12:38	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-04A	MW-6 100714	10/07/2014 13:25	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-04A	MW-6 100714	10/07/2014 13:25	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-04B	MW-6 100714	10/07/2014 13:25	10/09/2014	Aqueous	SW6010_W	/ Dissolved, TAL				Y	M2
N1893-04B	MW-6 100714	10/07/2014 13:25	10/09/2014	Aqueous	SW7470	/ Dissolved, TAL					M2
N1893-05A	MW-5 100714	10/07/2014 14:25	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-05A	MW-5 100714	10/07/2014 14:25	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-06A	RI-2 100714	10/07/2014 14:38	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-06A	RI-2 100714	10/07/2014 14:38	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-07A	RI-3 100714	10/07/2014 16:15	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-07A	RI-3 100714	10/07/2014 16:15	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-07B	RI-3 100714	10/07/2014 16:15	10/09/2014	Aqueous	SW6010_W	/ Dissolved, TAL				Y	M2
N1893-07B	RI-3 100714	10/07/2014 16:15	10/09/2014	Aqueous	SW7470	/ Dissolved, TAL					M2
N1893-08A	RI-1 100814	10/08/2014 11:00	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-08A	RI-1 100814	10/08/2014 11:00	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-08B	RI-1 100814	10/08/2014 11:00	10/09/2014	Aqueous	SW6010_W	/ Dissolved, TAL				Y	M2

HT = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Client ID: AECOM_LATHAM

Project: Tuxedo Waste Disposal

WO Name: Tuxedo Waste Disposal

Location: AECOM_TUXEDO,

Comments: N/A

Case:

SDG:

PO: 60323116.3

HC Due: 10/21/14

Fax Due:

Fax Report: ☐

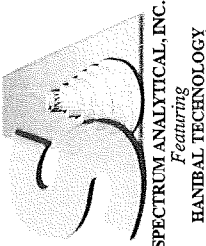
Report Level: ASP-A

Special Program:

EDD:

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1893-08B	RI-1 100814	10/08/2014 11:00	10/09/2014	Aqueous	SW7470	/ Dissolved, TAL					M2
N1893-09A	MW-2 100814	10/08/2014 15:00	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-09A	MW-2 100814	10/08/2014 15:00	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1893-10A	MW-3 100814	10/08/2014 15:50	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1893-10A	MW-3 100814	10/08/2014 15:50	10/09/2014	Aqueous	SW7470	/ TAL					M2

Sample Transmittal Documentation



Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 A Imgren Drive
Agawam, MA 01001
(413) 789-9018

☐ 8405 Benjamin Road, Site A
Tampa, FL 33634
(813) 888-9507

Special Handling:

TAT- Ind icate Date Needed: STD
· All TATs subject to laboratory approval.
· Min. 24-hour notification needed for rushes.
· Samples disposed of after 60 days unless otherwise instructed.

Report To: Mark Howard
AFCom
46 British American Blvd
Lebanon, NY
Telephone #: (518) 951-2200
Project Mgr. Mark Howard

Invoice To: AFCom

P.O. No.:
RQN:
State: NY

Project No.: 60323116
Site Name: Tuxedo Waste Disposal
Location: Tuxedo
Sampler(s): Rob McCreedy / Chris French

1=Na₂S₂O₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=Ascorbic Acid 7=CH₃OH
8=NaHSO₄ 9=Deionized Water 10=H₃PO₄ 11=
12=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

List preservative code below:

QA/QC Reporting Notes:

QA/QC Reporting Level

☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☒ Other ASP "A"

State-specific reporting standards:

NTU < 50, do not filterNTU < 50, do not filterNTU < 50, do not filterNTU > 50, filter & PreserveNTU < 50, do not filterNTU < 50, do not filterNTU > 50, filter & PreserveNTU > 50, filter & PreserveNTU < 50, do not filterNTU < 50, do not filter

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix
01	MW-1 100714	10/7/14	10:45	G	GW
02	RI-4 100714	11:30	11:30	G	GW
03	RI-SA 100714	12:38	12:38	G	GW
04	MW-6 100714	13:25	13:25	G	GW
05	MW-5 100714	14:25	14:25	G	GW
06	RI-2 100714	14:38	14:38	G	GW
07	RI-3 100714	16:15	16:15	G	GW
08	RI-1 100814	10/8/14	11:00	G	GW
09	MW-2 100814	10/8/14	15:00	G	GW
10	MW-3 100814	10/8/14	15:50	G	GW

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Received by:

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Received By: <u>WV</u>						Page 01 of 00			
Reviewed By: <u>KP</u>						Log-in Date 10/09/2014			
Work Order: N1893		Client Name: AECOM Technical Services, Inc.							
Project Name/Event: Tuxedo Waste Disposal									
Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.				Preservation (pH)		VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"		
				Lab Sample ID	HNO3			H2SO4	HCl
1. Custody Seal(s) <u>Present / Absent</u>				N1893-01	<2				
				N1893-02	<2				
2. Custody Seal Nos. <u>N/A</u>				N1893-03	<2				
				N1893-04	<2				
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists <u>Present / Absent</u>				N1893-05	<2				
				N1893-06	<2				
				N1893-07	<2				
4. Airbill <u>AirBill / Sticker</u>				N1893-08	<2				
				N1893-09	<2				
5. Airbill No. <u>FedEx 8059 4123 7928</u>				N1893-10	<2				
6. Sample Tags <u>Present / Absent</u>									
Sample Tag Numbers <u>Listed /</u>									
<u>Not Listed on Chain-of-Custody</u>									
7. Sample Condition <u>Intact / Broken /</u>									
<u>Leaking</u>									
8. Cooler Temperature Indicator Bottle <u>Present / Absent</u>									
9. Cooler Temperature <u>3.9 °C</u>									
10. Does information on TR/COCs and sample tags agree? <u>Yes / No</u>									
11. Date Received at Laboratory <u>10/09/2014</u>									
12. Time Received <u>10:25</u>									
Sample Transfer									
Fraction (1) TVOA/VOA		Fraction (2) SVOA/PEST/ARO							
Area #		Area #							
By		By							
On		On							
IR Temp Gun ID: MT-74				VOA Matrix Key: US = Unpreserved Soil A = Air UA = Unpreserved Aqueous H = HCl M = MeOH E = Encore N = NaHSO4 F = Freeze					
Coolant Condition: ICE									
Preservative Name/Lot No:									
				See Sample Condition Notification/Corrective Action Form Yes / <u>No</u>					
				Rad OK <u>Yes</u> / No					



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** Metals ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1893

SW846 6010C, SW846 7470A

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test codes: SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3005A

Aqueous Samples were prepared following procedures in laboratory test code: SW7470A

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

A matrix spike was not performed on any sample in this SDG.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

A duplicate analysis was not performed on any sample in this SDG.

F. Serial Dilution (SD):

A serial dilution was not performed on any sample in this SDG.

G. Samples:

No unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 10/27/2014



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS Matrix Spike.
- MSD Matrix Spike Duplicate
- DUP Duplicate analysis
- SD Serial Dilution
- PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

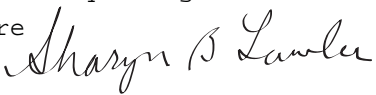
Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3
Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1893
SOW No.: SW846

EPA Sample No.	Lab Sample ID
<u>MW-1 100714</u>	<u>N1893-01</u>
<u>MW-2 100814</u>	<u>N1893-09</u>
<u>MW-3 100814</u>	<u>N1893-10</u>
<u>MW-5 100714</u>	<u>N1893-05</u>
<u>MW-6 100714</u>	<u>N1893-04</u>
<u>RI-1 100814</u>	<u>N1893-08</u>
<u>RI-2 100714</u>	<u>N1893-06</u>
<u>RI-3 100714</u>	<u>N1893-07</u>
<u>RI-4 100714</u>	<u>N1893-02</u>
<u>RI-5A 100714</u>	<u>N1893-03</u>

Were ICP interelement corrections applied? Yes/No Yes
Were background corrections applied? Yes/No Yes
If yes-were raw data generated before application of background corrections? Yes/No No

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature

Signature:  Name: Sharyn B. Lawler
Date: 10/27/14 Title: QAD

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-1 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-01Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	337			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	9.4	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	9290			P
7440-47-3	Chromium	3.3	B		P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	5.8	B		P
7439-89-6	Iron	889			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	2160			P
7439-96-5	Manganese	50.4			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.4	B		P
7440-09-7	Potassium	493	B		P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	40600			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.8	B		P
7440-66-6	Zinc	15.1	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-2 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-09Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	505			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	6.3	B		P
7440-39-3	Barium	15.0	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	23300			P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	3.6	U		P
7439-89-6	Iron	671			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	6410			P
7439-96-5	Manganese	24.1	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	0.85	U		P
7440-09-7	Potassium	1040			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	4090			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	2.4	B		P
7440-66-6	Zinc	4.9	U		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-3 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-10Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2690			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	103	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	95000			P
7440-47-3	Chromium	3.4	B		P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	8.6	B		P
7439-89-6	Iron	4180			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	22900			P
7439-96-5	Manganese	271			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	5.5	B		P
7440-09-7	Potassium	3390			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	379000			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	6.0	B		P
7440-66-6	Zinc	12.7	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-5 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-05Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	886			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	84.5	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	93300			P
7440-47-3	Chromium	4.0	B		P
7440-48-4	Cobalt	7.7	B		P
7440-50-8	Copper	65.7			P
7439-89-6	Iron	16600			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	22500			P
7439-96-5	Manganese	5400			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	7.8	B		P
7440-09-7	Potassium	3500			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	12500			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	3.9	B		P
7440-66-6	Zinc	31.8	B		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-6 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-04Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	438			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	23.7			P
7440-39-3	Barium	99.1	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	108000			P
7440-47-3	Chromium	5.7	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	31.1			P
7439-89-6	Iron	36000			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	11800			P
7439-96-5	Manganese	2200			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	1.4	B		P
7440-09-7	Potassium	3810			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	11700			P
7440-28-0	Thallium	7.4	B		P
7440-62-2	Vanadium	5.6	B		P
7440-66-6	Zinc	11.3	B		P

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-1 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-08Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3210			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	21.2	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	56400			P
7440-47-3	Chromium	5.0	B		P
7440-48-4	Cobalt	0.84	B		P
7440-50-8	Copper	7.4	B		P
7439-89-6	Iron	1360			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	10500			P
7439-96-5	Manganese	23.6	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	4.0	B		P
7440-09-7	Potassium	2630			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	22300			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.9	B		P
7440-66-6	Zinc	6.0	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-2 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-06Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	66.0	U		P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	14.2	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	28800			P
7440-47-3	Chromium	21.0			P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	3.6	U		P
7439-89-6	Iron	130	B		P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	7860			P
7439-96-5	Manganese	22.8	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	21.2	B		P
7440-09-7	Potassium	801	B		P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	51600			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.1	U		P
7440-66-6	Zinc	4.9	U		P

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-3 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-07Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	89900			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	33.8			P
7440-39-3	Barium	710			P
7440-41-7	Beryllium	8.4			P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	74300			P
7440-47-3	Chromium	130			P
7440-48-4	Cobalt	141			P
7440-50-8	Copper	458			P
7439-89-6	Iron	158000			P
7439-92-1	Lead	203			P
7439-95-4	Magnesium	47900			P
7439-96-5	Manganese	7120			P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	184			P
7440-09-7	Potassium	9890			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	31800			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	192			P
7440-66-6	Zinc	535			P

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-4 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-02Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1910			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	59.5	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	96500			P
7440-47-3	Chromium	4.9	B		P
7440-48-4	Cobalt	3.5	B		P
7440-50-8	Copper	15.2	B		P
7439-89-6	Iron	4060			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese	580			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	19.8	B		P
7440-09-7	Potassium	10600			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	10100			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	4.6	B		P
7440-66-6	Zinc	31.4	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-5A 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Matrix (soil/water): WATER Lab Sample ID: N1893-03Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	318			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	17.6	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	31400			P
7440-47-3	Chromium	6.7	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	3.6	U		P
7439-89-6	Iron	173	B		P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	1910			P
7439-96-5	Manganese	10.0	U		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	0.85	U		P
7440-09-7	Potassium	7390			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	17000			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	2.5	B		P
7440-66-6	Zinc	4.9	U		P

Comments:

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Preparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79581****FIMS2_141022A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/22/14 9:05	C		C		C		C	
Mercury	0.028	U	0.028	U					0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893Preparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79691****FIMS2_141024D**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/14 15:54	C	10/24/14 16:09	C		C		C	
Mercury	0.028	U	0.028	U	0.028	U			0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893

Preparation Blank Matrix (soil/water): WATER Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L **MB-79544**

OPTIMA3_141018A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	10/18/14 15:36	C	10/18/14 16:18	C	10/18/14 16:55	C		C	
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.5	B	4.300	U	P
Barium	2.4	B	3.9	B	3.2	B	3.5	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	169.5	B	110.0	U	117.4	B	114.8	B	112.581	B	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.9	B	1.1	B	0.8	B	1.0	B	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	31.0	U	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	U	1.0	B	0.8	U	1.1	B	0.850	U	P
Potassium	111.0	B	76.0	U	-348.0	B	-238.8	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	29.0	U	93.4	B	110.9	B	129.5	B	116.364	B	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.3	B	1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCS-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9787.97	107.6						
Antimony	455.0	479.73	105.4						
Arsenic	455.0	496.05	109.0						
Barium	9100.0	9817.10	107.9						
Beryllium	227.0	244.29	107.6						
Cadmium	227.0	245.52	108.2						
Calcium	22700.0	23931.47	105.4						
Chromium	910.0	988.38	108.6						
Cobalt	2270.0	2449.69	107.9						
Copper	1130.0	1218.25	107.8						
Iron	4550.0	5101.85	112.1						
Lead	455.0	484.10	106.4						
Magnesium	22700.0	24417.79	107.6						
Manganese	2270.0	2445.00	107.7						
Nickel	2270.0	2451.41	108.0						
Potassium	22700.0	24440.95	107.7						
Selenium	455.0	481.42	105.8						
Silver	1130.0	1256.90	111.2						
Sodium	22700.0	25183.21	110.9						
Thallium	455.0	449.74	98.8						
Vanadium	2270.0	2410.44	106.2						
Zinc	2270.0	2460.08	108.4						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCS-79581	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.58	99.6						

7

Lab Name: <u>Spectrum Analytical, Inc.</u>	Contract: <u>60323116.3</u>
Lab Code: <u>MITKEM</u> Case No.: <u></u>	SAS No.: <u></u> SDG No.: <u>SN1893</u>
Solid LCS Source: <u></u>	LCS(D) ID: <u></u>
Aqueous LCS Source: <u></u>	LCS-79691

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.52	98.3						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9671.70	106.3						
Antimony	455.0	472.62	103.9						
Arsenic	455.0	490.15	107.7						
Barium	9100.0	9732.49	107.0						
Beryllium	227.0	241.44	106.4						
Cadmium	227.0	240.48	105.9						
Calcium	22700.0	23506.67	103.6						
Chromium	910.0	961.07	105.6						
Cobalt	2270.0	2379.93	104.8						
Copper	1130.0	1206.19	106.7						
Iron	4550.0	4968.61	109.2						
Lead	455.0	477.92	105.0						
Magnesium	22700.0	24168.20	106.5						
Manganese	2270.0	2417.15	106.5						
Nickel	2270.0	2379.49	104.8						
Potassium	22700.0	24115.14	106.2						
Selenium	455.0	475.45	104.5						
Silver	1130.0	1242.78	110.0						
Sodium	22700.0	24378.92	107.4						
Thallium	455.0	442.44	97.2						
Vanadium	2270.0	2382.29	104.9						
Zinc	2270.0	2380.73	104.9						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79691	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.43	96.3						



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** Metals ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1893D

SW846 6010C, SW846 7470A

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous Samples were filtered in the laboratory prior to preparation following procedures in test codes: SW3005A, SW7470A. Filtration blank MB-79454 was created during the filtration step for both ICP and Hg tests but was not prepared for Hg analysis. All associated filtered samples were non-detects for Mercury so no further action was taken.

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

A matrix spike was not performed on any sample in this SDG.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

A duplicate analysis was not performed on any sample in this SDG.

F. Serial Dilution (SD):

A serial dilution was not performed on any sample in this SDG.

G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 10/27/2014



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HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

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HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL** Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE** Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA** Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX** Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS** Matrix Spike.
- MSD** Matrix Spike Duplicate
- DUP** Duplicate analysis
- SD** Serial Dilution
- PS** Post-digestion or Post-distillation spike. For metals or inorganic analyses

U.S.EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

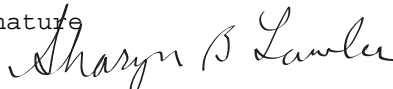
Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3
Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1893D
SOW No.: SW846

EPA Sample No.	Lab Sample ID
<u>MW-6 100714</u>	<u>N1893-04</u>
<u>RI-1 100814</u>	<u>N1893-08</u>
<u>RI-3 100714</u>	<u>N1893-07</u>

Were ICP interelement corrections applied?	Yes/No	<u>Yes</u>
Were background corrections applied?	Yes/No	<u>Yes</u>
If yes-were raw data generated before application of background corrections?	Yes/No	<u>No</u>

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature

Signature:  Name: Sharyn B. Lawler
Date: 10/27/14 Title: QAD

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-6 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893D

Matrix (soil/water): WATER Lab Sample ID: N1893-04

Level (low/med): MED Date Received: 10/09/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	155	B		P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	44.4	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	110000			P
7440-47-3	Chromium	0.64	U		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	7.8	B		P
7439-89-6	Iron	1940			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	12000			P
7439-96-5	Manganese	1940			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	0.85	U		P
7440-09-7	Potassium	3870			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	14400			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.1	U		P
7440-66-6	Zinc	36.4	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-1 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893D

Matrix (soil/water): WATER Lab Sample ID: N1893-08

Level (low/med): MED Date Received: 10/09/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	172	B		P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	16.2	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	53200			P
7440-47-3	Chromium	0.96	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	19.1	B		P
7439-89-6	Iron	127	B		P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	9860			P
7439-96-5	Manganese	18.3	B		P
7439-97-6	Mercury	0.057	B		CV
7440-02-0	Nickel	0.92	B		P
7440-09-7	Potassium	2550			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	22700			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.2	B		P
7440-66-6	Zinc	119			P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-3 100714

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893DMatrix (soil/water): WATER Lab Sample ID: N1893-07Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2990			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	111	B		P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	51700			P
7440-47-3	Chromium	4.1	B		P
7440-48-4	Cobalt	5.4	B		P
7440-50-8	Copper	49.4			P
7439-89-6	Iron	3070			P
7439-92-1	Lead	10.3			P
7439-95-4	Magnesium	13600			P
7439-96-5	Manganese	329			P
7439-97-6	Mercury	0.032	B		CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	1740			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	30300			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	6.3	B		P
7440-66-6	Zinc	16.6	B		P

Comments:

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893DPreparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79581****FIMS2_141022A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/22/14 9:05	C		C		C		C	
Mercury	0.028	U	0.028	U					0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893DPreparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79691****FIMS2_141024D**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/14 15:54	C		C		C		C	
Mercury	0.028	U	0.028	U					0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893D

Preparation Blank Matrix (soil/water): WATER Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L MB-79454

OPTIMA3_141018A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	10/18/14 15:36	C	10/18/14 16:18	C	10/18/14 16:55	C		C	
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.5	B	4.300	U	P
Barium	2.4	B	3.9	B	3.2	B	3.5	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	169.5	B	110.0	U	117.4	B	114.8	B	110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.9	B	1.1	B	0.8	B	1.0	B	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	31.0	U	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	U	1.0	B	0.8	U	1.1	B	0.850	U	P
Potassium	111.0	B	76.0	U	-348.0	B	-238.8	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	29.0	U	93.4	B	110.9	B	129.5	B	75.814	B	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.3	B	1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1893DPreparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): ug/L **MB-79544****OPTIMA3_141018A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)				Preparation Blank		C	M
		C		C		C		C		
Aluminum							66.000	U	P	
Antimony							9.300	U	P	
Arsenic							4.300	U	P	
Barium							1.100	U	P	
Beryllium							0.260	U	P	
Cadmium							0.890	U	P	
Calcium							112.581	B	P	
Chromium							0.640	U	P	
Cobalt							0.670	U	P	
Copper							3.600	U	P	
Iron							31.000	U	P	
Lead							4.200	U	P	
Magnesium							76.000	U	P	
Manganese							10.000	U	P	
Nickel							0.850	U	P	
Potassium							76.000	U	P	
Selenium							12.000	U	P	
Silver							6.900	U	P	
Sodium							116.364	B	P	
Thallium							6.200	U	P	
Vanadium							1.100	U	P	
Zinc							4.900	U	P	

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893D
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCS-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9787.97	107.6						
Antimony	455.0	479.73	105.4						
Arsenic	455.0	496.05	109.0						
Barium	9100.0	9817.10	107.9						
Beryllium	227.0	244.29	107.6						
Cadmium	227.0	245.52	108.2						
Calcium	22700.0	23931.47	105.4						
Chromium	910.0	988.38	108.6						
Cobalt	2270.0	2449.69	107.9						
Copper	1130.0	1218.25	107.8						
Iron	4550.0	5101.85	112.1						
Lead	455.0	484.10	106.4						
Magnesium	22700.0	24417.79	107.6						
Manganese	2270.0	2445.00	107.7						
Nickel	2270.0	2451.41	108.0						
Potassium	22700.0	24440.95	107.7						
Selenium	455.0	481.42	105.8						
Silver	1130.0	1256.90	111.2						
Sodium	22700.0	25183.21	110.9						
Thallium	455.0	449.74	98.8						
Vanadium	2270.0	2410.44	106.2						
Zinc	2270.0	2460.08	108.4						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3
Lab Code:	MITKEM	Case No.:	
		SAS No.:	
		SDG No.:	SN1893D
Solid LCS Source:			
			LCS(D) ID:
Aqueous LCS Source:			LCS-79691

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.52	98.3						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893D
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9671.70	106.3						
Antimony	455.0	472.62	103.9						
Arsenic	455.0	490.15	107.7						
Barium	9100.0	9732.49	107.0						
Beryllium	227.0	241.44	106.4						
Cadmium	227.0	240.48	105.9						
Calcium	22700.0	23506.67	103.6						
Chromium	910.0	961.07	105.6						
Cobalt	2270.0	2379.93	104.8						
Copper	1130.0	1206.19	106.7						
Iron	4550.0	4968.61	109.2						
Lead	455.0	477.92	105.0						
Magnesium	22700.0	24168.20	106.5						
Manganese	2270.0	2417.15	106.5						
Nickel	2270.0	2379.49	104.8						
Potassium	22700.0	24115.14	106.2						
Selenium	455.0	475.45	104.5						
Silver	1130.0	1242.78	110.0						
Sodium	22700.0	24378.92	107.4						
Thallium	455.0	442.44	97.2						
Vanadium	2270.0	2382.29	104.9						
Zinc	2270.0	2380.73	104.9						

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1893D
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79581	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.04	87.8						

Last Page of Data Report

Report Date:
28-Oct-14 14:52



- ☒ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

AECOM Technical Services, Inc.
40 British American Blvd.
Latham, NY 12110

Work Order: N1895
Project : Tuxedo Waste Disposal
Project #:

Attn: Mark Howard

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
N1895-01	USSW 100814	Aqueous	08-Oct-14 11:35	09-Oct-14 10:25
N1895-02	USSED 100814	Soil	08-Oct-14 11:40	09-Oct-14 10:25
N1895-03	DSSW 100814	Aqueous	08-Oct-14 12:45	09-Oct-14 10:25
N1895-04	DSSW 100814	Soil	08-Oct-14 12:50	09-Oct-14 10:25
N1895-05	MW-4 100814	Aqueous	08-Oct-14 16:13	09-Oct-14 10:25
N1895-06	TRIP BLANK	Aqueous	08-Oct-14 00:00	09-Oct-14 10:25

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the sample(s) as received. This report may not be reproduced, except in full, without written approval from Spectrum Analytical.

All applicable NELAP or USEPA CLP requirements have been met.

Spectrum Analytical (Rhode Island) is accredited under the National Environmental Laboratory Approval Program (NELAP) and DoD Environmental Laboratory Accreditation Program (ELAP), holds Organic and Inorganic contracts under the USEPA CLP Program and is certified under several states. The current list of our laboratory approvals and certifications is available on the Certifications page on our web site at www.spectrum-analytical.com.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Department of Defense	N/A
Connecticut	PH-0153
Delaware	N/A
Florida	E87664
Maine	2007037
Massachusetts	M-RI907
New Hampshire	2631
New Jersey	RI001
New York	11522
Rhode Island	LAI00301
USDA	P330-08-00023
USEPA - ISM	EP-W-09-039
USEPA - SOM	EP-W-11-033



Authorized by:

Yihai Ding
Laboratory Director

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Identification and Analytical Requirements Summary

Project Name : Tuxedo Waste Disposal

SDG : N1895

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		MSVOA Method #	MSSEMI Method #	GC* Method #	ME	Other
USSW 100814	N1895-01	SW8260_W	SW8270_W	SW8081_W	SW6010_W	
USSW 100814	N1895-01			SW8082_W	SW7470	
USSED 100814	N1895-02	SW8260_LOW_S	SW8270_S	SW8081_S	SW6010_S	SEE DATA
USSED 100814	N1895-02			SW8082_S	SW7471	
DSSW 100814	N1895-03	SW8260_W	SW8270_W	SW8081_W	SW6010_W	
DSSW 100814	N1895-03			SW8082_W	SW7470	
DSSSED 100814	N1895-04	SW8260_LOW_S	SW8270_S	SW8081_S	SW6010_S	SEE DATA
DSSSED 100814	N1895-04			SW8082_S	SW7471	
MW-4 100814	N1895-05				SW6010_W	
MW-4 100814	N1895-05				SW7470	
TRIP BLANK	N1895-06	SW8260_W				

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary MSVOA

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Date Collected	Date Received By Lab	Date Extracted	Date Analyzed
SW8260_LOW_S					
N1895-02A	SL	10/8/2014	10/9/2014	NA	10/10/2014
N1895-04A	SL	10/8/2014	10/9/2014	NA	10/10/2014
SW8260_W					
N1895-01A	AQ	10/8/2014	10/9/2014	NA	10/21/2014
N1895-03A	AQ	10/8/2014	10/9/2014	NA	10/21/2014
N1895-06A	AQ	10/8/2014	10/9/2014	NA	10/21/2014

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary MSSEMI

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Date Collected	Date Received By Lab	Date Extracted	Date Analyzed
SW8270_S					
N1895-02D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
N1895-04D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
SW8270_W					
N1895-01D	AQ	10/8/2014	10/9/2014	10/15/2014	10/20/2014
N1895-03D	AQ	10/8/2014	10/9/2014	10/15/2014	10/20/2014

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary GC*

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Date Collected	Date Received By Lab	Date Extracted	Date Analyzed
SW8081_S					
N1895-02D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
N1895-04D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
SW8081_W					
N1895-01D	AQ	10/8/2014	10/9/2014	10/15/2014	10/17/2014
N1895-03D	AQ	10/8/2014	10/9/2014	10/15/2014	10/17/2014
SW8082_S					
N1895-02D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
N1895-04D	SL	10/8/2014	10/9/2014	10/18/2014	10/20/2014
SW8082_W					
N1895-01D	AQ	10/8/2014	10/9/2014	10/15/2014	10/17/2014
N1895-03D	AQ	10/8/2014	10/9/2014	10/15/2014	10/17/2014

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary MSVOA

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Low/Medium Level	Dil/Conc Factor
SW8260_LOW_S					
N1895-02A	SL	SW8260_LOW_S	NA	LOW	1
N1895-04A	SL	SW8260_LOW_S	NA	LOW	1
SW8260_W					
N1895-01A	AQ	SW8260_W	NA	LOW	1
N1895-03A	AQ	SW8260_W	NA	LOW	1
N1895-06A	AQ	SW8260_W	NA	LOW	1

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary MSSEMI

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
SW8270_S					
N1895-02D	SL	SW8270_S	3550B	NA	1
N1895-04D	SL	SW8270_S	3550B	NA	1
SW8270_W					
N1895-01D	AQ	SW8270_W	3510C	NA	1
N1895-03D	AQ	SW8270_W	3510C	NA	1

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary GC*

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
SW8081_S					
N1895-02D	SL	SW8081_S	3550B	Sulfur	1
N1895-04D	SL	SW8081_S	3550B	Sulfur	1
SW8081_W					
N1895-01D	AQ	SW8081_W	3510C	Sulfur	1
N1895-03D	AQ	SW8081_W	3510C	Sulfur	1
SW8082_S					
N1895-02D	SL	SW8082_S	3550B	Acid/Sulfur	1
N1895-04D	SL	SW8082_S	3550B	Acid/Sulfur	1
SW8082_W					
N1895-01D	AQ	SW8082_W	3510C	Acid/Sulfur	1
N1895-03D	AQ	SW8082_W	3510C	Acid/Sulfur	1

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary ME

Project Name : Tuxedo Waste Disposal

SDG : N1895

Laboratory Sample ID	Matrix	Metals Requested	Date Received By Lab	Date Analyzed
SW6010_S				
N1895-02C	SL	SW6010_S	10/9/2014	10/20/2014
N1895-04C	SL	SW6010_S	10/9/2014	10/20/2014
SW6010_W				
N1895-01B	AQ	SW6010_W	10/9/2014	10/18/2014
N1895-03B	AQ	SW6010_W	10/9/2014	10/18/2014
N1895-05A	AQ	SW6010_W	10/9/2014	10/18/2014
SW7470				
N1895-01B	AQ	SW7470	10/9/2014	10/24/2014
N1895-03B	AQ	SW7470	10/9/2014	10/24/2014
N1895-05A	AQ	SW7470	10/9/2014	10/22/2014
SW7471				
N1895-02C	SL	SW7471	10/9/2014	10/21/2014
N1895-04C	SL	SW7471	10/9/2014	10/21/2014

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1895

Client ID: AECOM_LATHAM

Project: Tuxedo Waste Disposal

WO Name: Tuxedo Waste Disposal

Location: AECOM_TUXEDO,

Comments: N/A

Case:

SDG:

HC Due: 10/21/14

Fax Due:

☐

Fax Report:

Report Level: ASP-A

Special Program:

EDD:

PO: 60323116.3

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1895-01A	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW8260_W	/					VOA
N1895-01B	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1895-01B	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1895-01C	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW6010_W	/ Dissolved, TAL		Y	Y	Y	M2
N1895-01C	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW7470	/ Dissolved, TAL		Y	Y		M2
N1895-01D	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW8081_W	/					O2
N1895-01D	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW8082_W	/					O2
N1895-01D	USSW 100814	10/08/2014 11:35	10/09/2014	Aqueous	SW8270_W	/					O2
N1895-02A	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW8260_LOW_S	/					VOA
N1895-02B	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW8260_MED_S	/		Y			VOA
N1895-02C	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW6010_S	/ TAL				Y	O2
N1895-02C	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW7471	/ TAL					O2
N1895-02D	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	PMoist	/					O2
N1895-02D	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW8081_S	/					O2
N1895-02D	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW8082_S	/					O2
N1895-02D	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	SW8270_S	/					O2
N1895-02E	USSED 100814	10/08/2014 11:40	10/09/2014	Soil	LK_TOC_S	/ SPECTRUM--					SUB
N1895-03A	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW8260_W	/					VOA
N1895-03B	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1895-03B	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1895-03C	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW6010_W	/ Dissolved, TAL		Y	Y	Y	M2

HT = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1895

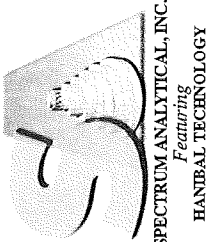
Client ID: AECOM_LATHAM
Project: Tuxedo Waste Disposal
WO Name: Tuxedo Waste Disposal
Location: AECOM_TUXEDO,
Comments: N/A
Case: HC Due: 10/21/14
SDG: Fax Due: Special Program: Report Level: ASP-A
PO: 60323116.3
Fax Report: ☐ EDD:

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1895-03C	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW7470	/ Dissolved, TAL	Y	Y	Y		M2
N1895-03D	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW8081_W	/					O2
N1895-03D	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW8082_W	/					O2
N1895-03D	DSSW 100814	10/08/2014 12:45	10/09/2014	Aqueous	SW8270_W	/					O2
N1895-04A	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW8260_LOW_S	/					VOA
N1895-04B	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW8260_MED_S	/		Y			VOA
N1895-04C	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW6010_S	/ TAL				Y	O2
N1895-04C	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW7471	/ TAL					O2
N1895-04D	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	PMoist	/					O2
N1895-04D	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW8081_S	/					O2
N1895-04D	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW8082_S	/					O2
N1895-04D	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	SW8270_S	/					O2
N1895-04E	DSSED 100814	10/08/2014 12:50	10/09/2014	Soil	LK_TOC_S	/ SPECTRUM--					SUB
N1895-05A	MW-4 100814	10/08/2014 16:13	10/09/2014	Aqueous	SW6010_W	/ TAL				Y	M2
N1895-05A	MW-4 100814	10/08/2014 16:13	10/09/2014	Aqueous	SW7470	/ TAL					M2
N1895-06A	TRIP BLANK	10/08/2014 00:00	10/09/2014	Aqueous	SW8260_W	/					VOA

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Sample Transmittal Documentation



Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive
Agawam, MA 01001
(413) 789-9018

☐ 8405 Benjamin Road, Ste A
Tampa, FL 33634
(813) 888-9507

☐ 646 Camp Avenue
N Kingstown, RI 02852
(401) 732-3400

Special Handling:

TAT- Ind icate Date Needed: STD
· All TATs subject to laboratory approval.
· Min. 24-hour notification needed for rushes.
· Samples disposed of after 60 days unless otherwise instructed.

Report To: Mark HowardAECOM40 B. 4th Ave. 3LVDWatson, NYTelephone #: (518) 951-2200Project Mgr. Mark HowardInvoice To: AECOMP.O. No.: RQN: Project No.: 60323116Site Name: Tuxedo Waste DisposalLocation: Tuxedo State: NYSampler(s): Russ M, Chris F

1=Na₂S₂O₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=Ascorbic Acid 7=CH₃OH
8=NaHSO₄ 9=Deionized Water 10=H₃PO₄ 11= 12=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

List preservative code below:

QA/QC Reporting Notes:

QA/QC Reporting Level

☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☒ Other ASP "A"

State-specific reporting standards:

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix
01	USSW 100814	10/8/14	11:55	G	SW
02	USSW 100814	10/8/14	11:40	G	SO
03	DSSW 100814	10/8/14	12:45	G	SW
04	DSSW 100814	10/8/14	12:50	G	SO
05	MN-4100814	10/8/14	16:13	G	GW
06	Trip Blank	10/8/14			
07	Trip Blank	10/8/14			
08	Trip Blank	10/8/14			
09	Trip Blank	10/8/14			
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97	Trip Blank	10/8/14			
98	Trip Blank	10/8/14			
99	Trip Blank	10/8/14			
100	Trip Blank	10/8/14			

Matrix

Type

Time

Date

Sample Id:

Lab Id:

N1895

10/8/14

11:55

G

SW

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Received By: <u>JP</u>		Page 01 of 00	
Reviewed By: <u>KP</u>		Log-in Date 10/09/2014	
Work Order: N1895		Client Name: AECOM Technical Services, Inc.	
Project Name/Event: Tuxedo Waste Disposal			
Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.			
		Preservation (pH)	
	Lab Sample ID	HNO3	H2SO4
		HCl	NaOH
		H3PO4	VOA Matrix
		Soil HeadSpace or Air Bubble > or equal to 1/4"	
1. Custody Seal(s)	Present / Absent	N1895-01	<2
	Intact / Broken	N1895-02	
2. Custody Seal Nos.	N/A	N1895-03	<2
		N1895-04	
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent	N1895-05	<2
		N1895-06	
4. Airbill	AirBill / Sticker		
	Present / Absent		
5. Airbill No.	FedEx 8059 4123 7939		
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	3.7 °C		
10. Does information on TR/COCs and sample tags agree?	Yes / No		
11. Date Received at Laboratory	10/09/2014		
12. Time Received	10:25		
Sample Transfer			
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO		
Area #	Area #		
By	By		
On	On		
IR Temp Gun ID: MT-74		VOA Matrix Key:	
Coolant Condition: ICE		US = Unpreserved Soil A = Air	
Preservative Name/Lot No:		UA = Unpreserved Aqueous H = HCl	
		M = MeOH E = Encore	
		N = NaHSO4 F = Freeze	
		See Sample Condition Notification/Corrective Action Form Yes / No	
		Rad OK Yes / No	



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

*** Volatiles ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1895

SW846 8260C, VOC by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code:
SW846 8260C

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW5030B

Soil Samples were prepared following procedures in laboratory test code: SW5035

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: V1
Instrument Type: GCMS-VOA
Description: HP5890 II / HP5972
Manufacturer: Hewlett-Packard
Model: 5890 / 5972
GC Column used: 30 m X 0.25 mm ID [1.40 um thickness] DB-624
capillary column.

Instrument Code: V10
Instrument Type: GCMS-VOA
Description: HP7890A
Manufacturer: Agilent
Model: 7890A / 5975C
GC Column used: 30 m X 0.25 mm ID [1.40 um thickness] DB-624
capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCS-79463 in batch 79463, recovery is below criteria for 1,4-Dioxane at 63% with criteria of (70-130).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting
- M2 peak co-elution
- M3 rising or falling baseline
- M4 retention time shift
- M5 miscellaneous - under this category, the justification is explained
- M6 software did not integrate peak
- M7 partial peak integration

Manual integration was performed on the following:

VSTD00110Q Iodomethane due to M7

VSTD00510Q Iodomethane due to M7

VSTD0051A Acetonitrile due to M1

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

A handwritten signature in black ink, appearing to be 'J. H. P.', is positioned above the signature line.

Signed: _____

Date: _____ 10/22/2014 _____



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL** Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE** Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA** Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX** Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS** Matrix Spike.
- MSD** Matrix Spike Duplicate
- DUP** Duplicate analysis
- SD** Serial Dilution
- PS** Post-digestion or Post-distillation spike. For metals or inorganic analyses

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79592
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7663.D
Level: (TRACE/LOW/MED) LOW Date Received: _____
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	44	
74-87-3	Chloromethane	51	
75-01-4	Vinyl chloride	50	
74-83-9	Bromomethane	56	
75-00-3	Chloroethane	47	
75-69-4	Trichlorofluoromethane	46	
75-35-4	1,1-Dichloroethene	47	
67-64-1	Acetone	54	
74-88-4	Iodomethane	58	
75-15-0	Carbon disulfide	47	
75-09-2	Methylene chloride	48	
156-60-5	trans-1,2-Dichloroethene	47	
1634-04-4	Methyl tert-butyl ether	49	
75-34-3	1,1-Dichloroethane	49	
108-05-4	Vinyl acetate	51	
78-93-3	2-Butanone	48	
156-59-2	cis-1,2-Dichloroethene	49	
594-20-7	2,2-Dichloropropane	46	
74-97-5	Bromochloromethane	50	
67-66-3	Chloroform	48	
71-55-6	1,1,1-Trichloroethane	48	
563-58-6	1,1-Dichloropropene	51	
56-23-5	Carbon tetrachloride	48	
107-06-2	1,2-Dichloroethane	51	
71-43-2	Benzene	49	
79-01-6	Trichloroethene	48	
78-87-5	1,2-Dichloropropane	49	
74-95-3	Dibromomethane	47	
75-27-4	Bromodichloromethane	49	
10061-01-5	cis-1,3-Dichloropropene	53	
108-10-1	4-Methyl-2-pentanone	50	
108-88-3	Toluene	49	
10061-02-6	trans-1,3-Dichloropropene	52	
79-00-5	1,1,2-Trichloroethane	48	
142-28-9	1,3-Dichloropropane	48	

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
LCS-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79592

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7663.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
127-18-4	Tetrachloroethene	48	
591-78-6	2-Hexanone	51	
124-48-1	Dibromochloromethane	51	
106-93-4	1,2-Dibromoethane	50	
108-90-7	Chlorobenzene	49	
630-20-6	1,1,1,2-Tetrachloroethane	49	
100-41-4	Ethylbenzene	52	
179601-23-1	m,p-Xylene	100	
95-47-6	o-Xylene	51	
1330-20-7	Xylene (Total)	150	
100-42-5	Styrene	52	
75-25-2	Bromoform	52	
98-82-8	Isopropylbenzene	52	
79-34-5	1,1,2,2-Tetrachloroethane	46	
108-86-1	Bromobenzene	49	
96-18-4	1,2,3-Trichloropropane	51	
103-65-1	n-Propylbenzene	50	
95-49-8	2-Chlorotoluene	49	
108-67-8	1,3,5-Trimethylbenzene	51	
106-43-4	4-Chlorotoluene	49	
98-06-6	tert-Butylbenzene	53	
95-63-6	1,2,4-Trimethylbenzene	51	
135-98-8	sec-Butylbenzene	51	
99-87-6	4-Isopropyltoluene	51	
541-73-1	1,3-Dichlorobenzene	48	
106-46-7	1,4-Dichlorobenzene	48	
104-51-8	n-Butylbenzene	52	
95-50-1	1,2-Dichlorobenzene	50	
96-12-8	1,2-Dibromo-3-chloropropane	50	
120-82-1	1,2,4-Trichlorobenzene	48	
87-68-3	Hexachlorobutadiene	45	
87-61-6	1,2,3-Trichlorobenzene	49	
91-20-3	Naphthalene	44	

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79592

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7664.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	45	
74-87-3	Chloromethane	51	
75-01-4	Vinyl chloride	52	
74-83-9	Bromomethane	58	
75-00-3	Chloroethane	48	
75-69-4	Trichlorofluoromethane	47	
75-35-4	1,1-Dichloroethene	49	
67-64-1	Acetone	50	
74-88-4	Iodomethane	43	
75-15-0	Carbon disulfide	50	
75-09-2	Methylene chloride	49	
156-60-5	trans-1,2-Dichloroethene	47	
1634-04-4	Methyl tert-butyl ether	50	
75-34-3	1,1-Dichloroethane	51	
108-05-4	Vinyl acetate	52	
78-93-3	2-Butanone	53	
156-59-2	cis-1,2-Dichloroethene	51	
594-20-7	2,2-Dichloropropane	47	
74-97-5	Bromochloromethane	53	
67-66-3	Chloroform	49	
71-55-6	1,1,1-Trichloroethane	50	
563-58-6	1,1-Dichloropropene	50	
56-23-5	Carbon tetrachloride	50	
107-06-2	1,2-Dichloroethane	53	
71-43-2	Benzene	50	
79-01-6	Trichloroethene	50	
78-87-5	1,2-Dichloropropane	51	
74-95-3	Dibromomethane	49	
75-27-4	Bromodichloromethane	50	
10061-01-5	cis-1,3-Dichloropropene	54	
108-10-1	4-Methyl-2-pentanone	51	
108-88-3	Toluene	50	
10061-02-6	trans-1,3-Dichloropropene	53	
79-00-5	1,1,2-Trichloroethane	49	
142-28-9	1,3-Dichloropropane	50	

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79592

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7664.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
127-18-4	Tetrachloroethene	50	
591-78-6	2-Hexanone	55	
124-48-1	Dibromochloromethane	51	
106-93-4	1,2-Dibromoethane	51	
108-90-7	Chlorobenzene	49	
630-20-6	1,1,1,2-Tetrachloroethane	50	
100-41-4	Ethylbenzene	53	
179601-23-1	m,p-Xylene	100	
95-47-6	o-Xylene	52	
1330-20-7	Xylene (Total)	160	
100-42-5	Styrene	54	
75-25-2	Bromoform	53	
98-82-8	Isopropylbenzene	54	
79-34-5	1,1,2,2-Tetrachloroethane	45	
108-86-1	Bromobenzene	49	
96-18-4	1,2,3-Trichloropropane	46	
103-65-1	n-Propylbenzene	51	
95-49-8	2-Chlorotoluene	50	
108-67-8	1,3,5-Trimethylbenzene	51	
106-43-4	4-Chlorotoluene	51	
98-06-6	tert-Butylbenzene	48	
95-63-6	1,2,4-Trimethylbenzene	52	
135-98-8	sec-Butylbenzene	50	
99-87-6	4-Isopropyltoluene	52	
541-73-1	1,3-Dichlorobenzene	50	
106-46-7	1,4-Dichlorobenzene	48	
104-51-8	n-Butylbenzene	53	
95-50-1	1,2-Dichlorobenzene	50	
96-12-8	1,2-Dibromo-3-chloropropane	49	
120-82-1	1,2,4-Trichlorobenzene	49	
87-68-3	Hexachlorobutadiene	46	
87-61-6	1,2,3-Trichlorobenzene	48	
91-20-3	Naphthalene	43	

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79592
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7666.D
Level: (TRACE/LOW/MED) LOW Date Received: _____
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
74-88-4	Iodomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
1634-04-4	Methyl tert-butyl ether	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
74-95-3	Dibromomethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79592

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7666.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23-1	m,p-Xylene	1.0	U
95-47-6	o-Xylene	1.0	U
1330-20-7	Xylene (Total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
108-86-1	Bromobenzene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U
91-20-3	Naphthalene	1.0	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01A
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7668.D
Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
67-64-1	Acetone	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
108-05-4	Vinyl acetate	5.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
71-43-2	Benzene	5.0	U
79-01-6	Trichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
74-95-3	Dibromomethane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7668.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
100-41-4	Ethylbenzene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
95-47-6	o-Xylene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	5.0	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03A
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7669.D
Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
67-64-1	Acetone	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
108-05-4	Vinyl acetate	5.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
71-43-2	Benzene	5.0	U
79-01-6	Trichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
74-95-3	Dibromomethane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03A
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7669.D
Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
100-41-4	Ethylbenzene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
95-47-6	o-Xylene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	5.0	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-06A
Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7667.D
Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014
% Moisture: not dec. Date Analyzed: 10/21/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
67-64-1	Acetone	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
108-05-4	Vinyl acetate	5.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
71-43-2	Benzene	5.0	U
79-01-6	Trichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
74-95-3	Dibromomethane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

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Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-06A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D7667.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. Date Analyzed: 10/21/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
100-41-4	Ethylbenzene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
95-47-6	o-Xylene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	5.0	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
LCS-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79463
Sample wt/vol: 5.00 (g/mL) G Lab File ID: V1N1673.D
Level: (TRACE/LOW/MED) LOW Date Received: _____
% Moisture: not dec. 0.0 Date Analyzed: 10/10/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	32	
74-87-3	Chloromethane	51	
75-01-4	Vinyl chloride	44	
74-83-9	Bromomethane	50	
75-00-3	Chloroethane	48	
75-69-4	Trichlorofluoromethane	54	
75-35-4	1,1-Dichloroethene	51	
67-64-1	Acetone	47	
74-88-4	Iodomethane	48	
75-15-0	Carbon disulfide	51	
75-09-2	Methylene chloride	51	
156-60-5	trans-1,2-Dichloroethene	51	
1634-04-4	Methyl tert-butyl ether	49	
75-34-3	1,1-Dichloroethane	51	
108-05-4	Vinyl acetate	46	
78-93-3	2-Butanone	53	
156-59-2	cis-1,2-Dichloroethene	52	
594-20-7	2,2-Dichloropropane	51	
74-97-5	Bromochloromethane	48	
67-66-3	Chloroform	54	
71-55-6	1,1,1-Trichloroethane	55	
563-58-6	1,1-Dichloropropene	50	
56-23-5	Carbon tetrachloride	55	
107-06-2	1,2-Dichloroethane	52	
71-43-2	Benzene	52	
79-01-6	Trichloroethene	48	
78-87-5	1,2-Dichloropropane	50	
74-95-3	Dibromomethane	53	
75-27-4	Bromodichloromethane	54	
10061-01-5	cis-1,3-Dichloropropene	51	
108-10-1	4-Methyl-2-pentanone	41	
108-88-3	Toluene	52	
10061-02-6	trans-1,3-Dichloropropene	50	
79-00-5	1,1,2-Trichloroethane	51	
142-28-9	1,3-Dichloropropane	53	

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
LCS-79463

Lab Name: <u>SPECTRUM ANALYTICAL, INC.</u>	Contract: _____
Lab Code: <u>MITKEM</u> Case No.: <u>N1895</u>	Mod. Ref No.: _____ SDG No.: <u>SN1895</u>
Matrix: (SOIL/SED/WATER) <u>SOIL</u>	Lab Sample ID: <u>LCS-79463</u>
Sample wt/vol: <u>5.00</u> (g/mL) <u>G</u>	Lab File ID: <u>V1N1673.D</u>
Level: (TRACE/LOW/MED) <u>LOW</u>	Date Received: _____
% Moisture: not dec. <u>0.0</u>	Date Analyzed: <u>10/10/2014</u>
GC Column: <u>DB-624</u> ID: <u>0.25</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume: _____ (uL)	Soil Aliquot Volume: _____ (uL)
Purge Volume: <u>10.0</u> (mL)	

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
127-18-4	Tetrachloroethene	46	
591-78-6	2-Hexanone	42	
124-48-1	Dibromochloromethane	52	
106-93-4	1,2-Dibromoethane	50	
108-90-7	Chlorobenzene	51	
630-20-6	1,1,1,2-Tetrachloroethane	51	
100-41-4	Ethylbenzene	51	
179601-23-1	m,p-Xylene	100	
95-47-6	o-Xylene	51	
1330-20-7	Xylene (Total)	150	
100-42-5	Styrene	49	
75-25-2	Bromoform	45	
98-82-8	Isopropylbenzene	50	
79-34-5	1,1,2,2-Tetrachloroethane	52	
108-86-1	Bromobenzene	48	
96-18-4	1,2,3-Trichloropropane	49	
103-65-1	n-Propylbenzene	50	
95-49-8	2-Chlorotoluene	50	
108-67-8	1,3,5-Trimethylbenzene	52	
106-43-4	4-Chlorotoluene	49	
98-06-6	tert-Butylbenzene	51	
95-63-6	1,2,4-Trimethylbenzene	50	
135-98-8	sec-Butylbenzene	51	
99-87-6	4-Isopropyltoluene	51	
541-73-1	1,3-Dichlorobenzene	48	
106-46-7	1,4-Dichlorobenzene	48	
104-51-8	n-Butylbenzene	53	
95-50-1	1,2-Dichlorobenzene	48	
96-12-8	1,2-Dibromo-3-chloropropane	61	
120-82-1	1,2,4-Trichlorobenzene	49	
87-68-3	Hexachlorobutadiene	51	
87-61-6	1,2,3-Trichlorobenzene	51	
91-20-3	Naphthalene	48	

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79463
Sample wt/vol: 5.00 (g/mL) G Lab File ID: V1N1674.D
Level: (TRACE/LOW/MED) LOW Date Received: _____
% Moisture: not dec. 0.0 Date Analyzed: 10/10/2014
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	42	
74-87-3	Chloromethane	52	
75-01-4	Vinyl chloride	45	
74-83-9	Bromomethane	52	
75-00-3	Chloroethane	50	
75-69-4	Trichlorofluoromethane	57	
75-35-4	1,1-Dichloroethene	53	
67-64-1	Acetone	54	
74-88-4	Iodomethane	54	
75-15-0	Carbon disulfide	53	
75-09-2	Methylene chloride	54	
156-60-5	trans-1,2-Dichloroethene	53	
1634-04-4	Methyl tert-butyl ether	51	
75-34-3	1,1-Dichloroethane	52	
108-05-4	Vinyl acetate	48	
78-93-3	2-Butanone	53	
156-59-2	cis-1,2-Dichloroethene	53	
594-20-7	2,2-Dichloropropane	53	
74-97-5	Bromochloromethane	50	
67-66-3	Chloroform	55	
71-55-6	1,1,1-Trichloroethane	56	
563-58-6	1,1-Dichloropropene	50	
56-23-5	Carbon tetrachloride	54	
107-06-2	1,2-Dichloroethane	55	
71-43-2	Benzene	53	
79-01-6	Trichloroethene	50	
78-87-5	1,2-Dichloropropane	52	
74-95-3	Dibromomethane	57	
75-27-4	Bromodichloromethane	55	
10061-01-5	cis-1,3-Dichloropropene	52	
108-10-1	4-Methyl-2-pentanone	44	
108-88-3	Toluene	53	
10061-02-6	trans-1,3-Dichloropropene	52	
79-00-5	1,1,2-Trichloroethane	53	
142-28-9	1,3-Dichloropropane	55	

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79463

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V1N1674.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. 0.0 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
127-18-4	Tetrachloroethene	45	
591-78-6	2-Hexanone	43	
124-48-1	Dibromochloromethane	53	
106-93-4	1,2-Dibromoethane	52	
108-90-7	Chlorobenzene	52	
630-20-6	1,1,1,2-Tetrachloroethane	53	
100-41-4	Ethylbenzene	50	
179601-23-1	m,p-Xylene	100	
95-47-6	o-Xylene	51	
1330-20-7	Xylene (Total)	150	
100-42-5	Styrene	52	
75-25-2	Bromoform	47	
98-82-8	Isopropylbenzene	52	
79-34-5	1,1,2,2-Tetrachloroethane	53	
108-86-1	Bromobenzene	49	
96-18-4	1,2,3-Trichloropropane	49	
103-65-1	n-Propylbenzene	52	
95-49-8	2-Chlorotoluene	51	
108-67-8	1,3,5-Trimethylbenzene	52	
106-43-4	4-Chlorotoluene	50	
98-06-6	tert-Butylbenzene	53	
95-63-6	1,2,4-Trimethylbenzene	52	
135-98-8	sec-Butylbenzene	52	
99-87-6	4-Isopropyltoluene	52	
541-73-1	1,3-Dichlorobenzene	49	
106-46-7	1,4-Dichlorobenzene	49	
104-51-8	n-Butylbenzene	55	
95-50-1	1,2-Dichlorobenzene	49	
96-12-8	1,2-Dibromo-3-chloropropane	57	
120-82-1	1,2,4-Trichlorobenzene	49	
87-68-3	Hexachlorobutadiene	52	
87-61-6	1,2,3-Trichlorobenzene	54	
91-20-3	Naphthalene	51	

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79463

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V1N1676.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. 0.0 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
67-64-1	Acetone	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
108-05-4	Vinyl acetate	5.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
71-43-2	Benzene	5.0	U
79-01-6	Trichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
74-95-3	Dibromomethane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79463

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V1N1676.D

Level: (TRACE/LOW/MED) LOW Date Received: _____

% Moisture: not dec. 0.0 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
100-41-4	Ethylbenzene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
95-47-6	o-Xylene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	5.0	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02A

Sample wt/vol: 9.20 (g/mL) G Lab File ID: V1N1679.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. 28 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	0.81	J
74-87-3	Chloromethane	3.8	U
75-01-4	Vinyl chloride	3.8	U
74-83-9	Bromomethane	3.8	U
75-00-3	Chloroethane	3.8	U
75-69-4	Trichlorofluoromethane	3.8	U
75-35-4	1,1-Dichloroethene	3.8	U
67-64-1	Acetone	21	
74-88-4	Iodomethane	3.8	U
75-15-0	Carbon disulfide	3.8	U
75-09-2	Methylene chloride	3.8	U
156-60-5	trans-1,2-Dichloroethene	3.8	U
1634-04-4	Methyl tert-butyl ether	3.8	U
75-34-3	1,1-Dichloroethane	3.8	U
108-05-4	Vinyl acetate	3.8	U
78-93-3	2-Butanone	3.8	U
156-59-2	cis-1,2-Dichloroethene	3.8	U
594-20-7	2,2-Dichloropropane	3.8	U
74-97-5	Bromochloromethane	3.8	U
67-66-3	Chloroform	3.8	U
71-55-6	1,1,1-Trichloroethane	3.8	U
563-58-6	1,1-Dichloropropene	3.8	U
56-23-5	Carbon tetrachloride	3.8	U
107-06-2	1,2-Dichloroethane	3.8	U
71-43-2	Benzene	3.8	U
79-01-6	Trichloroethene	3.8	U
78-87-5	1,2-Dichloropropane	3.8	U
74-95-3	Dibromomethane	3.8	U
75-27-4	Bromodichloromethane	3.8	U
10061-01-5	cis-1,3-Dichloropropene	3.8	U
108-10-1	4-Methyl-2-pentanone	3.8	U
108-88-3	Toluene	3.8	U
10061-02-6	trans-1,3-Dichloropropene	3.8	U
79-00-5	1,1,2-Trichloroethane	3.8	U
142-28-9	1,3-Dichloropropane	3.8	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02A

Sample wt/vol: 9.20 (g/mL) G Lab File ID: V1N1679.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. 28 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
127-18-4	Tetrachloroethene	3.8	U
591-78-6	2-Hexanone	3.8	U
124-48-1	Dibromochloromethane	3.8	U
106-93-4	1,2-Dibromoethane	3.8	U
108-90-7	Chlorobenzene	3.8	U
630-20-6	1,1,1,2-Tetrachloroethane	3.8	U
100-41-4	Ethylbenzene	3.8	U
179601-23-1	m,p-Xylene	3.8	U
95-47-6	o-Xylene	3.8	U
1330-20-7	Xylene (Total)	3.8	U
100-42-5	Styrene	3.8	U
75-25-2	Bromoform	3.8	U
98-82-8	Isopropylbenzene	3.8	U
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U
108-86-1	Bromobenzene	3.8	U
96-18-4	1,2,3-Trichloropropane	3.8	U
103-65-1	n-Propylbenzene	3.8	U
95-49-8	2-Chlorotoluene	3.8	U
108-67-8	1,3,5-Trimethylbenzene	3.8	U
106-43-4	4-Chlorotoluene	3.8	U
98-06-6	tert-Butylbenzene	3.8	U
95-63-6	1,2,4-Trimethylbenzene	3.8	U
135-98-8	sec-Butylbenzene	3.8	U
99-87-6	4-Isopropyltoluene	3.8	U
541-73-1	1,3-Dichlorobenzene	3.8	U
106-46-7	1,4-Dichlorobenzene	3.8	U
104-51-8	n-Butylbenzene	3.8	U
95-50-1	1,2-Dichlorobenzene	3.8	U
96-12-8	1,2-Dibromo-3-chloropropane	3.8	U
120-82-1	1,2,4-Trichlorobenzene	3.8	U
87-68-3	Hexachlorobutadiene	3.8	U
87-61-6	1,2,3-Trichlorobenzene	3.8	U
91-20-3	Naphthalene	3.8	U

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSD 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04A

Sample wt/vol: 7.80 (g/mL) G Lab File ID: V1N1680.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. 48 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6.2	U
74-87-3	Chloromethane	6.2	U
75-01-4	Vinyl chloride	6.2	U
74-83-9	Bromomethane	6.2	U
75-00-3	Chloroethane	6.2	U
75-69-4	Trichlorofluoromethane	6.2	U
75-35-4	1,1-Dichloroethene	6.2	U
67-64-1	Acetone	27	
74-88-4	Iodomethane	6.2	U
75-15-0	Carbon disulfide	6.2	U
75-09-2	Methylene chloride	6.2	U
156-60-5	trans-1,2-Dichloroethene	6.2	U
1634-04-4	Methyl tert-butyl ether	6.2	U
75-34-3	1,1-Dichloroethane	6.2	U
108-05-4	Vinyl acetate	6.2	U
78-93-3	2-Butanone	6.2	U
156-59-2	cis-1,2-Dichloroethene	6.2	U
594-20-7	2,2-Dichloropropane	6.2	U
74-97-5	Bromochloromethane	6.2	U
67-66-3	Chloroform	6.2	U
71-55-6	1,1,1-Trichloroethane	6.2	U
563-58-6	1,1-Dichloropropene	6.2	U
56-23-5	Carbon tetrachloride	6.2	U
107-06-2	1,2-Dichloroethane	6.2	U
71-43-2	Benzene	6.2	U
79-01-6	Trichloroethene	6.2	U
78-87-5	1,2-Dichloropropane	6.2	U
74-95-3	Dibromomethane	6.2	U
75-27-4	Bromodichloromethane	6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U
108-10-1	4-Methyl-2-pentanone	6.2	U
108-88-3	Toluene	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	U
142-28-9	1,3-Dichloropropane	6.2	U

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSD 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04A

Sample wt/vol: 7.80 (g/mL) G Lab File ID: V1N1680.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/09/2014

% Moisture: not dec. 48 Date Analyzed: 10/10/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
127-18-4	Tetrachloroethene	6.2	U
591-78-6	2-Hexanone	6.2	U
124-48-1	Dibromochloromethane	6.2	U
106-93-4	1,2-Dibromoethane	6.2	U
108-90-7	Chlorobenzene	6.2	U
630-20-6	1,1,1,2-Tetrachloroethane	6.2	U
100-41-4	Ethylbenzene	6.2	U
179601-23-1	m,p-Xylene	6.2	U
95-47-6	o-Xylene	6.2	U
1330-20-7	Xylene (Total)	6.2	U
100-42-5	Styrene	6.2	U
75-25-2	Bromoform	6.2	U
98-82-8	Isopropylbenzene	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U
108-86-1	Bromobenzene	6.2	U
96-18-4	1,2,3-Trichloropropane	6.2	U
103-65-1	n-Propylbenzene	6.2	U
95-49-8	2-Chlorotoluene	6.2	U
108-67-8	1,3,5-Trimethylbenzene	6.2	U
106-43-4	4-Chlorotoluene	6.2	U
98-06-6	tert-Butylbenzene	6.2	U
95-63-6	1,2,4-Trimethylbenzene	6.2	U
135-98-8	sec-Butylbenzene	6.2	U
99-87-6	4-Isopropyltoluene	6.2	U
541-73-1	1,3-Dichlorobenzene	6.2	U
106-46-7	1,4-Dichlorobenzene	6.2	U
104-51-8	n-Butylbenzene	6.2	U
95-50-1	1,2-Dichlorobenzene	6.2	U
96-12-8	1,2-Dibromo-3-chloropropane	6.2	U
120-82-1	1,2,4-Trichlorobenzene	6.2	U
87-68-3	Hexachlorobutadiene	6.2	U
87-61-6	1,2,3-Trichlorobenzene	6.2	U
91-20-3	Naphthalene	6.2	U

WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Level: (TRACE or LOW) LOW

	EPA SAMPLE NO.	VDMC1 (DBFM) #	VDMC2 (DCE) #	VDMC3 (TOL) #	VDMC4 (BFB) #				TOT OUT
01	LCS-79592	99	96	99	99				0
02	LCSD-79592	99	97	101	101				0
03	MB-79592	99	100	99	94				0
04	TRIP BLANK	101	103	98	99				0
05	USSW 100814	104	104	98	95				0
06	DSSW 100814	104	100	98	96				0

VDMC1 (DBFM) Dibromofluoromethane
VDMC2 (DCE) = 1,2-Dichloroethane-d4
VDMC3 (TOL) = Toluene-d8
VDMC4 (BFB) = Bromofluorobenzene

QC LIMITS
(85-115)
(70-120)
(85-120)
(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

som14.10.02.1616

SOIL VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC.

Contract:

Lab Code: MITKEM

Case No.: N1895

Mod. Ref No.:

SDG No.: SN1895

Level: (LOW/MED) LOW

	EPA SAMPLE NO.	VDMC1 (DBFM) #	VDMC2 (DCE) #	VDMC3 (TOL) #	VDMC4 (BFB) #				TOT OUT
01	LCS-79463	102	106	107	106				0
02	LCSD-79463	101	100	104	105				0
03	MB-79463	102	94	109	98				0
04	USSED 100814	110	95	113	95				0
05	DSSSED 100814	106	99	110	96				0

VDMC1 (DBFM) Dibromofluoromethane
VDMC2 (DCE) = 1,2-Dichloroethane-d4
VDMC3 (TOL) = Toluene-d8
VDMC4 (BFB) = Bromofluorobenzene

QC LIMITS

(76-128)
(88-110)
(85-115)
(85-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

som14.10.02.1616

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79592 LCS Lot No.: _____
Date Extracted: 10/20/2014 Date Analyzed (1): 10/21/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	44.0179	88		30 - 155
Chloromethane	50.0000	0.0000	50.9322	102		40 - 125
Vinyl chloride	50.0000	0.0000	49.7367	99		50 - 145
Bromomethane	50.0000	0.0000	55.6575	111		30 - 145
Chloroethane	50.0000	0.0000	46.8533	94		60 - 135
Trichlorofluoromethane	50.0000	0.0000	45.5082	91		60 - 145
1,1-Dichloroethene	50.0000	0.0000	47.3596	95		70 - 130
Acetone	50.0000	0.0000	54.0315	108		40 - 140
Iodomethane	50.0000	0.0000	57.6159	115		72 - 121
Carbon disulfide	50.0000	0.0000	47.0322	94		35 - 160
Methylene chloride	50.0000	0.0000	47.7812	96		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	47.3654	95		60 - 140
Methyl tert-butyl ether	50.0000	0.0000	49.1643	98		65 - 125
1,1-Dichloroethane	50.0000	0.0000	48.5210	97		70 - 135
Vinyl acetate	50.0000	0.0000	50.7468	101		38 - 163
2-Butanone	50.0000	0.0000	47.5722	95		30 - 150
cis-1,2-Dichloroethene	50.0000	0.0000	48.8087	98		70 - 125
2,2-Dichloropropane	50.0000	0.0000	46.0767	92		70 - 135
Bromochloromethane	50.0000	0.0000	50.2550	101		65 - 130
Chloroform	50.0000	0.0000	47.9782	96		65 - 135
1,1,1-Trichloroethane	50.0000	0.0000	47.6473	95		65 - 130
1,1-Dichloropropene	50.0000	0.0000	50.5738	101		75 - 130
Carbon tetrachloride	50.0000	0.0000	48.3702	97		65 - 140
1,2-Dichloroethane	50.0000	0.0000	51.2333	102		70 - 130
Benzene	50.0000	0.0000	48.8066	98		80 - 120
Trichloroethene	50.0000	0.0000	47.7926	96		70 - 125
1,2-Dichloropropane	50.0000	0.0000	48.6245	97		75 - 125
Dibromomethane	50.0000	0.0000	47.0961	94		75 - 125
Bromodichloromethane	50.0000	0.0000	48.9282	98		75 - 120
cis-1,3-Dichloropropene	50.0000	0.0000	52.9166	106		70 - 130
4-Methyl-2-pentanone	50.0000	0.0000	49.9623	100		60 - 135
Toluene	50.0000	0.0000	48.7558	98		75 - 120
trans-1,3-Dichloropropene	50.0000	0.0000	51.7685	104		55 - 140
1,1,2-Trichloroethane	50.0000	0.0000	47.8385	96		75 - 125
1,3-Dichloropropane	50.0000	0.0000	48.4384	97		75 - 125
Tetrachloroethene	50.0000	0.0000	48.1251	96		45 - 150
2-Hexanone	50.0000	0.0000	51.3376	103		55 - 130
Dibromochloromethane	50.0000	0.0000	50.7916	102		60 - 135
1,2-Dibromoethane	50.0000	0.0000	49.5405	99		80 - 120
Chlorobenzene	50.0000	0.0000	49.1474	98		80 - 120
1,1,1,2-Tetrachloroethane	50.0000	0.0000	49.0113	98		80 - 130
Ethylbenzene	50.0000	0.0000	51.7985	104		75 - 125
m,p-Xylene	100.0000	0.0000	100.7118	101		75 - 130
o-Xylene	50.0000	0.0000	50.6169	101		80 - 120

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79592 LCS Lot No.: _____
Date Extracted: 10/20/2014 Date Analyzed (1): 10/21/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Xylene (Total)	150.0000	0.0000	151.3287	101		81 - 121
Styrene	50.0000	0.0000	51.9661	104		65 - 135
Bromoform	50.0000	0.0000	52.2625	105		70 - 130
Isopropylbenzene	50.0000	0.0000	51.8554	104		75 - 125
1,1,2,2-Tetrachloroethane	50.0000	0.0000	45.6216	91		65 - 130
Bromobenzene	50.0000	0.0000	49.0507	98		75 - 125
1,2,3-Trichloropropane	50.0000	0.0000	50.7397	101		75 - 125
n-Propylbenzene	50.0000	0.0000	50.3789	101		70 - 130
2-Chlorotoluene	50.0000	0.0000	48.5550	97		75 - 125
1,3,5-Trimethylbenzene	50.0000	0.0000	50.6408	101		75 - 130
4-Chlorotoluene	50.0000	0.0000	49.0569	98		75 - 130
tert-Butylbenzene	50.0000	0.0000	52.8490	106		70 - 130
1,2,4-Trimethylbenzene	50.0000	0.0000	50.9542	102		75 - 130
sec-Butylbenzene	50.0000	0.0000	50.5724	101		70 - 125
4-Isopropyltoluene	50.0000	0.0000	51.3573	103		75 - 130
1,3-Dichlorobenzene	50.0000	0.0000	48.4958	97		75 - 125
1,4-Dichlorobenzene	50.0000	0.0000	48.3265	97		75 - 125
n-Butylbenzene	50.0000	0.0000	51.7858	104		70 - 135
1,2-Dichlorobenzene	50.0000	0.0000	50.1652	100		70 - 120
1,2-Dibromo-3-chloropropan	50.0000	0.0000	49.6235	99		50 - 130
1,2,4-Trichlorobenzene	50.0000	0.0000	47.6885	95		65 - 135
Hexachlorobutadiene	50.0000	0.0000	45.3289	91		50 - 140
1,2,3-Trichlorobenzene	50.0000	0.0000	48.7619	98		55 - 140
Naphthalene	50.0000	0.0000	43.7061	87		55 - 140

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 68 outside limits

COMMENTS: _____

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79592

Lab Name: SPECTRUM ANALYTICAL, INC.

Contract:

Lab Code: MITKEM Case No.: N1895

Mod. Ref No.:

SDG No.: SN1895

Lab Sample ID: LCSD-79592

LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Dichlorodifluoromethane	50.0000	44.6581	89		1		40	30 - 155
Chloromethane	50.0000	51.2065	102		0		40	40 - 125
Vinyl chloride	50.0000	51.7711	104		5		40	50 - 145
Bromomethane	50.0000	57.5894	115		4		40	30 - 145
Chloroethane	50.0000	47.6158	95		1		40	60 - 135
Trichlorofluoromethane	50.0000	46.8842	94		3		40	60 - 145
1,1-Dichloroethene	50.0000	49.3701	99		4		40	70 - 130
Acetone	50.0000	49.8178	100		8		40	40 - 140
Iodomethane	50.0000	42.9529	86		29		40	72 - 121
Carbon disulfide	50.0000	49.5934	99		5		40	35 - 160
Methylene chloride	50.0000	48.5682	97		1		40	55 - 140
trans-1,2-Dichloroethene	50.0000	47.4495	95		0		40	60 - 140
Methyl tert-butyl ether	50.0000	50.0398	100		2		40	65 - 125
1,1-Dichloroethane	50.0000	50.5848	101		4		40	70 - 135
Vinyl acetate	50.0000	51.9322	104		3		40	38 - 163
2-Butanone	50.0000	53.4023	107		12		40	30 - 150
cis-1,2-Dichloroethene	50.0000	50.7689	102		4		40	70 - 125
2,2-Dichloropropane	50.0000	47.4759	95		3		40	70 - 135
Bromochloromethane	50.0000	52.7171	105		4		40	65 - 130
Chloroform	50.0000	49.3325	99		3		40	65 - 135
1,1,1-Trichloroethane	50.0000	49.8394	100		5		40	65 - 130
1,1-Dichloropropene	50.0000	50.1451	100		1		40	75 - 130
Carbon tetrachloride	50.0000	49.5841	99		2		40	65 - 140
1,2-Dichloroethane	50.0000	52.9424	106		4		40	70 - 130
Benzene	50.0000	50.2951	101		3		40	80 - 120
Trichloroethene	50.0000	49.6510	99		3		40	70 - 125
1,2-Dichloropropane	50.0000	50.5586	101		4		40	75 - 125
Dibromomethane	50.0000	48.7632	98		4		40	75 - 125
Bromodichloromethane	50.0000	50.3101	101		3		40	75 - 120
cis-1,3-Dichloropropene	50.0000	53.9880	108		2		40	70 - 130
4-Methyl-2-pentanone	50.0000	50.8705	102		2		40	60 - 135
Toluene	50.0000	50.1588	100		2		40	75 - 120
trans-1,3-Dichloropropene	50.0000	53.3254	107		3		40	55 - 140
1,1,2-Trichloroethane	50.0000	49.4656	99		3		40	75 - 125
1,3-Dichloropropane	50.0000	49.8795	100		3		40	75 - 125
Tetrachloroethene	50.0000	49.5662	99		3		40	45 - 150
2-Hexanone	50.0000	54.5140	109		6		40	55 - 130
Dibromochloromethane	50.0000	51.2316	102		0		40	60 - 135
1,2-Dibromoethane	50.0000	50.9383	102		3		40	80 - 120
Chlorobenzene	50.0000	49.1431	98		0		40	80 - 120
1,1,1,2-Tetrachloroethane	50.0000	50.3944	101		3		40	80 - 130
Ethylbenzene	50.0000	53.4722	107		3		40	75 - 125
m,p-Xylene	100.0000	102.9379	103		2		40	75 - 130
o-Xylene	50.0000	52.0780	104		3		40	80 - 120
Xylene (Total)	150.0000	155.0159	103		2		40	81 - 121
Styrene	50.0000	53.5090	107		3		40	65 - 135

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79592 LCS Lot No.: _____

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Bromoform	50.0000	52.7020	105		0		40	70 - 130
Isopropylbenzene	50.0000	53.6569	107		3		40	75 - 125
1,1,2,2-Tetrachloroethane	50.0000	45.2450	90		1		40	65 - 130
Bromobenzene	50.0000	49.2932	99		1		40	75 - 125
1,2,3-Trichloropropane	50.0000	46.0701	92		9		40	75 - 125
n-Propylbenzene	50.0000	50.9649	102		1		40	70 - 130
2-Chlorotoluene	50.0000	49.7855	100		3		40	75 - 125
1,3,5-Trimethylbenzene	50.0000	50.9446	102		1		40	75 - 130
4-Chlorotoluene	50.0000	50.6034	101		3		40	75 - 130
tert-Butylbenzene	50.0000	47.9097	96		10		40	70 - 130
1,2,4-Trimethylbenzene	50.0000	51.5586	103		1		40	75 - 130
sec-Butylbenzene	50.0000	49.8330	100		1		40	70 - 125
4-Isopropyltoluene	50.0000	51.8740	104		1		40	75 - 130
1,3-Dichlorobenzene	50.0000	49.8750	100		3		40	75 - 125
1,4-Dichlorobenzene	50.0000	48.4260	97		0		40	75 - 125
n-Butylbenzene	50.0000	52.8091	106		2		40	70 - 135
1,2-Dichlorobenzene	50.0000	49.7780	100		0		40	70 - 120
1,2-Dibromo-3-chloropropan	50.0000	48.6833	97		2		40	50 - 130
1,2,4-Trichlorobenzene	50.0000	48.6666	97		2		40	65 - 135
Hexachlorobutadiene	50.0000	45.9296	92		1		40	50 - 140
1,2,3-Trichlorobenzene	50.0000	47.6866	95		3		40	55 - 140
Naphthalene	50.0000	43.3497	87		0		40	55 - 140

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 68 outside limits

Spike Recovery: 0 out of 68 outside limits

COMMENTS: _____

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79463 LCS Lot No.: _____
Date Extracted: 10/10/2014 Date Analyzed (1): 10/10/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	32.3655	65		35 - 135
Chloromethane	50.0000	0.0000	50.5390	101		50 - 130
Vinyl chloride	50.0000	0.0000	43.9143	88		60 - 125
Bromomethane	50.0000	0.0000	49.7990	100		30 - 160
Chloroethane	50.0000	0.0000	47.5112	95		40 - 155
Trichlorofluoromethane	50.0000	0.0000	54.1600	108		25 - 185
1,1-Dichloroethene	50.0000	0.0000	51.1517	102		65 - 135
Acetone	50.0000	0.0000	47.3219	95		20 - 160
Iodomethane	50.0000	0.0000	48.0250	96		70 - 126
Carbon disulfide	50.0000	0.0000	51.4763	103		45 - 160
Methylene chloride	50.0000	0.0000	51.3656	103		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	50.9577	102		65 - 135
Methyl tert-butyl ether	50.0000	0.0000	49.4161	99		75 - 126
1,1-Dichloroethane	50.0000	0.0000	50.9095	102		75 - 125
Vinyl acetate	50.0000	0.0000	46.2147	92		65 - 138
2-Butanone	50.0000	0.0000	53.0653	106		30 - 160
cis-1,2-Dichloroethene	50.0000	0.0000	51.7806	104		65 - 125
2,2-Dichloropropane	50.0000	0.0000	51.2317	102		65 - 135
Bromochloromethane	50.0000	0.0000	48.1587	96		70 - 125
Chloroform	50.0000	0.0000	54.1702	108		70 - 125
1,1,1-Trichloroethane	50.0000	0.0000	55.1988	110		70 - 135
1,1-Dichloropropene	50.0000	0.0000	50.2171	100		70 - 135
Carbon tetrachloride	50.0000	0.0000	55.0081	110		65 - 135
1,2-Dichloroethane	50.0000	0.0000	52.2685	105		70 - 135
Benzene	50.0000	0.0000	52.1648	104		75 - 125
Trichloroethene	50.0000	0.0000	48.2537	97		75 - 125
1,2-Dichloropropane	50.0000	0.0000	49.9868	100		70 - 120
Dibromomethane	50.0000	0.0000	53.0567	106		75 - 130
Bromodichloromethane	50.0000	0.0000	53.6067	107		70 - 130
cis-1,3-Dichloropropene	50.0000	0.0000	50.7289	101		70 - 125
4-Methyl-2-pentanone	50.0000	0.0000	41.2233	82		45 - 145
Toluene	50.0000	0.0000	52.0195	104		70 - 125
trans-1,3-Dichloropropene	50.0000	0.0000	49.5085	99		65 - 125
1,1,2-Trichloroethane	50.0000	0.0000	51.4578	103		60 - 125
1,3-Dichloropropane	50.0000	0.0000	52.8734	106		75 - 125
Tetrachloroethene	50.0000	0.0000	45.6232	91		65 - 140
2-Hexanone	50.0000	0.0000	42.0111	84		45 - 145
Dibromochloromethane	50.0000	0.0000	51.5599	103		65 - 130
1,2-Dibromoethane	50.0000	0.0000	50.1953	100		70 - 125
Chlorobenzene	50.0000	0.0000	50.7086	101		75 - 125
1,1,1,2-Tetrachloroethane	50.0000	0.0000	50.8255	102		75 - 125
Ethylbenzene	50.0000	0.0000	51.1563	102		75 - 125
m,p-Xylene	100.0000	0.0000	100.1722	100		80 - 125
o-Xylene	50.0000	0.0000	50.9220	102		75 - 125

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79463 LCS Lot No.: _____
Date Extracted: 10/10/2014 Date Analyzed (1): 10/10/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Xylene (Total)	150.0000	0.0000	151.0941	101		83 - 125
Styrene	50.0000	0.0000	49.2685	99		75 - 125
Bromoform	50.0000	0.0000	44.7269	89		55 - 135
Isopropylbenzene	50.0000	0.0000	50.4603	101		75 - 130
1,1,2,2-Tetrachloroethane	50.0000	0.0000	52.1421	104		55 - 130
Bromobenzene	50.0000	0.0000	47.6612	95		65 - 120
1,2,3-Trichloropropane	50.0000	0.0000	48.8834	98		65 - 130
n-Propylbenzene	50.0000	0.0000	49.8990	100		65 - 135
2-Chlorotoluene	50.0000	0.0000	50.3039	101		70 - 130
1,3,5-Trimethylbenzene	50.0000	0.0000	51.6699	103		65 - 135
4-Chlorotoluene	50.0000	0.0000	49.2324	98		75 - 125
tert-Butylbenzene	50.0000	0.0000	51.2278	102		65 - 130
1,2,4-Trimethylbenzene	50.0000	0.0000	50.2935	101		65 - 135
sec-Butylbenzene	50.0000	0.0000	51.0187	102		65 - 130
4-Isopropyltoluene	50.0000	0.0000	51.0219	102		75 - 135
1,3-Dichlorobenzene	50.0000	0.0000	48.0782	96		70 - 125
1,4-Dichlorobenzene	50.0000	0.0000	47.5186	95		70 - 125
n-Butylbenzene	50.0000	0.0000	53.0154	106		65 - 140
1,2-Dichlorobenzene	50.0000	0.0000	47.5636	95		75 - 120
1,2-Dibromo-3-chloropropan	50.0000	0.0000	60.5779	121		40 - 135
1,2,4-Trichlorobenzene	50.0000	0.0000	48.8227	98		65 - 130
Hexachlorobutadiene	50.0000	0.0000	50.6184	101		55 - 140
1,2,3-Trichlorobenzene	50.0000	0.0000	50.6073	101		60 - 135
Naphthalene	50.0000	0.0000	47.5356	95		40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 68 outside limits

COMMENTS: _____

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79463

Lab Name: SPECTRUM ANALYTICAL, INC.

Contract:

Lab Code: MITKEM Case No.: N1895

Mod. Ref No.:

SDG No.: SN1895

Lab Sample ID: LCSD-79463

LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Dichlorodifluoromethane	50.0000	42.3139	85		27		40	35 - 135
Chloromethane	50.0000	52.3835	105		4		40	50 - 130
Vinyl chloride	50.0000	45.1917	90		2		40	60 - 125
Bromomethane	50.0000	51.9633	104		4		40	30 - 160
Chloroethane	50.0000	49.7996	100		5		40	40 - 155
Trichlorofluoromethane	50.0000	57.4210	115		6		40	25 - 185
1,1-Dichloroethene	50.0000	52.8479	106		4		40	65 - 135
Acetone	50.0000	53.6106	107		12		40	20 - 160
Iodomethane	50.0000	54.3346	109		13		40	70 - 126
Carbon disulfide	50.0000	53.2946	107		4		40	45 - 160
Methylene chloride	50.0000	53.5639	107		4		40	55 - 140
trans-1,2-Dichloroethene	50.0000	52.5301	105		3		40	65 - 135
Methyl tert-butyl ether	50.0000	51.1343	102		3		40	75 - 126
1,1-Dichloroethane	50.0000	51.5063	103		1		40	75 - 125
Vinyl acetate	50.0000	48.2805	97		5		40	65 - 138
2-Butanone	50.0000	52.6772	105		1		40	30 - 160
cis-1,2-Dichloroethene	50.0000	53.4581	107		3		40	65 - 125
2,2-Dichloropropane	50.0000	53.1964	106		4		40	65 - 135
Bromochloromethane	50.0000	50.3209	101		5		40	70 - 125
Chloroform	50.0000	54.7028	109		1		40	70 - 125
1,1,1-Trichloroethane	50.0000	55.6291	111		1		40	70 - 135
1,1-Dichloropropene	50.0000	49.8210	100		0		40	70 - 135
Carbon tetrachloride	50.0000	54.4719	109		1		40	65 - 135
1,2-Dichloroethane	50.0000	54.7124	109		4		40	70 - 135
Benzene	50.0000	52.7738	106		2		40	75 - 125
Trichloroethene	50.0000	49.6609	99		2		40	75 - 125
1,2-Dichloropropane	50.0000	52.3525	105		5		40	70 - 120
Dibromomethane	50.0000	56.7459	113		6		40	75 - 130
Bromodichloromethane	50.0000	54.9666	110		3		40	70 - 130
cis-1,3-Dichloropropene	50.0000	52.2219	104		3		40	70 - 125
4-Methyl-2-pentanone	50.0000	43.5901	87		6		40	45 - 145
Toluene	50.0000	53.0754	106		2		40	70 - 125
trans-1,3-Dichloropropene	50.0000	52.2382	104		5		40	65 - 125
1,1,2-Trichloroethane	50.0000	53.4915	107		4		40	60 - 125
1,3-Dichloropropane	50.0000	54.7599	110		4		40	75 - 125
Tetrachloroethene	50.0000	45.3406	91		0		40	65 - 140
2-Hexanone	50.0000	42.9136	86		2		40	45 - 145
Dibromochloromethane	50.0000	52.9336	106		3		40	65 - 130
1,2-Dibromoethane	50.0000	52.4233	105		5		40	70 - 125
Chlorobenzene	50.0000	51.6992	103		2		40	75 - 125
1,1,1,2-Tetrachloroethane	50.0000	53.2231	106		4		40	75 - 125
Ethylbenzene	50.0000	50.3692	101		1		40	75 - 125
m,p-Xylene	100.0000	102.6286	103		3		40	80 - 125
o-Xylene	50.0000	51.1152	102		0		40	75 - 125
Xylene (Total)	150.0000	153.7438	102		1		40	83 - 125
Styrene	50.0000	51.9068	104		5		40	75 - 125

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79463 LCS Lot No.: _____

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Bromoform	50.0000	46.6383	93		4		40	55 - 135
Isopropylbenzene	50.0000	52.3237	105		4		40	75 - 130
1,1,2,2-Tetrachloroethane	50.0000	52.8203	106		2		40	55 - 130
Bromobenzene	50.0000	48.5222	97		2		40	65 - 120
1,2,3-Trichloropropane	50.0000	48.5916	97		1		40	65 - 130
n-Propylbenzene	50.0000	52.3404	105		5		40	65 - 135
2-Chlorotoluene	50.0000	51.4030	103		2		40	70 - 130
1,3,5-Trimethylbenzene	50.0000	52.1784	104		1		40	65 - 135
4-Chlorotoluene	50.0000	50.0565	100		2		40	75 - 125
tert-Butylbenzene	50.0000	52.5753	105		3		40	65 - 130
1,2,4-Trimethylbenzene	50.0000	51.9973	104		3		40	65 - 135
sec-Butylbenzene	50.0000	51.7424	103		1		40	65 - 130
4-Isopropyltoluene	50.0000	51.8897	104		2		40	75 - 135
1,3-Dichlorobenzene	50.0000	49.4891	99		3		40	70 - 125
1,4-Dichlorobenzene	50.0000	48.9462	98		3		40	70 - 125
n-Butylbenzene	50.0000	54.8884	110		4		40	65 - 140
1,2-Dichlorobenzene	50.0000	49.3652	99		4		40	75 - 120
1,2-Dibromo-3-chloropropan	50.0000	56.6024	113		7		40	40 - 135
1,2,4-Trichlorobenzene	50.0000	49.2941	99		1		40	65 - 130
Hexachlorobutadiene	50.0000	52.3604	105		4		40	55 - 140
1,2,3-Trichlorobenzene	50.0000	53.7271	107		6		40	60 - 135
Naphthalene	50.0000	50.8915	102		7		40	40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 68 outside limits

Spike Recovery: 0 out of 68 outside limits

COMMENTS: _____

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79592

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: V8D7666.D Lab Sample ID: MB-79592
Instrument ID: V10
Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 10/21/2014
Level: (TRACE or LOW/MED) LOW Time Analyzed: 4:30
GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-79592	LCS-79592	V8D7663.D	2:58
02	LCSD-79592	LCSD-79592	V8D7664.D	3:29
03	TRIP BLANK	N1895-06A	V8D7667.D	5:01
04	USSW 100814	N1895-01A	V8D7668.D	5:32
05	DSSW 100814	N1895-03A	V8D7669.D	6:03

COMMENTS:

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79463

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: V1N1676.D Lab Sample ID: MB-79463
Instrument ID: V1
Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 10/10/2014
Level: (TRACE or LOW/MED) LOW Time Analyzed: 11:26
GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-79463	LCS-79463	V1N1673.D	9:21
02	LCSD-79463	LCSD-79463	V1N1674.D	9:49
03	USSED 100814	N1895-02A	V1N1679.D	12:49
04	DSSSED 100814	N1895-04A	V1N1680.D	13:16

COMMENTS: _____



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** Semivolatile Organics ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1895

SW846 8270D, SVOA by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code:
SW846 8270D

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3510C
Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: S3
Instrument Type: GCMS-SEMI
Description: HP6890 / HP5973
Manufacturer: Hewlett-Packard
Model: 6890 / 5973

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCS-79507 in batch 79507, recovery is above criteria for Hexachloroethane at 100% with criteria of (30-95) and Naphthalene at 100% with criteria of (40-100).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

No manual integrations were performed on any sample or standard.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

A handwritten signature in black ink, appearing to be 'J. H. P.', written over a horizontal line.

Signed: _____

Date: _____ 10/22/2014 _____



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL** Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE** Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA** Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX** Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS** Matrix Spike.
- MSD** Matrix Spike Duplicate
- DUP** Duplicate analysis
- SD** Serial Dilution
- PS** Post-digestion or Post-distillation spike. For metals or inorganic analyses

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79507

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2373.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	13	
111-44-4	Bis(2-chloroethyl)ether	50	
95-57-8	2-Chlorophenol	35	
541-73-1	1,3-Dichlorobenzene	49	
106-46-7	1,4-Dichlorobenzene	48	
95-50-1	1,2-Dichlorobenzene	49	
95-48-7	2-Methylphenol	29	
108-60-1	2,2'-oxybis(1-Chloropropane)	49	
106-44-5	4-Methylphenol	24	
621-64-7	N-Nitroso-di-n-propylamine	46	
67-72-1	Hexachloroethane	50	
98-95-3	Nitrobenzene	51	
78-59-1	Isophorone	51	
88-75-5	2-Nitrophenol	46	
105-67-9	2,4-Dimethylphenol	38	
120-83-2	2,4-Dichlorophenol	43	
120-82-1	1,2,4-Trichlorobenzene	50	
91-20-3	Naphthalene	50	
106-47-8	4-Chloroaniline	39	
111-91-1	Bis(2-chloroethoxy)methane	51	
87-68-3	Hexachlorobutadiene	51	
59-50-7	4-Chloro-3-methylphenol	38	
91-57-6	2-Methylnaphthalene	48	
77-47-4	Hexachlorocyclopentadiene	50	
88-06-2	2,4,6-Trichlorophenol	44	
95-95-4	2,4,5-Trichlorophenol	48	
91-58-7	2-Chloronaphthalene	51	
88-74-4	2-Nitroaniline	48	
131-11-3	Dimethylphthalate	50	
208-96-8	Acenaphthylene	51	
606-20-2	2,6-Dinitrotoluene	50	
99-09-2	3-Nitroaniline	39	
83-32-9	Acenaphthene	50	
51-28-5	2,4-Dinitrophenol	26	
100-02-7	4-Nitrophenol	14	J
132-64-9	Dibenzofuran	47	

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79507

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2373.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
121-14-2	2,4-Dinitrotoluene	49	
84-66-2	Diethylphthalate	50	
7005-72-3	4-Chlorophenyl-phenylether	50	
86-73-7	Fluorene	50	
100-01-6	4-Nitroaniline	51	
534-52-1	4,6-Dinitro-2-methylphenol	45	
86-30-6	N-Nitrosodiphenylamine	51	
101-55-3	4-Bromophenyl-phenylether	53	
118-74-1	Hexachlorobenzene	54	
87-86-5	Pentachlorophenol	48	
85-01-8	Phenanthrene	52	
120-12-7	Anthracene	53	
86-74-8	Carbazole	49	
84-74-2	Di-n-butylphthalate	54	B
206-44-0	Fluoranthene	50	
129-00-0	Pyrene	52	
85-68-7	Butylbenzylphthalate	52	
91-94-1	3,3'-Dichlorobenzidine	50	
56-55-3	Benzo(a)anthracene	51	
218-01-9	Chrysene	53	
117-81-7	Bis(2-ethylhexyl)phthalate	52	
117-84-0	Di-n-octylphthalate	54	
205-99-2	Benzo(b)fluoranthene	55	
207-08-9	Benzo(k)fluoranthene	52	
50-32-8	Benzo(a)pyrene	54	
193-39-5	Indeno(1,2,3-cd)pyrene	51	
53-70-3	Dibenzo(a,h)anthracene	54	
191-24-2	Benzo(g,h,i)perylene	53	

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79507

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2381.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	12	
111-44-4	Bis(2-chloroethyl)ether	47	
95-57-8	2-Chlorophenol	34	
541-73-1	1,3-Dichlorobenzene	46	
106-46-7	1,4-Dichlorobenzene	44	
95-50-1	1,2-Dichlorobenzene	45	
95-48-7	2-Methylphenol	26	
108-60-1	2,2'-oxybis(1-Chloropropane)	47	
106-44-5	4-Methylphenol	23	
621-64-7	N-Nitroso-di-n-propylamine	44	
67-72-1	Hexachloroethane	47	
98-95-3	Nitrobenzene	48	
78-59-1	Isophorone	46	
88-75-5	2-Nitrophenol	44	
105-67-9	2,4-Dimethylphenol	35	
120-83-2	2,4-Dichlorophenol	37	
120-82-1	1,2,4-Trichlorobenzene	46	
91-20-3	Naphthalene	46	
106-47-8	4-Chloroaniline	26	
111-91-1	Bis(2-chloroethoxy)methane	47	
87-68-3	Hexachlorobutadiene	48	
59-50-7	4-Chloro-3-methylphenol	35	
91-57-6	2-Methylnaphthalene	44	
77-47-4	Hexachlorocyclopentadiene	40	
88-06-2	2,4,6-Trichlorophenol	43	
95-95-4	2,4,5-Trichlorophenol	41	
91-58-7	2-Chloronaphthalene	48	
88-74-4	2-Nitroaniline	42	
131-11-3	Dimethylphthalate	46	
208-96-8	Acenaphthylene	47	
606-20-2	2,6-Dinitrotoluene	48	
99-09-2	3-Nitroaniline	33	
83-32-9	Acenaphthene	47	
51-28-5	2,4-Dinitrophenol	23	
100-02-7	4-Nitrophenol	13	J
132-64-9	Dibenzofuran	44	

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79507
Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2381.D
Level: (LOW/MED) LOW Extraction: (Type) SEPF
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014
GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
121-14-2	2,4-Dinitrotoluene	46	
84-66-2	Diethylphthalate	46	
7005-72-3	4-Chlorophenyl-phenylether	47	
86-73-7	Fluorene	45	
100-01-6	4-Nitroaniline	40	
534-52-1	4,6-Dinitro-2-methylphenol	42	
86-30-6	N-Nitrosodiphenylamine	46	
101-55-3	4-Bromophenyl-phenylether	51	
118-74-1	Hexachlorobenzene	50	
87-86-5	Pentachlorophenol	46	
85-01-8	Phenanthrene	47	
120-12-7	Anthracene	49	
86-74-8	Carbazole	45	
84-74-2	Di-n-butylphthalate	49	B
206-44-0	Fluoranthene	45	
129-00-0	Pyrene	48	
85-68-7	Butylbenzylphthalate	49	
91-94-1	3,3'-Dichlorobenzidine	43	
56-55-3	Benzo(a)anthracene	47	
218-01-9	Chrysene	51	
117-81-7	Bis(2-ethylhexyl)phthalate	48	
117-84-0	Di-n-octylphthalate	49	
205-99-2	Benzo(b)fluoranthene	51	
207-08-9	Benzo(k)fluoranthene	49	
50-32-8	Benzo(a)pyrene	51	
193-39-5	Indeno(1,2,3-cd)pyrene	48	
53-70-3	Dibenzo(a,h)anthracene	51	
191-24-2	Benzo(g,h,i)perylene	50	

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79507

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2372.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	20	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	20	U
100-02-7	4-Nitrophenol	20	U
132-64-9	Dibenzofuran	10	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79507

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2372.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	20	U
86-30-6	N-Nitrosodiphenylamine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	20	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	3.1	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2375.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	20	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	20	U
100-02-7	4-Nitrophenol	20	U
132-64-9	Dibenzofuran	10	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2375.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	20	U
86-30-6	N-Nitrosodiphenylamine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	20	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	2.5	BJ
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2376.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	20	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	20	U
100-02-7	4-Nitrophenol	20	U
132-64-9	Dibenzofuran	10	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S3J2376.D

Level: (LOW/MED) LOW Extraction: (Type) SEPF

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/15/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
121-14-2	2,4-Dinitrotoluene	10		U
84-66-2	Diethylphthalate	10		U
7005-72-3	4-Chlorophenyl-phenylether	10		U
86-73-7	Fluorene	10		U
100-01-6	4-Nitroaniline	20		U
534-52-1	4,6-Dinitro-2-methylphenol	20		U
86-30-6	N-Nitrosodiphenylamine	10		U
101-55-3	4-Bromophenyl-phenylether	10		U
118-74-1	Hexachlorobenzene	10		U
87-86-5	Pentachlorophenol	20		U
85-01-8	Phenanthrene	10		U
120-12-7	Anthracene	10		U
86-74-8	Carbazole	10		U
84-74-2	Di-n-butylphthalate	3.7		BJ
206-44-0	Fluoranthene	10		U
129-00-0	Pyrene	10		U
85-68-7	Butylbenzylphthalate	10		U
91-94-1	3,3'-Dichlorobenzidine	10		U
56-55-3	Benzo(a)anthracene	10		U
218-01-9	Chrysene	10		U
117-81-7	Bis(2-ethylhexyl)phthalate	10		U
117-84-0	Di-n-octylphthalate	10		U
205-99-2	Benzo(b)fluoranthene	10		U
207-08-9	Benzo(k)fluoranthene	10		U
50-32-8	Benzo(a)pyrene	10		U
193-39-5	Indeno(1,2,3-cd)pyrene	10		U
53-70-3	Dibenzo(a,h)anthracene	10		U
191-24-2	Benzo(g,h,i)perylene	10		U

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2378.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2	Phenol	2200	
111-44-4	Bis(2-chloroethyl)ether	2600	
95-57-8	2-Chlorophenol	2300	
541-73-1	1,3-Dichlorobenzene	2400	
106-46-7	1,4-Dichlorobenzene	2300	
95-50-1	1,2-Dichlorobenzene	2400	
95-48-7	2-Methylphenol	2300	
108-60-1	2,2'-oxybis(1-Chloropropane)	2500	
106-44-5	4-Methylphenol	2300	
621-64-7	N-Nitroso-di-n-propylamine	2300	
67-72-1	Hexachloroethane	2500	
98-95-3	Nitrobenzene	2700	
78-59-1	Isophorone	2500	
88-75-5	2-Nitrophenol	2600	
105-67-9	2,4-Dimethylphenol	2300	
120-83-2	2,4-Dichlorophenol	2400	
120-82-1	1,2,4-Trichlorobenzene	2500	
91-20-3	Naphthalene	2600	
106-47-8	4-Chloroaniline	560	
111-91-1	Bis(2-chloroethoxy)methane	2600	
87-68-3	Hexachlorobutadiene	2600	
59-50-7	4-Chloro-3-methylphenol	2200	
91-57-6	2-Methylnaphthalene	2500	
77-47-4	Hexachlorocyclopentadiene	2700	
88-06-2	2,4,6-Trichlorophenol	2400	
95-95-4	2,4,5-Trichlorophenol	2600	
91-58-7	2-Chloronaphthalene	2600	
88-74-4	2-Nitroaniline	2400	
131-11-3	Dimethylphthalate	2500	
208-96-8	Acenaphthylene	2600	
606-20-2	2,6-Dinitrotoluene	2600	
99-09-2	3-Nitroaniline	970	
83-32-9	Acenaphthene	2600	
51-28-5	2,4-Dinitrophenol	2300	
100-02-7	4-Nitrophenol	2300	
132-64-9	Dibenzofuran	2400	

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2378.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
121-14-2	2,4-Dinitrotoluene	2500	
84-66-2	Diethylphthalate	2500	
7005-72-3	4-Chlorophenyl-phenylether	2500	
86-73-7	Fluorene	2500	
100-01-6	4-Nitroaniline	2300	
534-52-1	4,6-Dinitro-2-methylphenol	2300	
86-30-6	N-Nitrosodiphenylamine	2600	
101-55-3	4-Bromophenyl-phenylether	2800	
118-74-1	Hexachlorobenzene	2800	
87-86-5	Pentachlorophenol	2500	
85-01-8	Phenanthrene	2700	
120-12-7	Anthracene	2700	
86-74-8	Carbazole	2400	
84-74-2	Di-n-butylphthalate	2600	B
206-44-0	Fluoranthene	2500	
129-00-0	Pyrene	2900	
85-68-7	Butylbenzylphthalate	2800	
91-94-1	3,3'-Dichlorobenzidine	1300	
56-55-3	Benzo(a)anthracene	2600	
218-01-9	Chrysene	2800	
117-81-7	Bis(2-ethylhexyl)phthalate	2800	
117-84-0	Di-n-octylphthalate	3000	
205-99-2	Benzo(b)fluoranthene	2700	
207-08-9	Benzo(k)fluoranthene	2900	
50-32-8	Benzo(a)pyrene	2700	
193-39-5	Indeno(1,2,3-cd)pyrene	2400	
53-70-3	Dibenzo(a,h)anthracene	2600	
191-24-2	Benzo(g,h,i)perylene	2600	

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2379.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2	Phenol	2300	
111-44-4	Bis(2-chloroethyl)ether	2800	
95-57-8	2-Chlorophenol	2400	
541-73-1	1,3-Dichlorobenzene	2500	
106-46-7	1,4-Dichlorobenzene	2500	
95-50-1	1,2-Dichlorobenzene	2500	
95-48-7	2-Methylphenol	2400	
108-60-1	2,2'-oxybis(1-Chloropropane)	2600	
106-44-5	4-Methylphenol	2400	
621-64-7	N-Nitroso-di-n-propylamine	2400	
67-72-1	Hexachloroethane	2600	
98-95-3	Nitrobenzene	2700	
78-59-1	Isophorone	2600	
88-75-5	2-Nitrophenol	2600	
105-67-9	2,4-Dimethylphenol	2400	
120-83-2	2,4-Dichlorophenol	2500	
120-82-1	1,2,4-Trichlorobenzene	2600	
91-20-3	Naphthalene	2600	
106-47-8	4-Chloroaniline	870	
111-91-1	Bis(2-chloroethoxy)methane	2700	
87-68-3	Hexachlorobutadiene	2600	
59-50-7	4-Chloro-3-methylphenol	2400	
91-57-6	2-Methylnaphthalene	2400	
77-47-4	Hexachlorocyclopentadiene	2800	
88-06-2	2,4,6-Trichlorophenol	2700	
95-95-4	2,4,5-Trichlorophenol	3000	
91-58-7	2-Chloronaphthalene	2900	
88-74-4	2-Nitroaniline	2700	
131-11-3	Dimethylphthalate	2800	
208-96-8	Acenaphthylene	2800	
606-20-2	2,6-Dinitrotoluene	2900	
99-09-2	3-Nitroaniline	1500	
83-32-9	Acenaphthene	2800	
51-28-5	2,4-Dinitrophenol	2500	
100-02-7	4-Nitrophenol	2500	
132-64-9	Dibenzofuran	2700	

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2379.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
121-14-2	2,4-Dinitrotoluene	2700	
84-66-2	Diethylphthalate	2800	
7005-72-3	4-Chlorophenyl-phenylether	2900	
86-73-7	Fluorene	2800	
100-01-6	4-Nitroaniline	2400	
534-52-1	4,6-Dinitro-2-methylphenol	2500	
86-30-6	N-Nitrosodiphenylamine	2900	
101-55-3	4-Bromophenyl-phenylether	3000	
118-74-1	Hexachlorobenzene	3000	
87-86-5	Pentachlorophenol	2800	
85-01-8	Phenanthrene	2800	
120-12-7	Anthracene	2800	
86-74-8	Carbazole	2600	
84-74-2	Di-n-butylphthalate	2900	B
206-44-0	Fluoranthene	2600	
129-00-0	Pyrene	3100	
85-68-7	Butylbenzylphthalate	3100	
91-94-1	3,3'-Dichlorobenzidine	1800	
56-55-3	Benzo(a)anthracene	2900	
218-01-9	Chrysene	3000	
117-81-7	Bis(2-ethylhexyl)phthalate	3100	
117-84-0	Di-n-octylphthalate	3300	
205-99-2	Benzo(b)fluoranthene	3200	
207-08-9	Benzo(k)fluoranthene	3100	
50-32-8	Benzo(a)pyrene	3000	
193-39-5	Indeno(1,2,3-cd)pyrene	2900	
53-70-3	Dibenzo(a,h)anthracene	2900	
191-24-2	Benzo(g,h,i)perylene	3000	

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2377.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	Bis(2-chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
111-91-1	Bis(2-chloroethoxy)methane	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	670	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	670	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	670	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	670	U
100-02-7	4-Nitrophenol	670	U
132-64-9	Dibenzofuran	330	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79562

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J2377.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	670	U
534-52-1	4,6-Dinitro-2-methylphenol	670	U
86-30-6	N-Nitrosodiphenylamine	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	670	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-butylphthalate	85	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	Bis(2-ethylhexyl)phthalate	330	U
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02D

Sample wt/vol: 15.5 (g/mL) G Lab File ID: S3J2380.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 28 Decanted: (Y/N) N Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	440	U
111-44-4	Bis(2-chloroethyl)ether	440	U
95-57-8	2-Chlorophenol	440	U
541-73-1	1,3-Dichlorobenzene	440	U
106-46-7	1,4-Dichlorobenzene	440	U
95-50-1	1,2-Dichlorobenzene	440	U
95-48-7	2-Methylphenol	440	U
108-60-1	2,2'-oxybis(1-Chloropropane)	440	U
106-44-5	4-Methylphenol	440	U
621-64-7	N-Nitroso-di-n-propylamine	440	U
67-72-1	Hexachloroethane	440	U
98-95-3	Nitrobenzene	440	U
78-59-1	Isophorone	440	U
88-75-5	2-Nitrophenol	440	U
105-67-9	2,4-Dimethylphenol	440	U
120-83-2	2,4-Dichlorophenol	440	U
120-82-1	1,2,4-Trichlorobenzene	440	U
91-20-3	Naphthalene	440	U
106-47-8	4-Chloroaniline	440	U
111-91-1	Bis(2-chloroethoxy)methane	440	U
87-68-3	Hexachlorobutadiene	440	U
59-50-7	4-Chloro-3-methylphenol	440	U
91-57-6	2-Methylnaphthalene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
88-06-2	2,4,6-Trichlorophenol	440	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	440	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	440	U
208-96-8	Acenaphthylene	440	U
606-20-2	2,6-Dinitrotoluene	440	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	440	U
51-28-5	2,4-Dinitrophenol	900	U
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	440	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02D

Sample wt/vol: 15.5 (g/mL) G Lab File ID: S3J2380.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 28 Decanted: (Y/N) N Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
121-14-2	2,4-Dinitrotoluene	440	U
84-66-2	Diethylphthalate	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
86-73-7	Fluorene	440	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
118-74-1	Hexachlorobenzene	440	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	440	U
120-12-7	Anthracene	440	U
86-74-8	Carbazole	440	U
84-74-2	Di-n-butylphthalate	650	B
206-44-0	Fluoranthene	440	U
129-00-0	Pyrene	96	J
85-68-7	Butylbenzylphthalate	440	U
91-94-1	3,3'-Dichlorobenzidine	440	U
56-55-3	Benzo(a)anthracene	440	U
218-01-9	Chrysene	440	U
117-81-7	Bis(2-ethylhexyl)phthalate	440	U
117-84-0	Di-n-octylphthalate	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
50-32-8	Benzo(a)pyrene	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
53-70-3	Dibenzo(a,h)anthracene	440	U
191-24-2	Benzo(g,h,i)perylene	440	U

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSD 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04D

Sample wt/vol: 15.4 (g/mL) G Lab File ID: S3J2382.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 48 Decanted: (Y/N) N Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	620	U
111-44-4	Bis(2-chloroethyl)ether	620	U
95-57-8	2-Chlorophenol	620	U
541-73-1	1,3-Dichlorobenzene	620	U
106-46-7	1,4-Dichlorobenzene	620	U
95-50-1	1,2-Dichlorobenzene	620	U
95-48-7	2-Methylphenol	620	U
108-60-1	2,2'-oxybis(1-Chloropropane)	620	U
106-44-5	4-Methylphenol	620	U
621-64-7	N-Nitroso-di-n-propylamine	620	U
67-72-1	Hexachloroethane	620	U
98-95-3	Nitrobenzene	620	U
78-59-1	Isophorone	620	U
88-75-5	2-Nitrophenol	620	U
105-67-9	2,4-Dimethylphenol	620	U
120-83-2	2,4-Dichlorophenol	620	U
120-82-1	1,2,4-Trichlorobenzene	620	U
91-20-3	Naphthalene	620	U
106-47-8	4-Chloroaniline	620	U
111-91-1	Bis(2-chloroethoxy)methane	620	U
87-68-3	Hexachlorobutadiene	620	U
59-50-7	4-Chloro-3-methylphenol	620	U
91-57-6	2-Methylnaphthalene	620	U
77-47-4	Hexachlorocyclopentadiene	620	U
88-06-2	2,4,6-Trichlorophenol	620	U
95-95-4	2,4,5-Trichlorophenol	1300	U
91-58-7	2-Chloronaphthalene	620	U
88-74-4	2-Nitroaniline	1300	U
131-11-3	Dimethylphthalate	620	U
208-96-8	Acenaphthylene	620	U
606-20-2	2,6-Dinitrotoluene	620	U
99-09-2	3-Nitroaniline	1300	U
83-32-9	Acenaphthene	620	U
51-28-5	2,4-Dinitrophenol	1300	U
100-02-7	4-Nitrophenol	1300	U
132-64-9	Dibenzofuran	620	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSD 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04D

Sample wt/vol: 15.4 (g/mL) G Lab File ID: S3J2382.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 48 Decanted: (Y/N) N Date Received: 10/09/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/18/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/20/2014

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
121-14-2	2,4-Dinitrotoluene	620	U
84-66-2	Diethylphthalate	620	U
7005-72-3	4-Chlorophenyl-phenylether	620	U
86-73-7	Fluorene	620	U
100-01-6	4-Nitroaniline	1300	U
534-52-1	4,6-Dinitro-2-methylphenol	1300	U
86-30-6	N-Nitrosodiphenylamine	620	U
101-55-3	4-Bromophenyl-phenylether	620	U
118-74-1	Hexachlorobenzene	620	U
87-86-5	Pentachlorophenol	1300	U
85-01-8	Phenanthrene	620	U
120-12-7	Anthracene	620	U
86-74-8	Carbazole	620	U
84-74-2	Di-n-butylphthalate	1300	B
206-44-0	Fluoranthene	180	J
129-00-0	Pyrene	200	J
85-68-7	Butylbenzylphthalate	620	U
91-94-1	3,3'-Dichlorobenzidine	620	U
56-55-3	Benzo(a)anthracene	620	U
218-01-9	Chrysene	160	J
117-81-7	Bis(2-ethylhexyl)phthalate	620	U
117-84-0	Di-n-octylphthalate	620	U
205-99-2	Benzo(b)fluoranthene	150	J
207-08-9	Benzo(k)fluoranthene	620	U
50-32-8	Benzo(a)pyrene	620	U
193-39-5	Indeno(1,2,3-cd)pyrene	620	U
53-70-3	Dibenzo(a,h)anthracene	620	U
191-24-2	Benzo(g,h,i)perylene	620	U

WATER SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

	EPA SAMPLE NO.	SDMC1 (NBZ) #	SDMC2 (FBP) #	SDMC3 (TPH) #	SDMC4 (PHL) #	SDMC5 (2FP) #	SDMC6 (TBP) #			TOT OUT
01	MB-79507	100	110	117	21	43	91			0
02	LCS-79507	104	99	103	23	37	96			0
03	USSW 100814	96	99	84	14	27	84			0
04	DSSW 100814	91	97	82	13	27	88			0
05	LCSD-79507	93	94	95	21	36	88			0

QC LIMITS

SDMC1	(NBZ) = Nitrobenzene-d5	(40-110)
SDMC2	(FBP) = 2-Fluorobiphenyl	(50-110)
SDMC3	(TPH) = Terphenyl-d14	(50-135)
SDMC4	(PHL) = Phenol-d5	(10-115)
SDMC5	(2FP) = 2-Fluorophenol	(20-110)
SDMC6	(TBP) = 2,4,6-Tribromophenol	(40-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC.

Contract:

Lab Code: MITKEM

Case No.: N1895

Mod. Ref No.:

SDG No.: SN1895

Level: (LOW/MED) LOW

	EPA SAMPLE NO.	SDMC1 (NBZ) #	SDMC2 (FBP) #	SDMC3 (TPH) #	SDMC4 (PHL) #	SDMC5 (2FP) #	SDMC6 (TBP) #			TOT OUT
01	MB-79562	78	79	90	72	80	71			0
02	LCS-79562	81	80	88	70	77	74			0
03	LCSD-79562	81	84	93	75	79	83			0
04	USSED 100814	75	83	88	70	79	68			0
05	DSSSED 100814	78	80	89	70	78	75			0

QC LIMITS

SDMC1	(NBZ) = Nitrobenzene-d5	(35-100)
SDMC2	(FBP) = 2-Fluorobiphenyl	(45-105)
SDMC3	(TPH) = Terphenyl-d14	(30-125)
SDMC4	(PHL) = Phenol-d5	(40-100)
SDMC5	(2FP) = 2-Fluorophenol	(35-105)
SDMC6	(TBP) = 2,4,6-Tribromophenol	(35-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79507 LCS Lot No.: A0103342
Date Extracted: 10/15/2014 Date Analyzed (1): 10/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Phenol	50.0000	0.0000	12.5492	25		0 - 115
Bis(2-chloroethyl)ether	50.0000	0.0000	50.0087	100		35 - 110
2-Chlorophenol	50.0000	0.0000	35.3545	71		35 - 105
1,3-Dichlorobenzene	50.0000	0.0000	48.5500	97		30 - 100
1,4-Dichlorobenzene	50.0000	0.0000	47.9108	96		30 - 100
1,2-Dichlorobenzene	50.0000	0.0000	49.0703	98		35 - 100
2-Methylphenol	50.0000	0.0000	29.1024	58		40 - 110
2,2'-oxybis(1-Chloropropan	50.0000	0.0000	49.2984	99		30 - 123
4-Methylphenol	50.0000	0.0000	23.6634	47		30 - 110
N-Nitroso-di-n-propylamine	50.0000	0.0000	46.4169	93		35 - 130
Hexachloroethane	50.0000	0.0000	50.1067	100	*	30 - 95
Nitrobenzene	50.0000	0.0000	51.2819	103		45 - 110
Isophorone	50.0000	0.0000	51.3259	103		50 - 110
2-Nitrophenol	50.0000	0.0000	45.9603	92		40 - 115
2,4-Dimethylphenol	50.0000	0.0000	37.8804	76		30 - 110
2,4-Dichlorophenol	50.0000	0.0000	42.9165	86		50 - 105
1,2,4-Trichlorobenzene	50.0000	0.0000	49.6312	99		35 - 105
Naphthalene	50.0000	0.0000	50.2056	100	*	40 - 100
4-Chloroaniline	50.0000	0.0000	38.9496	78		15 - 110
Bis(2-chloroethoxy)methane	50.0000	0.0000	50.7953	102		45 - 105
Hexachlorobutadiene	50.0000	0.0000	50.8666	102		25 - 105
4-Chloro-3-methylphenol	50.0000	0.0000	38.1423	76		45 - 110
2-Methylnaphthalene	50.0000	0.0000	48.2422	96		45 - 105
Hexachlorocyclopentadiene	50.0000	0.0000	49.9161	100		27 - 147
2,4,6-Trichlorophenol	50.0000	0.0000	44.4866	89		50 - 115
2,4,5-Trichlorophenol	50.0000	0.0000	47.6224	95		50 - 110
2-Chloronaphthalene	50.0000	0.0000	51.1916	102		50 - 105
2-Nitroaniline	50.0000	0.0000	47.5773	95		50 - 115
Dimethylphthalate	50.0000	0.0000	49.8672	100		25 - 125
Acenaphthylene	50.0000	0.0000	50.9573	102		50 - 105
2,6-Dinitrotoluene	50.0000	0.0000	50.0632	100		50 - 115
3-Nitroaniline	50.0000	0.0000	39.2756	79		20 - 125
Acenaphthene	50.0000	0.0000	50.3868	101		45 - 110
2,4-Dinitrophenol	50.0000	0.0000	25.9386	52		15 - 140
4-Nitrophenol	50.0000	0.0000	13.9307	28		0 - 125
Dibenzofuran	50.0000	0.0000	46.8375	94		55 - 105
2,4-Dinitrotoluene	50.0000	0.0000	49.1243	98		50 - 120
Diethylphthalate	50.0000	0.0000	50.0783	100		40 - 120
4-Chlorophenyl-phenylether	50.0000	0.0000	50.1179	100		50 - 110
Fluorene	50.0000	0.0000	49.8050	100		50 - 110
4-Nitroaniline	50.0000	0.0000	51.0914	102		35 - 120
4,6-Dinitro-2-methylphenol	50.0000	0.0000	45.3572	91		40 - 130
N-Nitrosodiphenylamine	50.0000	0.0000	50.7195	101		50 - 110
4-Bromophenyl-phenylether	50.0000	0.0000	53.2825	107		50 - 115

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79507 LCS Lot No.: A0103342
Date Extracted: 10/15/2014 Date Analyzed (1): 10/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Hexachlorobenzene	50.0000	0.0000	53.7538	108		50 - 110
Pentachlorophenol	50.0000	0.0000	47.7957	96		40 - 115
Phenanthrene	50.0000	0.0000	51.7855	104		50 - 115
Anthracene	50.0000	0.0000	53.0858	106		55 - 110
Carbazole	50.0000	0.0000	48.8621	98		50 - 115
Di-n-butylphthalate	50.0000	0.0000	53.6891	107		55 - 115
Fluoranthene	50.0000	0.0000	49.9494	100		55 - 115
Pyrene	50.0000	0.0000	51.7156	103		50 - 130
Butylbenzylphthalate	50.0000	0.0000	52.2123	104		45 - 115
3,3'-Dichlorobenzidine	50.0000	0.0000	50.0939	100		20 - 110
Benzo(a)anthracene	50.0000	0.0000	50.7218	101		55 - 110
Chrysene	50.0000	0.0000	52.7879	106		55 - 110
Bis(2-ethylhexyl)phthalate	50.0000	0.0000	51.9112	104		40 - 125
Di-n-octylphthalate	50.0000	0.0000	53.5779	107		35 - 135
Benzo(b)fluoranthene	50.0000	0.0000	55.1742	110		45 - 120
Benzo(k)fluoranthene	50.0000	0.0000	52.3350	105		45 - 125
Benzo(a)pyrene	50.0000	0.0000	53.8798	108		55 - 110
Indeno(1,2,3-cd)pyrene	50.0000	0.0000	51.0667	102		45 - 125
Dibenzo(a,h)anthracene	50.0000	0.0000	54.0262	108		40 - 125
Benzo(g,h,i)perylene	50.0000	0.0000	52.7138	105		40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 2 out of 64 outside limits

COMMENTS: _____

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79507 LCS Lot No.: A0103342

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC #		%RPD #		QC LIMITS	
							RPD	REC.
Phenol	50.0000	11.8220	24		4		40	0 - 115
Bis(2-chloroethyl)ether	50.0000	47.1110	94		6		40	35 - 110
2-Chlorophenol	50.0000	33.6553	67		6		40	35 - 105
1,3-Dichlorobenzene	50.0000	46.2477	92		5		40	30 - 100
1,4-Dichlorobenzene	50.0000	44.4052	89		8		40	30 - 100
1,2-Dichlorobenzene	50.0000	45.0911	90		9		40	35 - 100
2-Methylphenol	50.0000	26.4714	53		9		40	40 - 110
2,2'-oxybis(1-Chloropropan	50.0000	46.5977	93		6		40	30 - 123
4-Methylphenol	50.0000	23.1904	46		2		40	30 - 110
N-Nitroso-di-n-propylamine	50.0000	44.0937	88		6		40	35 - 130
Hexachloroethane	50.0000	47.3853	95		5		40	30 - 95
Nitrobenzene	50.0000	47.7306	95		8		40	45 - 110
Isophorone	50.0000	46.3087	93		10		40	50 - 110
2-Nitrophenol	50.0000	44.1726	88		4		40	40 - 115
2,4-Dimethylphenol	50.0000	34.5448	69		10		40	30 - 110
2,4-Dichlorophenol	50.0000	36.9868	74		15		40	50 - 105
1,2,4-Trichlorobenzene	50.0000	45.5205	91		8		40	35 - 105
Naphthalene	50.0000	46.4335	93		7		40	40 - 100
4-Chloroaniline	50.0000	25.8358	52		40		40	15 - 110
Bis(2-chloroethoxy)methane	50.0000	47.4184	95		7		40	45 - 105
Hexachlorobutadiene	50.0000	48.3772	97		5		40	25 - 105
4-Chloro-3-methylphenol	50.0000	34.5931	69		10		40	45 - 110
2-Methylnaphthalene	50.0000	44.3693	89		8		40	45 - 105
Hexachlorocyclopentadiene	50.0000	40.3135	81		21		40	27 - 147
2,4,6-Trichlorophenol	50.0000	42.9192	86		3		40	50 - 115
2,4,5-Trichlorophenol	50.0000	40.9141	82		15		40	50 - 110
2-Chloronaphthalene	50.0000	47.7513	96		6		40	50 - 105
2-Nitroaniline	50.0000	42.4685	85		11		40	50 - 115
Dimethylphthalate	50.0000	46.2434	92		8		40	25 - 125
Acenaphthylene	50.0000	47.3236	95		7		40	50 - 105
2,6-Dinitrotoluene	50.0000	47.5056	95		5		40	50 - 115
3-Nitroaniline	50.0000	32.7700	66		18		40	20 - 125
Acenaphthene	50.0000	47.1230	94		7		40	45 - 110
2,4-Dinitrophenol	50.0000	22.9899	46		12		40	15 - 140
4-Nitrophenol	50.0000	13.2038	26		7		40	0 - 125
Dibenzofuran	50.0000	44.3192	89		5		40	55 - 105
2,4-Dinitrotoluene	50.0000	46.3370	93		5		40	50 - 120
Diethylphthalate	50.0000	46.3689	93		7		40	40 - 120
4-Chlorophenyl-phenylether	50.0000	46.5979	93		7		40	50 - 110
Fluorene	50.0000	45.2562	91		9		40	50 - 110
4-Nitroaniline	50.0000	39.6702	79		25		40	35 - 120
4,6-Dinitro-2-methylphenol	50.0000	42.4122	85		7		40	40 - 130
N-Nitrosodiphenylamine	50.0000	46.2975	93		8		40	50 - 110
4-Bromophenyl-phenylether	50.0000	50.6037	101		6		40	50 - 115
Hexachlorobenzene	50.0000	50.2121	100		8		40	50 - 110
Pentachlorophenol	50.0000	45.7271	91		5		40	40 - 115

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79507 LCS Lot No.: A0103342

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Phenanthrene	50.0000	47.3791	95		9		40	50 - 115
Anthracene	50.0000	48.9448	98		8		40	55 - 110
Carbazole	50.0000	45.0165	90		9		40	50 - 115
Di-n-butylphthalate	50.0000	49.0789	98		9		40	55 - 115
Fluoranthene	50.0000	45.1175	90		11		40	55 - 115
Pyrene	50.0000	48.4738	97		6		40	50 - 130
Butylbenzylphthalate	50.0000	48.7248	97		7		40	45 - 115
3,3'-Dichlorobenzidine	50.0000	43.1987	86		15		40	20 - 110
Benzo(a)anthracene	50.0000	46.9233	94		7		40	55 - 110
Chrysene	50.0000	50.8795	102		4		40	55 - 110
Bis(2-ethylhexyl)phthalate	50.0000	48.0992	96		8		40	40 - 125
Di-n-octylphthalate	50.0000	48.8285	98		9		40	35 - 135
Benzo(b)fluoranthene	50.0000	50.7947	102		8		40	45 - 120
Benzo(k)fluoranthene	50.0000	49.4612	99		6		40	45 - 125
Benzo(a)pyrene	50.0000	50.5533	101		7		40	55 - 110
Indeno(1,2,3-cd)pyrene	50.0000	48.3863	97		5		40	45 - 125
Dibenzo(a,h)anthracene	50.0000	50.8616	102		6		40	40 - 125
Benzo(g,h,i)perylene	50.0000	50.4263	101		4		40	40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 64 outside limits

Spike Recovery: 0 out of 64 outside limits

COMMENTS: _____

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79562 LCS Lot No.: A0103342
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Phenol	3333.0000	0.0000	2158.3051	65		40 - 100
Bis(2-chloroethyl)ether	3333.0000	0.0000	2569.7593	77		40 - 105
2-Chlorophenol	3333.0000	0.0000	2332.7365	70		45 - 105
1,3-Dichlorobenzene	3333.0000	0.0000	2417.6306	73		40 - 100
1,4-Dichlorobenzene	3333.0000	0.0000	2317.5202	70		35 - 105
1,2-Dichlorobenzene	3333.0000	0.0000	2361.0609	71		45 - 95
2-Methylphenol	3333.0000	0.0000	2269.7380	68		40 - 105
2,2'-oxybis(1-Chloropropan	3333.0000	0.0000	2498.8850	75		20 - 115
4-Methylphenol	3333.0000	0.0000	2280.5245	68		40 - 105
N-Nitroso-di-n-propylamine	3333.0000	0.0000	2296.0443	69		40 - 115
Hexachloroethane	3333.0000	0.0000	2538.1525	76		35 - 110
Nitrobenzene	3333.0000	0.0000	2653.4469	80		40 - 115
Isophorone	3333.0000	0.0000	2486.0450	75		45 - 110
2-Nitrophenol	3333.0000	0.0000	2557.3252	77		40 - 110
2,4-Dimethylphenol	3333.0000	0.0000	2316.7231	70		30 - 105
2,4-Dichlorophenol	3333.0000	0.0000	2365.1281	71		45 - 110
1,2,4-Trichlorobenzene	3333.0000	0.0000	2543.4043	76		45 - 110
Naphthalene	3333.0000	0.0000	2565.3217	77		40 - 105
4-Chloroaniline	3333.0000	0.0000	557.2028	17		10 - 100
Bis(2-chloroethoxy)methane	3333.0000	0.0000	2626.0560	79		45 - 110
Hexachlorobutadiene	3333.0000	0.0000	2594.4900	78		40 - 115
4-Chloro-3-methylphenol	3333.0000	0.0000	2235.1644	67		45 - 115
2-Methylnaphthalene	3333.0000	0.0000	2483.3727	75		45 - 105
Hexachlorocyclopentadiene	3333.0000	0.0000	2655.8535	80		8 - 148
2,4,6-Trichlorophenol	3333.0000	0.0000	2444.1044	73		45 - 110
2,4,5-Trichlorophenol	3333.0000	0.0000	2625.2719	79		50 - 110
2-Chloronaphthalene	3333.0000	0.0000	2642.7141	79		45 - 105
2-Nitroaniline	3333.0000	0.0000	2412.0413	72		45 - 120
Dimethylphthalate	3333.0000	0.0000	2500.6637	75		50 - 110
Acenaphthylene	3333.0000	0.0000	2633.1448	79		45 - 105
2,6-Dinitrotoluene	3333.0000	0.0000	2579.3154	77		50 - 110
3-Nitroaniline	3333.0000	0.0000	965.0647	29		25 - 110
Acenaphthene	3333.0000	0.0000	2605.2711	78		45 - 110
2,4-Dinitrophenol	3333.0000	0.0000	2338.1404	70		15 - 130
4-Nitrophenol	3333.0000	0.0000	2251.5492	68		15 - 140
Dibenzofuran	3333.0000	0.0000	2422.4727	73		50 - 105
2,4-Dinitrotoluene	3333.0000	0.0000	2501.7976	75		50 - 115
Diethylphthalate	3333.0000	0.0000	2537.1203	76		50 - 115
4-Chlorophenyl-phenylether	3333.0000	0.0000	2545.9473	76		45 - 110
Fluorene	3333.0000	0.0000	2543.8282	76		50 - 110
4-Nitroaniline	3333.0000	0.0000	2255.6160	68		35 - 115
4,6-Dinitro-2-methylphenol	3333.0000	0.0000	2319.3784	70		30 - 135
N-Nitrosodiphenylamine	3333.0000	0.0000	2643.6979	79		50 - 115
4-Bromophenyl-phenylether	3333.0000	0.0000	2837.5841	85		45 - 115

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79562 LCS Lot No.: A0103342
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Hexachlorobenzene	3333.0000	0.0000	2762.0176	83		45 - 120
Pentachlorophenol	3333.0000	0.0000	2547.7433	76		25 - 120
Phenanthrene	3333.0000	0.0000	2661.8990	80		50 - 110
Anthracene	3333.0000	0.0000	2702.9437	81		55 - 105
Carbazole	3333.0000	0.0000	2426.1767	73		45 - 115
Di-n-butylphthalate	3333.0000	0.0000	2649.7074	79		55 - 110
Fluoranthene	3333.0000	0.0000	2453.7622	74		55 - 115
Pyrene	3333.0000	0.0000	2865.7718	86		45 - 125
Butylbenzylphthalate	3333.0000	0.0000	2832.8608	85		50 - 125
3,3'-Dichlorobenzidine	3333.0000	0.0000	1302.8369	39		10 - 130
Benzo(a)anthracene	3333.0000	0.0000	2640.0135	79		50 - 110
Chrysene	3333.0000	0.0000	2799.5010	84		55 - 110
Bis(2-ethylhexyl)phthalate	3333.0000	0.0000	2802.1545	84		45 - 125
Di-n-octylphthalate	3333.0000	0.0000	2995.7732	90		40 - 130
Benzo(b)fluoranthene	3333.0000	0.0000	2730.9390	82		45 - 115
Benzo(k)fluoranthene	3333.0000	0.0000	2861.2727	86		45 - 125
Benzo(a)pyrene	3333.0000	0.0000	2730.1822	82		50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	0.0000	2434.2623	73		40 - 120
Dibenzo(a,h)anthracene	3333.0000	0.0000	2565.6797	77		40 - 125
Benzo(g,h,i)perylene	3333.0000	0.0000	2588.8198	78		40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 64 outside limits

COMMENTS: _____

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79562 LCS Lot No.: A0103342

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC #		%RPD #	QC LIMITS	
						RPD	REC.
Phenol	3333.0000	2305.7425	69		6	40	40 - 100
Bis(2-chloroethyl)ether	3333.0000	2752.7394	83		8	40	40 - 105
2-Chlorophenol	3333.0000	2426.9162	73		4	40	45 - 105
1,3-Dichlorobenzene	3333.0000	2514.1375	75		3	40	40 - 100
1,4-Dichlorobenzene	3333.0000	2488.1758	75		7	40	35 - 105
1,2-Dichlorobenzene	3333.0000	2480.6785	74		4	40	45 - 95
2-Methylphenol	3333.0000	2415.2000	72		6	40	40 - 105
2,2'-oxybis(1-Chloropropan	3333.0000	2567.9029	77		3	40	20 - 115
4-Methylphenol	3333.0000	2367.2556	71		4	40	40 - 105
N-Nitroso-di-n-propylamine	3333.0000	2442.3339	73		6	40	40 - 115
Hexachloroethane	3333.0000	2635.5467	79		4	40	35 - 110
Nitrobenzene	3333.0000	2746.7171	82		2	40	40 - 115
Isophorone	3333.0000	2602.1761	78		4	40	45 - 110
2-Nitrophenol	3333.0000	2569.2746	77		0	40	40 - 110
2,4-Dimethylphenol	3333.0000	2395.6109	72		3	40	30 - 105
2,4-Dichlorophenol	3333.0000	2514.3661	75		5	40	45 - 110
1,2,4-Trichlorobenzene	3333.0000	2591.7532	78		3	40	45 - 110
Naphthalene	3333.0000	2642.6685	79		3	40	40 - 105
4-Chloroaniline	3333.0000	873.0790	26		42 *	40	10 - 100
Bis(2-chloroethoxy)methane	3333.0000	2674.8438	80		1	40	45 - 110
Hexachlorobutadiene	3333.0000	2648.8814	79		1	40	40 - 115
4-Chloro-3-methylphenol	3333.0000	2410.9178	72		7	40	45 - 115
2-Methylnaphthalene	3333.0000	2439.6759	73		3	40	45 - 105
Hexachlorocyclopentadiene	3333.0000	2762.0990	83		4	40	8 - 148
2,4,6-Trichlorophenol	3333.0000	2728.2180	82		12	40	45 - 110
2,4,5-Trichlorophenol	3333.0000	2981.4451	89		12	40	50 - 110
2-Chloronaphthalene	3333.0000	2887.5903	87		10	40	45 - 105
2-Nitroaniline	3333.0000	2716.3366	81		12	40	45 - 120
Dimethylphthalate	3333.0000	2826.7965	85		13	40	50 - 110
Acenaphthylene	3333.0000	2849.5544	85		7	40	45 - 105
2,6-Dinitrotoluene	3333.0000	2873.2776	86		11	40	50 - 110
3-Nitroaniline	3333.0000	1461.7756	44		41 *	40	25 - 110
Acenaphthene	3333.0000	2831.7885	85		9	40	45 - 110
2,4-Dinitrophenol	3333.0000	2478.5414	74		6	40	15 - 130
4-Nitrophenol	3333.0000	2469.0977	74		8	40	15 - 140
Dibenzofuran	3333.0000	2666.1811	80		9	40	50 - 105
2,4-Dinitrotoluene	3333.0000	2712.9824	81		8	40	50 - 115
Diethylphthalate	3333.0000	2774.2167	83		9	40	50 - 115
4-Chlorophenyl-phenylether	3333.0000	2850.0333	86		12	40	45 - 110
Fluorene	3333.0000	2796.1979	84		10	40	50 - 110
4-Nitroaniline	3333.0000	2448.4147	73		7	40	35 - 115
4,6-Dinitro-2-methylphenol	3333.0000	2450.3586	74		6	40	30 - 135
N-Nitrosodiphenylamine	3333.0000	2873.2051	86		8	40	50 - 115
4-Bromophenyl-phenylether	3333.0000	2991.8568	90		6	40	45 - 115
Hexachlorobenzene	3333.0000	3000.4595	90		8	40	45 - 120
Pentachlorophenol	3333.0000	2763.8316	83		9	40	25 - 120

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79562 LCS Lot No.: A0103342

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS	
							RPD	REC.
Phenanthrene	3333.0000	2818.1781	85		6		40	50 - 110
Anthracene	3333.0000	2841.9451	85		5		40	55 - 105
Carbazole	3333.0000	2637.5756	79		8		40	45 - 115
Di-n-butylphthalate	3333.0000	2914.6872	87		10		40	55 - 110
Fluoranthene	3333.0000	2612.8898	78		5		40	55 - 115
Pyrene	3333.0000	3118.7019	94		9		40	45 - 125
Butylbenzylphthalate	3333.0000	3076.1761	92		8		40	50 - 125
3,3'-Dichlorobenzidine	3333.0000	1816.9146	55		34		40	10 - 130
Benzo(a)anthracene	3333.0000	2891.2751	87		10		40	50 - 110
Chrysene	3333.0000	2954.0015	89		6		40	55 - 110
Bis(2-ethylhexyl)phthalate	3333.0000	3091.5244	93		10		40	45 - 125
Di-n-octylphthalate	3333.0000	3305.0780	99		10		40	40 - 130
Benzo(b)fluoranthene	3333.0000	3194.2924	96		16		40	45 - 115
Benzo(k)fluoranthene	3333.0000	3090.9546	93		8		40	45 - 125
Benzo(a)pyrene	3333.0000	2971.8373	89		8		40	50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	2925.1246	88		19		40	40 - 120
Dibenzo(a,h)anthracene	3333.0000	2850.5544	86		11		40	40 - 125
Benzo(g,h,i)perylene	3333.0000	2963.3463	89		13		40	40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 64 outside limits

Spike Recovery: 0 out of 64 outside limits

COMMENTS: _____

4C - FORM IV SV
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79507

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: S3J2372.D Lab Sample ID: MB-79507
Instrument ID: S3 Date Extracted: 10/15/2014
Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 10/20/2014
Level: (LOW/MED) LOW Time Analyzed: 11:49
Extraction: (Type) SEPF GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-79507	LCS-79507	S3J2373.D	10/20/2014
02	USSW 100814	N1895-01D	S3J2375.D	10/20/2014
03	DSSW 100814	N1895-03D	S3J2376.D	10/20/2014
04	LCSD-79507	LCSD-79507	S3J2381.D	10/20/2014

COMMENTS:

4C - FORM IV SV
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79562

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: S3J2377.D Lab Sample ID: MB-79562
Instrument ID: S3 Date Extracted: 10/18/2014
Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 10/20/2014
Level: (LOW/MED) LOW Time Analyzed: 13:55
Extraction: (Type) SONC GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-79562	LCS-79562	S3J2378.D	10/20/2014
02	LCSD-79562	LCSD-79562	S3J2379.D	10/20/2014
03	USSED 100814	N1895-02D	S3J2380.D	10/20/2014
04	DSSSED 100814	N1895-04D	S3J2382.D	10/20/2014

COMMENTS:



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

*** Pesticide Organics ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1895

SW846 8081B, Organochlorine Pesticides by GC-ECD

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code:
SW846 8081B

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3510C
Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: E6
Instrument Type: GC-ECD

Description: HP6890

Manufacturer: Hewlett-Packard

Model: 6890

GC Column used: 30 m X 0.53 mm ID [0.50 um thickness] CLPPest capillary column.

GC Column used: 30 m X 0.53 mm ID [0.42 um thickness] CLPPestII capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits with the following exceptions. Please note that the acceptance criteria allow one surrogate recovery outside of the QC limits per fraction.

USSED 100814 (N1895-02D), recovery is below criteria for Decachlorobiphenyl on front column at 54% with criteria of (55-130).

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Dilutions:

No sample in this SDG required analysis at dilution.

F. Samples:

The lower concentration between the primary and confirmatory GC column concentrations is reported due to the presence of interferences unless otherwise indicated. P flags are assigned to

compounds when D% between the two columns are greater than 40%.

No other unusual occurrences were noted during sample analysis.

G. Manual Integration

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting
- M2 peak co-elution
- M3 rising or falling baseline
- M4 retention time shift
- M5 miscellaneous - under this category, the justification is explained
- M6 software did not integrate peak
- M7 partial peak integration

The following samples were manually integrated:

INDC1E6 Decachlorobiphenyl on front column , delta-BHC on rear column , Heptachlor on rear column due to M3


PEMEA beta-BHC on rear column due to M3

TOXAPH3E6 Decachlorobiphenyl on front column , Toxaphene on front column due to M3

TOXAPH4E6 Decachlorobiphenyl on front column , Toxaphene on front column due to M3

TOXAPH5E6 Decachlorobiphenyl on front column , Toxaphene on front column due to M3

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

A handwritten signature in black ink, appearing to be 'TJH' or similar, written in a cursive style.

Signed: _____

Date: _____ 10/22/2014 _____



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HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS Matrix Spike.
- MSD Matrix Spike Duplicate
- DUP Duplicate analysis
- SD Serial Dilution
- PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79500

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3525F.D/E6B3525R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3528F.D/E6B3528R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3529F.D/E6B3529R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:	Q
		(ug/L or ug/Kg) <u>UG/L</u>	
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79500(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79500

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3526F.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.20	
319-85-7	beta-BHC	0.16	
319-86-8	delta-BHC	0.25	
58-89-9	gamma-BHC (Lindane)	0.19	
76-44-8	Heptachlor	0.18	
309-00-2	Aldrin	0.19	
1024-57-3	Heptachlor epoxide	0.19	
959-98-8	Endosulfan I	0.19	
60-57-1	Dieldrin	0.41	
72-55-9	4,4'-DDE	0.40	
72-20-8	Endrin	0.42	
33213-65-9	Endosulfan II	0.41	
72-54-8	4,4'-DDD	0.39	
1031-07-8	Endosulfan sulfate	0.45	
50-29-3	4,4'-DDT	0.41	
72-43-5	Methoxychlor	1.8	
53494-70-5	Endrin ketone	0.42	
7421-93-4	Endrin aldehyde	0.42	
5103-71-9	alpha-Chlordane	0.19	
5103-74-2	gamma-Chlordane	0.19	
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79500(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79500

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3526R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.19	
319-85-7	beta-BHC	0.20	
319-86-8	delta-BHC	0.25	
58-89-9	gamma-BHC (Lindane)	0.20	
76-44-8	Heptachlor	0.19	
309-00-2	Aldrin	0.19	
1024-57-3	Heptachlor epoxide	0.19	
959-98-8	Endosulfan I	0.20	
60-57-1	Dieldrin	0.38	
72-55-9	4,4'-DDE	0.38	
72-20-8	Endrin	0.41	
33213-65-9	Endosulfan II	0.43	
72-54-8	4,4'-DDD	0.38	
1031-07-8	Endosulfan sulfate	0.44	
50-29-3	4,4'-DDT	0.41	
72-43-5	Methoxychlor	1.8	
53494-70-5	Endrin ketone	0.40	
7421-93-4	Endrin aldehyde	0.42	
5103-71-9	alpha-Chlordane	0.19	
5103-74-2	gamma-Chlordane	0.19	
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79500(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79500

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3527F.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.20	
319-85-7	beta-BHC	0.17	
319-86-8	delta-BHC	0.25	
58-89-9	gamma-BHC (Lindane)	0.19	
76-44-8	Heptachlor	0.19	
309-00-2	Aldrin	0.19	
1024-57-3	Heptachlor epoxide	0.19	
959-98-8	Endosulfan I	0.19	
60-57-1	Dieldrin	0.41	
72-55-9	4,4'-DDE	0.40	
72-20-8	Endrin	0.42	
33213-65-9	Endosulfan II	0.41	
72-54-8	4,4'-DDD	0.39	
1031-07-8	Endosulfan sulfate	0.45	
50-29-3	4,4'-DDT	0.40	
72-43-5	Methoxychlor	1.8	
53494-70-5	Endrin ketone	0.42	
7421-93-4	Endrin aldehyde	0.43	
5103-71-9	alpha-Chlordane	0.19	
5103-74-2	gamma-Chlordane	0.19	
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79500(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79500

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E6B3527R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SEPF Date Extracted: 10/15/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.20	
319-85-7	beta-BHC	0.21	
319-86-8	delta-BHC	0.25	
58-89-9	gamma-BHC (Lindane)	0.20	
76-44-8	Heptachlor	0.19	
309-00-2	Aldrin	0.19	
1024-57-3	Heptachlor epoxide	0.20	
959-98-8	Endosulfan I	0.20	
60-57-1	Dieldrin	0.39	
72-55-9	4,4'-DDE	0.37	
72-20-8	Endrin	0.41	
33213-65-9	Endosulfan II	0.43	
72-54-8	4,4'-DDD	0.38	
1031-07-8	Endosulfan sulfate	0.44	
50-29-3	4,4'-DDT	0.40	
72-43-5	Methoxychlor	1.8	
53494-70-5	Endrin ketone	0.41	
7421-93-4	Endrin aldehyde	0.42	
5103-71-9	alpha-Chlordane	0.19	
5103-74-2	gamma-Chlordane	0.19	
8001-35-2	Toxaphene	5.0	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79563

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E6B3574F.D/E6B3574R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02D

Sample wt/vol: 30.4 (g/mL) G Lab File ID: E6B3577F.D/E6B3577R.D

% Moisture: 28 Decanted: (Y/N) N Date Received: 10/09/2014

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	6.3	
72-20-8	Endrin	5.3	P
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	9.2	P
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	21	
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	12	P
5103-74-2	gamma-Chlordane	19	P
8001-35-2	Toxaphene	230	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSD 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04D

Sample wt/vol: 30.4 (g/mL) G Lab File ID: E6B3578F.D/E6B3578R.D

% Moisture: 48 Decanted: (Y/N) N Date Received: 10/09/2014

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	3.3	U
319-85-7	beta-BHC	3.3	U
319-86-8	delta-BHC	3.3	U
58-89-9	gamma-BHC (Lindane)	3.3	U
76-44-8	Heptachlor	3.3	U
309-00-2	Aldrin	3.3	U
1024-57-3	Heptachlor epoxide	3.3	U
959-98-8	Endosulfan I	3.3	U
60-57-1	Dieldrin	6.3	U
72-55-9	4,4'-DDE	6.3	U
72-20-8	Endrin	6.3	U
33213-65-9	Endosulfan II	6.3	U
72-54-8	4,4'-DDD	6.3	U
1031-07-8	Endosulfan sulfate	6.3	U
50-29-3	4,4'-DDT	6.3	U
72-43-5	Methoxychlor	33	U
53494-70-5	Endrin ketone	6.3	U
7421-93-4	Endrin aldehyde	6.3	U
5103-71-9	alpha-Chlordane	3.3	U
5103-74-2	gamma-Chlordane	3.3	U
8001-35-2	Toxaphene	330	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79563(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79563

Sample wt/vol: 30 (g/mL) G Lab File ID: E6B3575F.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	6.3	
319-85-7	beta-BHC	5.1	
319-86-8	delta-BHC	7.5	
58-89-9	gamma-BHC (Lindane)	6.0	
76-44-8	Heptachlor	5.5	
309-00-2	Aldrin	6.2	
1024-57-3	Heptachlor epoxide	5.7	
959-98-8	Endosulfan I	5.9	
60-57-1	Dieldrin	12	
72-55-9	4,4'-DDE	11	
72-20-8	Endrin	12	
33213-65-9	Endosulfan II	13	
72-54-8	4,4'-DDD	11	
1031-07-8	Endosulfan sulfate	12	
50-29-3	4,4'-DDT	11	
72-43-5	Methoxychlor	46	
53494-70-5	Endrin ketone	12	
7421-93-4	Endrin aldehyde	13	
5103-71-9	alpha-Chlordane	5.9	
5103-74-2	gamma-Chlordane	5.9	
8001-35-2	Toxaphene	170	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79563(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79563

Sample wt/vol: 30 (g/mL) G Lab File ID: E6B3575R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	6.1	
319-85-7	beta-BHC	5.8	
319-86-8	delta-BHC	6.2	
58-89-9	gamma-BHC (Lindane)	5.7	
76-44-8	Heptachlor	6.0	
309-00-2	Aldrin	6.3	
1024-57-3	Heptachlor epoxide	6.0	
959-98-8	Endosulfan I	5.6	
60-57-1	Dieldrin	11	
72-55-9	4,4'-DDE	11	
72-20-8	Endrin	11	
33213-65-9	Endosulfan II	13	
72-54-8	4,4'-DDD	11	
1031-07-8	Endosulfan sulfate	12	
50-29-3	4,4'-DDT	11	
72-43-5	Methoxychlor	46	
53494-70-5	Endrin ketone	10	
7421-93-4	Endrin aldehyde	11	
5103-71-9	alpha-Chlordane	6.1	
5103-74-2	gamma-Chlordane	5.9	
8001-35-2	Toxaphene	170	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79563(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79563

Sample wt/vol: 30 (g/mL) G Lab File ID: E6B3576F.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	5.6	
319-85-7	beta-BHC	5.0	
319-86-8	delta-BHC	6.9	
58-89-9	gamma-BHC (Lindane)	5.5	
76-44-8	Heptachlor	5.0	
309-00-2	Aldrin	5.6	
1024-57-3	Heptachlor epoxide	5.6	
959-98-8	Endosulfan I	5.8	
60-57-1	Dieldrin	12	
72-55-9	4,4'-DDE	11	
72-20-8	Endrin	12	
33213-65-9	Endosulfan II	12	
72-54-8	4,4'-DDD	10	
1031-07-8	Endosulfan sulfate	11	
50-29-3	4,4'-DDT	11	
72-43-5	Methoxychlor	45	
53494-70-5	Endrin ketone	11	
7421-93-4	Endrin aldehyde	12	
5103-71-9	alpha-Chlordane	5.7	
5103-74-2	gamma-Chlordane	5.7	
8001-35-2	Toxaphene	170	U

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79563(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79563

Sample wt/vol: 30 (g/mL) G Lab File ID: E6B3576R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	5.4	
319-85-7	beta-BHC	5.9	
319-86-8	delta-BHC	5.8	
58-89-9	gamma-BHC (Lindane)	5.3	
76-44-8	Heptachlor	5.4	
309-00-2	Aldrin	5.6	
1024-57-3	Heptachlor epoxide	5.8	
959-98-8	Endosulfan I	5.4	
60-57-1	Dieldrin	11	
72-55-9	4,4'-DDE	11	
72-20-8	Endrin	11	
33213-65-9	Endosulfan II	13	
72-54-8	4,4'-DDD	10	
1031-07-8	Endosulfan sulfate	11	
50-29-3	4,4'-DDT	10	
72-43-5	Methoxychlor	46	
53494-70-5	Endrin ketone	10	
7421-93-4	Endrin aldehyde	11	
5103-71-9	alpha-Chlordane	5.9	
5103-74-2	gamma-Chlordane	5.7	
8001-35-2	Toxaphene	170	U

2N - FORM II PEST-1
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MB-79500	80	79	79	79			0
02	LCS-79500	82	80	81	81			0
03	LCSD-79500	82	80	81	80			0
04	USSW 100814	80	78	78	80			0
05	DSSW 100814	79	78	77	79			0

QC LIMITS

TCX = Tetrachloro-m-xylene

(25-140)

DCB = Decachlorobiphenyl

(30-135)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

som14.10.02.1616

2P - FORM II PEST-2
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MB-79563	74	65	66	68			0
02	LCS-79563	79	69	68	70			0
03	LCSD-79563	69	61	67	70			0
04	USSED 100814	91	81	54 *	105			1
05	DSSSED 100814	67	67	57	57			0

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

QC LIMITS
(14-113)
(55-130)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

som14.10.02.1616

3L - FORM III PEST-3
WATER PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79500 LCS Lot No.: A092276
Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014
Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
alpha-BHC	0.2000	0.1977	99	60-130
beta-BHC	0.2000	0.1648	82	65-125
delta-BHC	0.2000	0.2510	125	45-135
gamma-BHC (Lindane)	0.2000	0.1925	96	25-135
Heptachlor	0.2000	0.1845	92	40-130
Aldrin	0.2000	0.1929	96	25-140
Heptachlor epoxide	0.2000	0.1857	93	60-130
Endosulfan I	0.2000	0.1875	94	50-110
Dieldrin	0.4000	0.4137	103	60-130
4,4'-DDE	0.4000	0.3989	100	35-140
Endrin	0.4000	0.4232	106	55-135
Endosulfan II	0.4000	0.4068	102	30-130
4,4'-DDD	0.4000	0.3892	97	25-150
Endosulfan sulfate	0.4000	0.4498	112	55-135
4,4'-DDT	0.4000	0.4078	102	45-140
Methoxychlor	2.0000	1.8139	91	55-150
Endrin ketone	0.4000	0.4196	105	75-125
Endrin aldehyde	0.4000	0.4247	106	55-135
alpha-Chlordane	0.2000	0.1894	95	65-125
gamma-Chlordane	0.2000	0.1907	95	60-125

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/17/2014

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
alpha-BHC	0.2000	0.1944	97	60-130
beta-BHC	0.2000	0.2039	102	65-125
delta-BHC	0.2000	0.2538	127	45-135
gamma-BHC (Lindane)	0.2000	0.1972	99	25-135

COMMENTS:

3L - FORM III PEST-3
WATER PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79500 LCS Lot No.: A092276
Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014

Heptachlor	0.2000	0.1870	93	40-130
Aldrin	0.2000	0.1918	96	25-140
Heptachlor epoxide	0.2000	0.1934	97	60-130
Endosulfan I	0.2000	0.2021	101	50-110
Dieldrin	0.4000	0.3847	96	60-130
4,4'-DDE	0.4000	0.3758	94	35-140
Endrin	0.4000	0.4144	104	55-135
Endosulfan II	0.4000	0.4339	108	30-130
4,4'-DDD	0.4000	0.3816	95	25-150
Endosulfan sulfate	0.4000	0.4438	111	55-135
4,4'-DDT	0.4000	0.4067	102	45-140
Methoxychlor	2.0000	1.8019	90	55-150
Endrin ketone	0.4000	0.4039	101	75-125
Endrin aldehyde	0.4000	0.4172	104	55-135
alpha-Chlordane	0.2000	0.1926	96	65-125
gamma-Chlordane	0.2000	0.1859	93	60-125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 40 outside limits.

COMMENTS:

3L - FORM III PEST-3
WATER PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79500 LCS Lot No.: A092276
Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014
Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	0.2000	0.2000	100	60-130	1.0	30
beta-BHC	0.2000	0.1651	83	65-125	1.0	30
delta-BHC	0.2000	0.2495	125	45-135	0	30
gamma-BHC (Lindane)	0.2000	0.1942	97	25-135	1.0	30
Heptachlor	0.2000	0.1862	93	40-130	1.0	30
Aldrin	0.2000	0.1948	97	25-140	1.0	30
Heptachlor epoxide	0.2000	0.1877	94	60-130	1.0	30
Endosulfan I	0.2000	0.1876	94	50-110	0	30
Dieldrin	0.4000	0.4139	103	60-130	0	30
4,4'-DDE	0.4000	0.3985	100	35-140	0	30
Endrin	0.4000	0.4214	105	55-135	1.0	30
Endosulfan II	0.4000	0.4076	102	30-130	0	30
4,4'-DDD	0.4000	0.3885	97	25-150	0	30
Endosulfan sulfate	0.4000	0.4506	113	55-135	1.0	30
4,4'-DDT	0.4000	0.4037	101	45-140	1.0	30
Methoxychlor	2.0000	1.8240	91	55-150	0	30
Endrin ketone	0.4000	0.4235	106	75-125	1.0	30
Endrin aldehyde	0.4000	0.4283	107	55-135	1.0	30
alpha-Chlordane	0.2000	0.1891	95	65-125	0	30
gamma-Chlordane	0.2000	0.1916	96	60-125	1.0	30

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/17/2014

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	0.2000	0.1971	99	60-130	2.0	30
beta-BHC	0.2000	0.2054	103	65-125	1.0	30
delta-BHC	0.2000	0.2523	126	45-135	1.0	30
gamma-BHC (Lindane)	0.2000	0.2000	100	25-135	1.0	30

COMMENTS:

3L - FORM III PEST-3
WATER PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
 Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
 Lab Sample ID: LCSD-79500 LCS Lot No.: A092276
 Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014

Heptachlor	0.2000	0.1881	94	40-130	1.0	30
Aldrin	0.2000	0.1937	97	25-140	1.0	30
Heptachlor epoxide	0.2000	0.1952	98	60-130	1.0	30
Endosulfan I	0.2000	0.2000	100	50-110	1.0	30
Dieldrin	0.4000	0.3863	97	60-130	1.0	30
4,4'-DDE	0.4000	0.3712	93	35-140	1.0	30
Endrin	0.4000	0.4139	103	55-135	1.0	30
Endosulfan II	0.4000	0.4263	107	30-130	1.0	30
4,4'-DDD	0.4000	0.3785	95	25-150	0	30
Endosulfan sulfate	0.4000	0.4447	111	55-135	0	30
4,4'-DDT	0.4000	0.3953	99	45-140	3.0	30
Methoxychlor	2.0000	1.8126	91	55-150	1.0	30
Endrin ketone	0.4000	0.4065	102	75-125	1.0	30
Endrin aldehyde	0.4000	0.4161	104	55-135	0	30
alpha-Chlordane	0.2000	0.1929	96	65-125	0	30
gamma-Chlordane	0.2000	0.1867	93	60-125	0	30

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 40 outside limits.

RPD: 0 out of 40 outside limits.

COMMENTS:

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79563 LCS Lot No.: A092276
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014
Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS
alpha-BHC	6.6670	6.3256	95	60-125
beta-BHC	6.6670	5.1035	77	60-125
delta-BHC	6.6670	7.4780	112	55-130
gamma-BHC (Lindane)	6.6670	5.9981	90	60-125
Heptachlor	6.6670	5.4755	82	50-140
Aldrin	6.6670	6.1674	93	45-140
Heptachlor epoxide	6.6670	5.7172	86	65-130
Endosulfan I	6.6670	5.9448	89	15-135
Dieldrin	13.3330	12.3254	92	65-125
4,4'-DDE	13.3330	11.4608	86	70-125
Endrin	13.3330	12.3880	93	60-135
Endosulfan II	13.3330	12.5371	94	35-140
4,4'-DDD	13.3330	10.6751	80	30-135
Endosulfan sulfate	13.3330	12.1423	91	60-135
4,4'-DDT	13.3330	11.1816	84	45-140
Methoxychlor	66.6670	45.6223	68	55-145
Endrin ketone	13.3330	11.6658	87	65-135
Endrin aldehyde	13.3330	12.5905	94	35-145
alpha-Chlordane	6.6670	5.8540	88	65-120
gamma-Chlordane	6.6670	5.8786	88	65-125

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/20/2014

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS
alpha-BHC	6.6670	6.0544	91	60-125
beta-BHC	6.6670	5.8174	87	60-125
delta-BHC	6.6670	6.1664	92	55-130
gamma-BHC (Lindane)	6.6670	5.7380	86	60-125

COMMENTS:

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79563 LCS Lot No.: A092276
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014

Heptachlor	6.6670	6.0086	90	50-140
Aldrin	6.6670	6.2841	94	45-140
Heptachlor epoxide	6.6670	5.9599	89	65-130
Endosulfan I	6.6670	5.5727	84	15-135
Dieldrin	13.3330	11.2728	85	65-125
4,4'-DDE	13.3330	10.6648	80	70-125
Endrin	13.3330	11.1096	83	60-135
Endosulfan II	13.3330	13.2972	100	35-140
4,4'-DDD	13.3330	10.5420	79	30-135
Endosulfan sulfate	13.3330	11.8500	89	60-135
4,4'-DDT	13.3330	10.6745	80	45-140
Methoxychlor	66.6670	46.3935	70	55-145
Endrin ketone	13.3330	10.3563	78	65-135
Endrin aldehyde	13.3330	11.1764	84	35-145
alpha-Chlordane	6.6670	6.0518	91	65-120
gamma-Chlordane	6.6670	5.8597	88	65-125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 40 outside limits.

COMMENTS:

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79563 LCS Lot No.: A092276
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014
Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	6.6670	5.6199	84	60-125	12	30
beta-BHC	6.6670	4.9975	75	60-125	3.0	30
delta-BHC	6.6670	6.8651	103	55-130	8.0	30
gamma-BHC (Lindane)	6.6670	5.4728	82	60-125	9.0	30
Heptachlor	6.6670	4.9685	75	50-140	9.0	30
Aldrin	6.6670	5.6294	84	45-140	10	30
Heptachlor epoxide	6.6670	5.5515	83	65-130	4.0	30
Endosulfan I	6.6670	5.7852	87	15-135	2.0	30
Dieldrin	13.3330	12.0730	91	65-125	1.0	30
4,4'-DDE	13.3330	11.3861	85	70-125	1.0	30
Endrin	13.3330	12.1409	91	60-135	2.0	30
Endosulfan II	13.3330	12.3270	92	35-140	2.0	30
4,4'-DDD	13.3330	10.4201	78	30-135	3.0	30
Endosulfan sulfate	13.3330	11.4522	86	60-135	6.0	30
4,4'-DDT	13.3330	11.1621	84	45-140	0	30
Methoxychlor	66.6670	45.1660	68	55-145	0	30
Endrin ketone	13.3330	11.3313	85	65-135	2.0	30
Endrin aldehyde	13.3330	12.1176	91	35-145	3.0	30
alpha-Chlordane	6.6670	5.7401	86	65-120	2.0	30
gamma-Chlordane	6.6670	5.7252	86	65-125	2.0	30

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/20/2014

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	6.6670	5.3713	81	60-125	12	30
beta-BHC	6.6670	5.9246	89	60-125	2.0	30
delta-BHC	6.6670	5.7841	87	55-130	6.0	30
gamma-BHC (Lindane)	6.6670	5.3013	80	60-125	7.0	30

COMMENTS:

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79563 LCS Lot No.: A092276
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014

Heptachlor	6.6670	5.4461	82	50-140	9.0	30
Aldrin	6.6670	5.6055	84	45-140	11	30
Heptachlor epoxide	6.6670	5.7816	87	65-130	2.0	30
Endosulfan I	6.6670	5.4200	81	15-135	4.0	30
Dieldrin	13.3330	11.1117	83	65-125	2.0	30
4,4'-DDE	13.3330	10.6035	80	70-125	0	30
Endrin	13.3330	11.0170	83	60-135	0	30
Endosulfan II	13.3330	12.9773	97	35-140	3.0	30
4,4'-DDD	13.3330	10.3179	77	30-135	3.0	30
Endosulfan sulfate	13.3330	11.0660	83	60-135	7.0	30
4,4'-DDT	13.3330	10.3874	78	45-140	3.0	30
Methoxychlor	66.6670	46.3269	69	55-145	1.0	30
Endrin ketone	13.3330	10.1626	76	65-135	3.0	30
Endrin aldehyde	13.3330	10.8674	82	35-145	2.0	30
alpha-Chlordane	6.6670	5.9219	89	65-120	2.0	30
gamma-Chlordane	6.6670	5.7490	86	65-125	2.0	30

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 40 outside limits.

RPD: 0 out of 40 outside limits.

COMMENTS:

4E - FORM IV PEST
PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79500

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: E6B3525F.D / E6B3525R.D Lab Sample ID: MB-79500
Matrix: (SOIL/SED/WATER) WATER Extraction: (Type) SEPF Date Extracted: 10/15/2014
Sulfur Cleanup: (Y/N) Y GPC Cleanup: (Y/N) N

Date Analyzed (1): 10/17/2014 Date Analyzed (2): 10/17/2014
Time Analyzed (1): 16:31 Time Analyzed (2): 16:31
Instrument ID (1): E6 Instrument ID (2): E6
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-79500	LCS-79500	10/17/2014	10/17/2014
02	LCSD-79500	LCSD-79500	10/17/2014	10/17/2014
03	USSW 100814	N1895-01D	10/17/2014	10/17/2014
04	DSSW 100814	N1895-03D	10/17/2014	10/17/2014

COMMENTS:

4E - FORM IV PEST
PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79563

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: E6B3574F.D / E6B3574R.D Lab Sample ID: MB-79563
Matrix: (SOIL/SED/WATER) SOIL Extraction: (Type) SONC Date Extracted: 10/18/2014
Sulfur Cleanup: (Y/N) Y GPC Cleanup: (Y/N) N

Date Analyzed (1): 10/20/2014 Date Analyzed (2): 10/20/2014
Time Analyzed (1): 16:48 Time Analyzed (2): 16:48
Instrument ID (1): E6 Instrument ID (2): E6
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-79563	LCS-79563	10/20/2014	10/20/2014
02	LCSD-79563	LCSD-79563	10/20/2014	10/20/2014
03	USSED 100814	N1895-02D	10/20/2014	10/20/2014
04	DSSED 100814	N1895-04D	10/20/2014	10/20/2014

COMMENTS:



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** PCB Organics ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1895

SW846 8082A, PCB by GC-ECD

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code:
SW846 8082A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3510C
Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: E2
Instrument Type: GC-ECD

Description: HP5890 II +
Manufacturer: Hewlett-Packard
Model: 5890
GC Column used: 30 m X 0.53 mm ID [0.50 um thickness] CLPPest
capillary column.
GC Column used: 30 m X 0.53 mm ID [0.42 um thickness] CLPPestII
capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits with the following exceptions. Please note that the acceptance criteria allow one surrogate recovery outside of the QC limits per fraction.

USSED 100814 (N1895-02D), recovery is above criteria for Decachlorobiphenyl on rear column at 172% with criteria of (60-125), recovery is below criteria for Decachlorobiphenyl on front column at 45% with criteria of (60-125).

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Dilutions:

No sample in this SDG required analysis at dilution.

F. Samples:

The lower concentration between the primary and confirmatory GC

column concentrations is reported due to the presence of interferences unless otherwise indicated. P flags are assigned to compounds when D% between the two columns are greater than 40%.

No other unusual occurrences were noted during sample analysis.

G. Manual Integration

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:


- M1 peak tailing or fronting
- M2 peak co-elution
- M3 rising or falling baseline
- M4 retention time shift
- M5 miscellaneous - under this category, the justification is explained
- M6 software did not integrate peak
- M7 partial peak integration

The following samples were manually integrated:

AR12426J2 Aroclor-1242 on front column due to M3

AR12482J2 Aroclor-1248 on front column due to M3

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

A handwritten signature in black ink, appearing to be 'JFW' or similar, written in a cursive style.

Signed: _____

Date: _____ 10/22/2014 _____



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL** Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE** Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA** Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX** Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS** Matrix Spike.
- MSD** Matrix Spike Duplicate
- DUP** Duplicate analysis
- SD** Serial Dilution
- PS** Post-digestion or Post-distillation spike. For metals or inorganic analyses

1H - FORM I ARO
AROCOLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79501

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-79501
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3129F.D/E2N3129R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1H - FORM I ARO
AROCOLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-01D
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3132F.D/E2N3132R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1H - FORM I ARO
AROCOLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSW 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1895-03D
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3133F.D/E2N3133R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/09/2014
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79501(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79501
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3130F.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	4.8	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	4.5	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79501(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-79501
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3130R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	4.6	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	4.5	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79501(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79501
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3131F.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	4.8	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	4.6	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79501(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCSD-79501
Sample wt/vol: 1000 (g/mL) ML Lab File ID: E2N3131R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SEPF Date Extracted: 10/15/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/17/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	4.7	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	4.6	

1H - FORM I ARO
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-79564

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____

Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-79564

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E2N3146F.D/E2N3146R.D

% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____

Extraction: (Type) SONC Date Extracted: 10/18/2014

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

1H - FORM I ARO
AROCOLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

USSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-02D
Sample wt/vol: 30.4 (g/mL) G Lab File ID: E2N3149F.D/E2N3149R.D
% Moisture: 28 Decanted: (Y/N) N Date Received: 10/09/2014
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	45	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

1H - FORM I ARO
AROCOLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSSSED 100814

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1895-04D
Sample wt/vol: 30.4 (g/mL) G Lab File ID: E2N3150F.D/E2N3150R.D
% Moisture: 48 Decanted: (Y/N) N Date Received: 10/09/2014
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
12674-11-2	Aroclor-1016	63	U
11104-28-2	Aroclor-1221	63	U
11141-16-5	Aroclor-1232	63	U
53469-21-9	Aroclor-1242	63	U
12672-29-6	Aroclor-1248	63	U
11097-69-1	Aroclor-1254	63	U
11096-82-5	Aroclor-1260	63	U

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79564(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79564
Sample wt/vol: 30 (g/mL) G Lab File ID: E2N3147F.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	130	
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	150	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-79564(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-79564
Sample wt/vol: 30 (g/mL) G Lab File ID: E2N3147R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	140	
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	160	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79564(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79564
Sample wt/vol: 30 (g/mL) G Lab File ID: E2N3148F.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	140	
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	140	

1H - FORM I ARO
AROCOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCSD-79564(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-79564
Sample wt/vol: 30 (g/mL) G Lab File ID: E2N3148R.D
% Moisture: _____ Decanted: (Y/N) _____ Date Received: _____
Extraction: (Type) SONC Date Extracted: 10/18/2014
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/20/2014
Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y
Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	160	
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	150	

2Q - FORM II ARO-1
WATER AROCLOR SURROGATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MB-79501	111	121	113	103			0
02	LCS-79501	106	116	114	103			0
03	LCSD-79501	105	116	114	104			0
04	USSW 100814	104	116	111	105			0
05	DSSW 100814	101	114	107	103			0

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

QC LIMITS
(34-137)
(40-135)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

som14.10.02.1616

2R - FORM II ARO-2
SOIL AROCLOR SURROGATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MB-79564	104	114	112	100			0
02	LCS-79564	89	95	118	107			0
03	LCSD-79564	105	115	111	103			0
04	USSED 100814	146	126	45 *	172 *			2
05	DSSSED 100814	84	98	82	93			0

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

QC LIMITS
(34-147)
(60-125)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

som14.10.02.1616

3N - FORM III ARO-3
WATER AROCLOR LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79501

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79501 LCS Lot No.: a094177
Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014
Instrument ID (1): E2 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
Aroclor-1016	4.0000	4.7532	119	25-145
Aroclor-1260	4.0000	4.5292	113	30-145

Instrument ID (2): E2 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/17/2014

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
Aroclor-1016	4.0000	4.6159	115	25-145
Aroclor-1260	4.0000	4.4805	112	30-145

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

COMMENTS:

3N - FORM III ARO-3
WATER AROCLOR LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79501

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79501 LCS Lot No.: a094177
Date Extracted: 10/15/2014 Date Analyzed (1): 10/17/2014
Instrument ID (1): E2 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
Aroclor-1016	4.0000	4.7983	120	25-145	1.0	30
Aroclor-1260	4.0000	4.6054	115	30-145	2.0	30

Instrument ID (2): E2 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/17/2014

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
Aroclor-1016	4.0000	4.7365	118	25-145	3.0	30
Aroclor-1260	4.0000	4.6170	115	30-145	3.0	30

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

RPD: 0 out of 4 outside limits.

COMMENTS:

3P - FORM III ARO-4
SOIL AROCLOR LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-79564

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCS-79564 LCS Lot No.: a094177
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014
Instrument ID (1): E2 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS
Aroclor-1016	133.3330	127.6052	96	40-140
Aroclor-1260	133.3330	148.3241	111	60-130

Instrument ID (2): E2 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/20/2014

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS
Aroclor-1016	133.3330	139.0881	104	40-140
Aroclor-1260	133.3330	157.9070	118	60-130

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

COMMENTS:

3P - FORM III ARO-4
SOIL AROCLOR LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-79564

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab Sample ID: LCSD-79564 LCS Lot No.: a094177
Date Extracted: 10/18/2014 Date Analyzed (1): 10/20/2014
Instrument ID (1): E2 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
Aroclor-1016	133.3330	135.0245	101	40-140	5.0	30
Aroclor-1260	133.3330	142.0217	107	60-130	4.0	30

Instrument ID (2): E2 GC Column(2): CLPPestII ID: 0.53 (mm)
Date Analyzed (2): 10/20/2014

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
Aroclor-1016	133.3330	156.6715	118	40-140	13	30
Aroclor-1260	133.3330	152.1576	114	60-130	3.0	30

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

RPD: 0 out of 4 outside limits.

COMMENTS:

4F - FORM IV ARO
AROCOLOR METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79501

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: E2N3129F.D / E2N3129R.D Lab Sample ID: MB-79501
Matrix: (SOIL/SED/WATER) WATER Extraction: (Type) SEPF Date Extracted: 10/15/2014
Sulfur Cleanup: (Y/N) Y GPC Cleanup: (Y/N) N
Acid Cleanup: (Y/N) Y
Date Analyzed (1): 10/17/2014 Date Analyzed (2): 10/17/2014
Time Analyzed (1): 12:38 Time Analyzed (2): 12:38
Instrument ID (1): E2 Instrument ID (2): E2
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-79501	LCS-79501	10/17/2014	10/17/2014
02	LCSD-79501	LCSD-79501	10/17/2014	10/17/2014
03	USSW 100814	N1895-01D	10/17/2014	10/17/2014
04	DSSW 100814	N1895-03D	10/17/2014	10/17/2014

COMMENTS:

4F - FORM IV ARO
AROCOLOR METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-79564

Lab Name: SPECTRUM ANALYTICAL, INC. Contract: _____
Lab Code: MITKEM Case No.: N1895 Mod. Ref No.: _____ SDG No.: SN1895
Lab File ID: E2N3146F.D / E2N3146R.D Lab Sample ID: MB-79564
Matrix: (SOIL/SED/WATER) SOIL Extraction: (Type) SONC Date Extracted: 10/18/2014
Sulfur Cleanup: (Y/N) Y GPC Cleanup: (Y/N) N
Acid Cleanup: (Y/N) Y
Date Analyzed (1): 10/20/2014 Date Analyzed (2): 10/20/2014
Time Analyzed (1): 11:38 Time Analyzed (2): 11:38
Instrument ID (1): E2 Instrument ID (2): E2
GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-79564	LCS-79564	10/20/2014	10/20/2014
02	LCSD-79564	LCSD-79564	10/20/2014	10/20/2014
03	USSED 100814	N1895-02D	10/20/2014	10/20/2014
04	DSSSED 100814	N1895-04D	10/20/2014	10/20/2014

COMMENTS:



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** Metals ***

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: N1895

SW846 6010C, SW846 7470A, SW846 7471B

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test codes:
SW846 6010C, SW846 7470A, SW846 7471B

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3005A

Aqueous Samples were prepared following procedures in laboratory test code: SW7470A

Soil Samples were prepared following procedures in laboratory test code: SW3050B

Soil Samples were prepared following procedures in laboratory test code: SW7471B

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

A matrix spike was not performed on any sample in this SDG.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

A duplicate analysis was not performed on any sample in this SDG.

F. Serial Dilution (SD):

A serial dilution was not performed on any sample in this SDG.

G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 10/28/2014



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

- DL** Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE** Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA** Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX** Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS** Matrix Spike.
- MSD** Matrix Spike Duplicate
- DUP** Duplicate analysis
- SD** Serial Dilution
- PS** Post-digestion or Post-distillation spike. For metals or inorganic analyses

U.S.EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

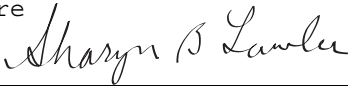
Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3
Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1895
SOW No.: SW846

EPA Sample No.	Lab Sample ID
<u>DSSD 100814</u>	<u>N1895-04</u>
<u>DSSW 100814</u>	<u>N1895-03</u>
<u>MW-4 100814</u>	<u>N1895-05</u>
<u>USSED 100814</u>	<u>N1895-02</u>
<u>USSW 100814</u>	<u>N1895-01</u>

Were ICP interelement corrections applied?	Yes/No	<u>Yes</u>
Were background corrections applied?	Yes/No	<u>Yes</u>
If yes-were raw data generated before application of background corrections?	Yes/No	<u>No</u>

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature

Signature:  Name: Sharyn B. Lawler
Date: 10/28/14 Title: QAD

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSSD 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Matrix (soil/water): SOIL Lab Sample ID: N1895-04Level (low/med): MED Date Received: 10/09/2014% Solids: 51.6Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8130			P
7440-36-0	Antimony	0.53	B		P
7440-38-2	Arsenic	6.1			P
7440-39-3	Barium	52.8			P
7440-41-7	Beryllium	0.66			P
7440-43-9	Cadmium	0.036	B		P
7440-70-2	Calcium	2440			P
7440-47-3	Chromium	12.6			P
7440-48-4	Cobalt	7.1			P
7440-50-8	Copper	34.4			P
7439-89-6	Iron	15700			P
7439-92-1	Lead	42.0			P
7439-95-4	Magnesium	2800			P
7439-96-5	Manganese	200			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	13.5			P
7440-09-7	Potassium	452			P
7782-49-2	Selenium	1.3	B		P
7440-22-4	Silver	0.20	B		P
7440-23-5	Sodium	246			P
7440-28-0	Thallium	0.23	U		P
7440-62-2	Vanadium	16.8			P
7440-66-6	Zinc	94.3			P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSSW 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Matrix (soil/water): WATER Lab Sample ID: N1895-03Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	115	B		P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	21.9	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	50400			P
7440-47-3	Chromium	1.0	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	6.0	B		P
7439-89-6	Iron	229			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	16000			P
7439-96-5	Manganese	81.8			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	8740			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	130000			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.1	U		P
7440-66-6	Zinc	19.2	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-4 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Matrix (soil/water): WATER Lab Sample ID: N1895-05Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3090			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	48.4	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	55100			P
7440-47-3	Chromium	3.9	B		P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	15.3	B		P
7439-89-6	Iron	4980			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	13300			P
7439-96-5	Manganese	1310			P
7439-97-6	Mercury	0.062	B		CV
7440-02-0	Nickel	6.1	B		P
7440-09-7	Potassium	2880			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	39900			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	17.2	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

USSED 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Matrix (soil/water): SOIL Lab Sample ID: N1895-02Level (low/med): MED Date Received: 10/09/2014% Solids: 71.9Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5670			P
7440-36-0	Antimony	0.33	B		P
7440-38-2	Arsenic	3.0			P
7440-39-3	Barium	21.0			P
7440-41-7	Beryllium	0.39			P
7440-43-9	Cadmium	0.035	B		P
7440-70-2	Calcium	2060			P
7440-47-3	Chromium	8.8			P
7440-48-4	Cobalt	6.1			P
7440-50-8	Copper	18.2			P
7439-89-6	Iron	13100			P
7439-92-1	Lead	40.9			P
7439-95-4	Magnesium	2330			P
7439-96-5	Manganese	109			P
7439-97-6	Mercury	0.24			CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	368			P
7782-49-2	Selenium	1.3			P
7440-22-4	Silver	0.10	B		P
7440-23-5	Sodium	105			P
7440-28-0	Thallium	0.25	B		P
7440-62-2	Vanadium	11.9			P
7440-66-6	Zinc	78.5			P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

USSW 100814

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Matrix (soil/water): WATER Lab Sample ID: N1895-01Level (low/med): MED Date Received: 10/09/2014% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	191	B		P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	4.3	U		P
7440-39-3	Barium	23.3	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.89	U		P
7440-70-2	Calcium	51600			P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	6.3	B		P
7439-89-6	Iron	407			P
7439-92-1	Lead	4.2	U		P
7439-95-4	Magnesium	16500			P
7439-96-5	Manganese	98.5			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	9380			P
7782-49-2	Selenium	12.0	U		P
7440-22-4	Silver	6.9	U		P
7440-23-5	Sodium	138000			P
7440-28-0	Thallium	6.2	U		P
7440-62-2	Vanadium	1.2	B		P
7440-66-6	Zinc	18.3	B		P

Comments:

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Preparation Blank Matrix (soil/water): SOIL Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG **MB-79582****FIMS2_141021A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/21/14 11:23	C		C		C		C	
Mercury	0.028	U	0.028	U					0.012	B	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Preparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79581****FIMS2_141022A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/22/14 9:05	C		C		C		C	
Mercury	0.028	U	0.028	U					0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

FIMS2_141022C

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/22/14 12:21	C		C		C		C	
Mercury	0.028	U	0.028	U							CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895Preparation Blank Matrix (soil/water): WATER Method Blank ID:Preparation Blank Concentration Units (ug/L or mg/kg): UG/L **MB-79691****FIMS2_141024D**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/14 15:54	C	10/24/14 16:09	C		C		C	
Mercury	0.028	U	0.028	U	0.028	U			0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895

Preparation Blank Matrix (soil/water): WATER Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L MB-79544

OPTIMA3_141018A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	10/18/14 15:36	C	10/18/14 16:18	C	10/18/14 16:55	C		C	
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.5	B	4.300	U	P
Barium	2.4	B	3.9	B	3.2	B	3.5	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	169.5	B	110.0	U	117.4	B	114.8	B	112.581	B	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.9	B	1.1	B	0.8	B	1.0	B	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	31.0	U	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	U	1.0	B	0.8	U	1.1	B	0.850	U	P
Potassium	111.0	B	76.0	U	-348.0	B	-238.8	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	29.0	U	93.4	B	110.9	B	129.5	B	116.364	B	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.3	B	1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_141018A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	10/18/14 17:28	C		C		C		C	
Aluminum			66.0	U							P
Antimony			9.3	U							P
Arsenic			7.2	B							P
Barium			3.3	B							P
Beryllium			0.3	U							P
Cadmium			0.9	U							P
Calcium			153.1	B							P
Chromium			0.6	U							P
Cobalt			0.7	B							P
Copper			3.6	U							P
Iron			31.0	U							P
Lead			4.2	U							P
Magnesium			76.0	U							P
Manganese			10.0	U							P
Nickel			0.8	U							P
Potassium			76.0	U							P
Selenium			12.0	U							P
Silver			6.9	U							P
Sodium			128.5	B							P
Thallium			6.2	U							P
Vanadium			1.1	U							P
Zinc			4.9	U							P

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1895

Preparation Blank Matrix (soil/water): SOIL Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG MB-79545

OPTIMA3_141020B

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	10/20/14 13:33	C	10/20/14 14:14	C		C		C	
Aluminum	66.0	U	66.0	U	66.0	U			1.295	B	P
Antimony	9.3	U	9.3	U	9.3	U			0.380	U	P
Arsenic	4.3	U	4.3	U	4.3	U			0.410	U	P
Barium	4.5	B	4.0	B	2.7	B			0.034	B	P
Beryllium	0.3	U	0.3	U	0.3	U			0.002	U	P
Cadmium	0.9	U	0.9	U	0.9	U			0.015	U	P
Calcium	110.0	U	110.0	U	110.0	U			6.100	U	P
Chromium	0.6	U	0.6	U	0.6	U			0.019	U	P
Cobalt	0.8	B	0.9	B	0.7	U			0.044	U	P
Copper	3.6	U	3.6	U	3.6	U			0.110	U	P
Iron	31.0	U	31.0	U	46.7	B			1.500	U	P
Lead	4.2	U	4.2	U	4.2	U			0.170	U	P
Magnesium	76.0	U	76.0	U	76.0	U			0.837	B	P
Manganese	10.0	U	10.0	U	10.0	U			0.130	U	P
Nickel	1.3	B	1.0	B	0.8	U			0.043	U	P
Potassium	76.0	U	76.0	U	76.0	U			3.400	U	P
Selenium	12.0	U	12.0	U	12.0	U			0.640	U	P
Silver	6.9	U	6.9	U	6.9	U			0.065	B	P
Sodium	29.0	U	29.0	U	29.0	U			1.100	U	P
Thallium	6.2	U	6.2	U	6.2	U			0.220	U	P
Vanadium	1.4	B	1.2	B	1.1	U			0.060	U	P
Zinc	4.9	U	4.9	U	4.9	U			0.180	U	P

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Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1895
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCS-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9787.97	107.6						
Antimony	455.0	479.73	105.4						
Arsenic	455.0	496.05	109.0						
Barium	9100.0	9817.10	107.9						
Beryllium	227.0	244.29	107.6						
Cadmium	227.0	245.52	108.2						
Calcium	22700.0	23931.47	105.4						
Chromium	910.0	988.38	108.6						
Cobalt	2270.0	2449.69	107.9						
Copper	1130.0	1218.25	107.8						
Iron	4550.0	5101.85	112.1						
Lead	455.0	484.10	106.4						
Magnesium	22700.0	24417.79	107.6						
Manganese	2270.0	2445.00	107.7						
Nickel	2270.0	2451.41	108.0						
Potassium	22700.0	24440.95	107.7						
Selenium	455.0	481.42	105.8						
Silver	1130.0	1256.90	111.2						
Sodium	22700.0	25183.21	110.9						
Thallium	455.0	449.74	98.8						
Vanadium	2270.0	2410.44	106.2						
Zinc	2270.0	2460.08	108.4						

U.S. EPA - CLP

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LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc.

Contract: 60323116.3

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.:

SN1895

Solid LCS Source:

LCS(D) ID:

Aqueous LCS Source:

LCS-79545

Analyte	Aqueous (ug/L)			Solid (mg/Kg)				
	True	Found	%R	True	Found	C	Limits	%R
Aluminum				455.0	474.6		364 546.0	104.3
Antimony				22.8	24.3		18.2 27.3	106.6
Arsenic				22.8	25.1		18.2 27.3	110.1
Barium				455.0	483.6		364 546.0	106.3
Beryllium				11.4	11.7		9.1 13.6	102.6
Cadmium				11.4	12.5		9.1 13.6	109.6
Calcium				1135.0	1164.8		908 1362.0	102.6
Chromium				45.5	48.8		36.4 54.6	107.3
Cobalt				113.5	121.3		90.8 136.2	106.9
Copper				56.5	59.6		45.2 67.8	105.5
Iron				227.5	253.4		182 273.0	111.4
Lead				22.8	24.9		18.2 27.3	109.2
Magnesium				1135.0	1197.6		908 1362.0	105.5
Manganese				113.5	120.3		90.8 136.2	106.0
Nickel				113.5	121.0		90.8 136.2	106.6
Potassium				1135.0	1213.1		908 1362.0	106.9
Selenium				22.8	23.6		18.2 27.3	103.5
Silver				56.5	60.1		42.4 67.8	106.4
Sodium				1135.0	1207.8		908 1362.0	106.4
Thallium				22.8	22.8		18.2 27.3	100.0
Vanadium				113.5	118.0		90.8 136.2	104.0
Zinc				113.5	119.7		90.8 136.2	105.5

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Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1895
Solid LCS Source:				LCS(D) ID:			
Aqueous LCS Source:				LCS-79581			

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.58	99.6						

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Lab Name: <u>Spectrum Analytical, Inc.</u>	Contract: <u>60323116.3</u>
Lab Code: <u>MITKEM</u> Case No.: <u></u>	SAS No.: <u></u> SDG No.: <u>SN1895</u>
Solid LCS Source: <u></u>	LCS(D) ID: <u></u>
Aqueous LCS Source: <u></u>	LCS-79582

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury				0.8	0.8		0.6	0.9	100.0

7

Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1895
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79544	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	9100.0	9671.70	106.3						
Antimony	455.0	472.62	103.9						
Arsenic	455.0	490.15	107.7						
Barium	9100.0	9732.49	107.0						
Beryllium	227.0	241.44	106.4						
Cadmium	227.0	240.48	105.9						
Calcium	22700.0	23506.67	103.6						
Chromium	910.0	961.07	105.6						
Cobalt	2270.0	2379.93	104.8						
Copper	1130.0	1206.19	106.7						
Iron	4550.0	4968.61	109.2						
Lead	455.0	477.92	105.0						
Magnesium	22700.0	24168.20	106.5						
Manganese	2270.0	2417.15	106.5						
Nickel	2270.0	2379.49	104.8						
Potassium	22700.0	24115.14	106.2						
Selenium	455.0	475.45	104.5						
Silver	1130.0	1242.78	110.0						
Sodium	22700.0	24378.92	107.4						
Thallium	455.0	442.44	97.2						
Vanadium	2270.0	2382.29	104.9						
Zinc	2270.0	2380.73	104.9						

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Lab Name:	Spectrum Analytical, Inc.	Contract:	60323116.3				
Lab Code:	MITKEM	Case No.:		SAS No.:		SDG No.:	SN1895
Solid LCS Source:						LCS(D) ID:	
Aqueous LCS Source:						LCSD-79581	

	Aqueous (ug/L)			Solid (mg/Kg)					
Analyte	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.04	87.8						



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

*** Wet Chemistry ***



SPECTRUM ANALYTICAL, INC.
Featuring
Hanibal Technology

Quality Assurance/Quality Control Data Deliverable
ASP-A

Prepared for
Spectrum Analytical, Inc. - North Kingstown, RI
Project/Number: Tuxedo Waste Disposal / N1895

Work Order: SB98348
SDG# 98348
Submitted on October 20th, 2014



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Laboratory Name: Spectrum Analytical, Inc. featuring Hanibal Technology

City/State: Agawam, MA

Client Name: Spectrum Analytical, Inc. - North Kingstown, RI

Project Name/Number: Tuxedo Waste Disposal / N1895

SDG#: 98348

Associated Work Orders: SB98348

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NY Lab ID #11393/11840
NJ Lab ID#MA011/MA012



SPECTRUM ANALYTICAL, INC.
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Hanibal Technology

Spectrum Analytical, Inc. - North Kingstown, RI

Client Project: Tuxedo Waste Disposal

Project Number: N1895

Spectrum Analytical, Inc. Project ID: SB98348

10/21/2014

Prepared for: Spectrum Analytical, Inc. - North Kingstown, RI
646 Camp Ave.
North Kingstown, RI 02852
Attn: Agnes Huntley

Prepared By: Spectrum Analytical, Inc.
830 Silver Street
Agawam, MA 01001
(800)789-9115

SB98348 General Narrative

Spectrum Analytical, Inc. submits the enclosed data package for the site characterization of Tuxedo Waste Disposal. Samples submitted for analysis by Spectrum Analytical, Inc. - North Kingstown, RI. Under this deliverable, analysis results are presented for two Soil samples submitted on October 20th, 2014.

The analyses were performed according to USEPA SW846 method analytical guidelines and other methods. In addition the analyses were performed according to criteria dictated by National Environmental Laboratory Accreditation Conference (NELAC) and in accordance with project contract requirements and chain of custody forms.

Observations and/or deviations observed for specific analyses can be found in the analysis narrative:

1. Overall Observations:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual Integrations are coded to provide the data reviewer justification for such action. The codes are labeled on corresponding raw data for GC/MS and GC analysis as follows:

- M1 peak tailing or fronting
- M2 peak co-elution
- M3 rising or falling baseline
- M4 retention time shift
- M5 miscellaneous - under this category, the justification is explained
- M6 software did not integrate peak
- M7 partial peak integration

The enclosed report includes the originals of all data with the exception of logbook pages and certain initial calibrations. Scanned copies of logbook pages are included, with the originals are archived within the laboratory.

The pages in this report have been numbered consecutively, starting with the general narrative and ending with the page labeled as "Last Page of data Report".

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this electronic data package, has been authorized by the laboratory director as verified by the following signature.



Nicole Leja
Laboratory Director

Date: 10/21/2014

Sample Identification and Analytical Requirements Summary

Project Name: Tuxedo Waste Disposal

SDG:

SB98348

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		VOC Method #	SVOC Method #	GC Method #	Metals	Other
USSED 100814	SB98348-01					Lloyd Kahn
DSSSED 100814	SB98348-02					Lloyd Kahn



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample Transmittal Documentation

ANALYTICAL, INC.
HAWAII, TECHNOLOGY

Subcontractor:

Spectrum Analytical, Inc. - Agawam, MA
11 Almgren Drive
Agawam, Massachusetts 01001

Phone: (413) 789-9018

EQUIFacilityCode: N/A

Client Sample ID

Collection Date

Matrix

DUP/MS/MSD

Milkem Sample ID

= Number of containers

USSED 100814	SP98348-01	10/08/2014 11:40	1	Soil		N1895-02E	X												
DSSD 100814	-02	10/08/2014 12:50	1	Soil		N1895-04E	X												

CHAIN-OF-CUSTODY RECORD

WorkOrder : N1895

Project: Tuxedo Waste Disposal

Report Type : ASP-A

Due Date : 10/21/2014

FAX Due Date :

Report To : Agnes R Huntley

Purchase Order : N1895

EDD Types :

Please generate a
Little PEL EDD

Requested Test

LK TOC S

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

1) LK_TOC_S, TOTAL ORGANIC CARBON BY COMBUSTION

Use 'Client Sample IDs' when reporting data. If needed, truncate 'Client Sample IDs' to fit on reports. Use full 'Client Sample ID' when generating EDD.
Comments: Level 2 not needed, just the ASP-A

Relinquished by:	<i>Agnes R Huntley</i>	Date/Time	
Relinquished by:	<i>Agnes R Huntley</i>	Received by:	<i>Agnes R Huntley</i>
		Received by:	<i>Agnes R Huntley</i>
		Date/Time	10/20/14 17:45

646 Camp Ave * North Kingstown * RI * 028524008 * 401-732-3400 * 401-732-3499
www.spectrum-analytical.com

08/10/081R2
344 10/20

WORK ORDER

Printed: 10/20/2014 5:59:24PM

SB98348

Spectrum Analytical, Inc. - Agawam, MA

Report To:

Spectrum Analytical, Inc. - North Kingstown, RI
Agnes Huntley
646 Camp Ave.
North Kingstown, RI 02852
Phone: (401) 732-3400
Fax: (401) 732-3499

Project #: N1895
Project: Tuxedo Waste Disposal
Date Due: 21-Oct-14 17:00
Received By: Jessica Hoffman
Date Received: 20-Oct-14 16:50
Temperature: 0.8°C
PO #: N1895

✓ Containers Intact	Frozen vials
✓ Properly Labeled	Frozen soil jars
✓ COC/Labels Agree	State EDD
Received On Ice	✓ COC present
✓ Recd within hold time	Custody seal present
Air-tight containers (Encore device)	Custody seal intact
Refrigerated	COC complete
DW Field QC	

Lab ID	Client ID	Sampled	Lab Matrix / Report Matrix	Containers
SB98348-01	USSED 100814	08-Oct-14 11:40	Soil/Sediment / Soil	A - 2 oz. jar
SB98348-02	DSSSED 100814	08-Oct-14 12:50	Soil/Sediment / Soil	A - 2 oz. jar

WORK ORDER

Printed: 10/20/2014 5:59:24PM

SB98348

Spectrum Analytical, Inc. - Agawam, MA

Analysis	Due	TAT	Comments
SB98348-01 USSED 100814 we-TOC - Lloyd Kahn ✓	21-Oct-14 15:00	1	ASP-A
SB98348-02 DSSED 100814 we-TOC - Lloyd Kahn ✓	"	"	"

SPECTRUM ANALYTICAL, INC.

[illegible]

Notes:

COC login reviewed by:

Login Analyst Initials:

Date: 10/20/2014 (Rev. 2/5/2013)



SPECTRUM ANALYTICAL, INC.
Featuring
Hanibal Technology

Lloyd Kahn

CROSS REFERENCE TABLE

Lloyd Kahn

Laboratory:	<u>Spectrum Analytical, Inc. - Agawam, MA</u>	SDG:	<u>98348</u>
Client:	<u>Spectrum Analytical, Inc. - North Kingstown, RI</u>	Project:	<u>Tuxedo Waste Disposal</u>
Project Number:	<u>N1895</u>		

Client Sample ID:

USSED 100814

DSSSED 100814

Lab Sample ID:

SB98348-01

SB98348-02

CASE NARRATIVE

Spectrum Analytical, Inc. Lab Reference No. SB98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal / N1895

SDG #: 98348

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception or a communication form is included in the addendum with this package.

II. HOLDING TIMES

All samples were prepared and analyzed within the method-specific holding time.

III. METHODS

Analyses were performed according to Lloyd Kahn.

IV. PREPARATION

Soil/Sediment samples were prepared according to General Preparation.

V. INSTRUMENTATION

The following equipment was used to analyze Lloyd Kahn:

TOC2 details: Teledyne Tekmar Apollo 9000 / TOC Boat Sampler Model 183

VI. ANALYSIS

A. Calibration:

All quality control samples were within the acceptance criteria.

B. Blanks:

All blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Samples (LCS):

All method criteria were met.

2. Matrix Spike / Matrix Spike Duplicate Samples (MS/MSD):

No matrix spike or matrix spike duplicates were analyzed.

3. Reference:

All method criteria were met.

D. Duplicates:

A duplicate was analyzed.

In batch 1424839 from source sample DSSSED 100814 (SB98348-02).

All method criteria were met with the following exceptions:

Total Organic Carbon in batch 1424839, sample 1424839-DUP1 from source sample DSSSED 100814 (SB98348-02): This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.

E. Samples:

All method criteria were met with the following exceptions:

Total Organic Carbon in batch 1424839, sample DSSSED 100814 (SB98348-02): This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.

Total Organic Carbon in batch 1424839, sample DSSSED 100814 (SB98348-02): This sample was analyzed in quadruplicate. The % RSD is 5.709929%.

TOC Estimate Qualifier Clarification Case Narrative:

Please note, specific TOC values within this work order are flagged as estimated. The TOC value is initially measured in ug (microgram) of carbon but converts to ppm in the instrument software program. The initial ug of carbon reading fell within the midrange of the calibration curve of the instrumentation; however, the limited sample weight used elevated the ppm value above the maximum value listed in Element. As a result, the sample value is not over the calibration range of the instrument and was not reanalyzed.



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Lloyd Kahn

Sample Summaries

FORM I - INORGANIC ANALYSIS DATA SHEET

Lloyd Kahn

USSED 100814

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
 Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
 Project Number: N1895 Received: 10/20/14 16:50
 Matrix: Soil Laboratory ID: SB98348-01 File ID: 10211107
 Sampled: 10/08/14 11:40 Prepared: 10/21/14 10:00 Analyzed: 10/21/14 11:36
 % Solids: Preparation: General Preparation Initial/Final: 10 g / 10 ml
 Batch: 1424839 Sequence: S411974 Calibration: 1407011
 Instrument: TOC2
 Reported to: MRL

CAS NO.	Analyte	Result (mg/kg)	Dilution Factor	MDL	MRL	Q
NA	Total Organic Carbon	22300	1	44.9	1000	

FORM I - INORGANIC ANALYSIS DATA SHEET**DSSSED 100814****Lloyd Kahn**

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
Project Number: N1895 Received: 10/20/14 16:50
Matrix: Soil Laboratory ID: SB98348-02 File ID: 10211210
Sampled: 10/08/14 12:50 Prepared: 10/21/14 10:00 Analyzed: 10/21/14 12:27
% Solids: Preparation: General Preparation Initial/Final: 10 g / 10 ml
Batch: 1424839 Sequence: S411974 Calibration: 1407011
Instrument: TOC2
Reported to: MRL

CAS NO.	Analyte	Result (mg/kg)	Dilution Factor	MDL	MRL	Q
NA	Total Organic Carbon	125000	1	44.9	1000	E



SPECTRUM ANALYTICAL, INC.
Featuring
Hanibal Technology

Lloyd Kahn

QC Summaries

FORM IIa - INITIAL AND CONTINUING CALIBRATION CHECK

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Instrument ID: TOC2

Calibration: 1407011

Sequence: S411974

Lab Sample ID	Analyte	True	Found	%R	QC Limits	Units	Method
1424839-CCV1	Total Organic Carbon	8000	7610	95	85 - 115	mg/kg	Lloyd Kahn
1424839-CCV2	Total Organic Carbon	8000	8210	103	85 - 115	mg/kg	Lloyd Kahn
1424839-CCV3	Total Organic Carbon	8000	7890	99	85 - 115	mg/kg	Lloyd Kahn

* Values outside of QC limits

FORM IIa - INITIAL AND CONTINUING CALIBRATION CHECK

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Instrument ID: TOC2

Calibration: 1407011

Sequence: S407572

Lab Sample ID	Analyte	True	Found	%R	QC Limits	Units	Method
S407572-ICV1	Total Organic Carbon	8000	8590	107	85 - 115	mg/kg	Lloyd Kahn

* Values outside of QC limits

FORM III - BLANKS

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Instrument ID: TOC2

Calibration: 1407011

Sequence: S411974

Matrix: Soil/Sediment

Lab Sample ID	Analyte	Found	MRL	Units	C	Method
1424839-CCB1	Total Organic Carbon	496.6179	100	mg/kg		Lloyd Kahn
1424839-BLK1	Total Organic Carbon	55.0	1000	mg/kg	J	Lloyd Kahn
1424839-CCB2	Total Organic Carbon	214.6522	100	mg/kg		Lloyd Kahn
1424839-CCB3	Total Organic Carbon	611.4197	100	mg/kg		Lloyd Kahn

FORM III - BLANKS

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Instrument ID: TOC2

Calibration: 1407011

Sequence: S407572

Matrix: Soil/Sediment

Lab Sample ID	Analyte	Found	MRL	Units	C	Method
S407572-ICB1	Total Organic Carbon	131.394	100	mg/kg		Lloyd Kahn

FORM IIIa - LCS / LCS DUPLICATE RECOVERY**Lloyd Kahn**

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
Matrix: Soil/Sediment Instrument: TOC2
Batch: 1424839 Laboratory ID: 1424839-BS1
Preparation: General Preparation Initial/Final: 10 g / 10 ml
Analyzed: 10/21/14 10:59 Spike ID: 14G0275
File ID: 10211054

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Total Organic Carbon	8000	7480	93	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Individual peaks for multi-component analytes are indicated by a number in parentheses

DSSD 100814

File ID: 10211229

FORM VIII(Organics)/FORM XIII(Inorganics)
ANALYSIS BATCH (SEQUENCE) SUMMARY

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Sequence: S411974

Instrument: TOC2

Calibration: 1407011

Sample Name	Lab Sample ID	Lab File ID	Analyzed
Calibration Check	1424839-CCV1	10211032	10/21/14 10:37
Calibration Blank	1424839-CCB1	10211042	10/21/14 10:45
Blank	1424839-BLK1	10211048	10/21/14 10:51
LCS	1424839-BS1	10211054	10/21/14 10:59
Reference	1424839-SRM1	10211101	10/21/14 11:05
USSED 100814	SB98348-01	10211107	10/21/14 11:36
DSSSED 100814	SB98348-02	10211210	10/21/14 12:27
DSSSED 100814	1424839-DUP1	10211229	10/21/14 12:45
Calibration Check	1424839-CCV2	10211328	10/21/14 13:33
Calibration Blank	1424839-CCB2	10211334	10/21/14 13:40
Calibration Check	1424839-CCV3	10211356	10/21/14 14:03
Calibration Blank	1424839-CCB3	10211404	10/21/14 14:08

FORM VIII(Organics)/FORM XIII(Inorganics)
ANALYSIS BATCH (SEQUENCE) SUMMARY

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Sequence: S407572

Instrument: TOC2

Calibration: 1407011

Sample Name	Lab Sample ID	Lab File ID	Analyzed
Cal Standard	S407572-CAL1		04/29/14 15:58
Cal Standard	S407572-CAL2		04/29/14 16:04
Cal Standard	S407572-CAL3		04/29/14 16:12
Cal Standard	S407572-CAL4		04/29/14 16:19
Cal Standard	S407572-CAL5		04/29/14 16:44
Cal Standard	S407572-CAL6		04/29/14 16:56
Cal Standard	S407572-CAL7		04/29/14 17:07
Initial Cal Check	S407572-ICV1		04/29/14 17:25
Initial Cal Blank	S407572-ICB1		04/29/14 17:30

Organic/FORM IX(Inorganic) - METHOD DETECTION AND REPORTING LIMITS

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Analyte	MDL	MRL	Units
Total Organic Carbon	44.9	100	mg/kg



SPECTRUM ANALYTICAL, INC.
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Hanibal Technology

Lloyd Kahn

Calibration Summaries

FORM VI - INITIAL CALIBRATION DATA

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
Calibration: 1407011 Instrument: TOC2
Matrix: Soil/Sediment Calibration Date: 07/07/14 14:31
File ID: 1407011

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Total Organic Carbon	0	0	1000	2494.785	2000	2741.113	4000	2740.35	8000	2647.826	12500	2710.605

Individual peaks for multi-component analytes are indicated by a number in parentheses

FORM VI - INITIAL CALIBRATION DATA (Continued)

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
Calibration: 1407011 Instrument: TOC2
Matrix: Soil/Sediment Calibration Date: 07/07/14 14:31
File ID: 1407011

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Total Organic Carbon	25000	2547.415										

Individual peaks for multi-component analytes are indicated by a number in parentheses

FORM VI - INITIAL CALIBRATION DATA (Continued)

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA SDG: 98348
Client: Spectrum Analytical, Inc. - North Kingstown, RI Project: Tuxedo Waste Disposal
Calibration: 1407011 Instrument: TOC2
Matrix: Soil/Sediment Calibration Date: 07/07/14 14:31
File ID: 1407011

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Total Organic Carbon	2268.871	44.29622			0.9989743		0.997	

Individual peaks for multi-component analytes are indicated by a number in parentheses

FORM VIIb(Inorganics) - STANDARD REFERENCE MATERIAL RECOVERY

Lloyd Kahn

Laboratory: Spectrum Analytical, Inc. - Agawam, MA

SDG: 98348

Client: Spectrum Analytical, Inc. - North Kingstown, RI

Project: Tuxedo Waste Disposal

Matrix: Soil/Sediment

Spike ID: 14A1386

Batch: 1424839

Laboratory ID: 1424839-SRM1

Preparation: General Preparation

Initial/Final: 10 g / 10 ml

ANALYTE	TRUE (mg/kg)	FOUND (mg/kg)	SRM % REC.	QC LIMITS REC.
Total Organic Carbon	3470	4450	128	49 - 151

* Values outside of QC limits

Notes & Definitions

BRL Below the reporting limit and also indicates there are no detections between the MDL and MRL

Form I 'Q' column

- B** The analyte was found in the associated blank as well as the sample
- D** All identified compounds in the analysis are at a secondary dilution factor
- E** The identified compound's concentration exceeds the calibration range of the instrument for this specific analysis
- J** Compound detected but below the reporting limit and above the minimum detection limit (MDL); therefore, the result is an estimated concentration
- N** Included for TIC that indicates presumptive evidence of a compound
- P** Used for a Dual Column target analyte when the concentration difference between the two GC columns is greater than 40%.
- U** Compound was analyzed for but not detected

Form IIa 'Method' column

This column refers to the instrument used for analysis

IR Iris ICP
MS Thermo ICP/MS
AV Mercury analyzer

Form VI 'Q' column

- * indicates that:
Mean RF is above the value in the LIMIT column, or
Linear COD is below the value in the LIMIT column, or
Quad COD is below the value in the LIMIT column

Form VII 'Type' column

- A** average of response factor
L linear regression
Q quadratic equation

Form VIII 'Q' column for Inorganics

- E** The dilution analysis is not within a control limit of 10%, therefore a chemical or physical interference effect must be suspected

Last Page of Data Report

Last Page of Data Report

Appendix D

AECOM Biennial Groundwater Monitoring Report (October 2016)



Environment

Prepared for:
SUPERFUND STANDBY PROGRAM
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, New York
April 2017

Biennial Groundwater Monitoring Report
September 2016
Tuxedo Waste Disposal Site
Site No. 3-36-035
Work Assignment No. D007626-36



Environment

Prepared for:
SUPERFUND STANDBY PROGRAM
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, New York
April 2017

Biennial Groundwater Monitoring Report
September 2016
Tuxedo Waste Disposal Site
Site No. 3-36-035
Work Assignment No. D007626-36



Prepared By: Ross McCredy, Geologist



Reviewed By: Mark J. Howard, Project Manager

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Appendix A	Monitoring Well Sampling Observation Logs
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Executive Summary

The Tuxedo Waste Disposal Site is located in the Town of Tuxedo, Orange County, New York. The Site is approximately 12 acres in size and is located in a rural area approximately one mile north of the Village of Tuxedo Park, between State Route 17 and the New York State Thruway.

The Site was added to the New York State Department of Environmental Conservation Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site (Site No. 3-36-035) following the discovery of nonexempt waste at an active construction and demolition debris landfill in 1987. The presence of nonexempt waste was in violation of the standards and regulations in place at that time. The Site was reclassified to Class 4 following the completion of the remedial investigation and feasibility study in 1991. A Record of Decision was issued in February 1992 for impacted soil, refuse, groundwater, landfill gas, and surface water and sediment within the Ramapo River.

Due to the nature of the landfill and contamination of soil, bedrock, and the underlying bedrock aquifers with Target Analyte List metals and mercury, the selected remedies in the Record of Decision consisted of: excavation of refuse with consolidation and reclamation of soil; an engineered final cover; a passive gas collection and treatment system; a surface water diversion system; site restrictions to protect the integrity of the final cover; and groundwater, surface water, sediment, and air emissions monitoring.

During the September 2016 sampling event, the riser in MW-7 was obstructed and MW-1 was unable to be located due to overgrown vegetation. Therefore, these wells were not sampled during the September 2016 groundwater sampling event. The overall conditions of all other wells were acceptable.

The obstruction in MW-7 will be addressed during the next landfill gas monitoring event (June 2017). All attempts will be made to remove the obstruction from within the riser and rehabilitate the existing monitoring well. If MW-7 cannot be rehabilitated, the groundwater monitoring well should be properly decommissioned and a new monitoring well should be installed. MW-1 will be located and the vegetation obscuring the well will be cleared.

Based on AECOM's review, the concentration of Target Analyte List metals and mercury reported in the samples collected from the Tuxedo Waste Disposal Site during the September 2016 biennial sampling event remained consistent with historical (October 2000 to October 2001) and recent (May 2005 to October 2014) data.

All available data indicate that the selected remedies established in the 1992 Record of Decision to design and install an engineered, final cover and to design and construct a surface water diversion system to reduce surface run-on, infiltration, and subsequent generation of leachate continue to be protective of human health and the environment (including the Ramapo River) by containing more harmful metals.

Groundwater will continue to be monitored on a biennial basis to document the concentration of TAL metals in the groundwater at the Site in accordance with the final Site Management Plan issued in December 2014. The next groundwater sampling event will be completed in 2018.

1.0 Introduction

In accordance with the Site Management Plan (SMP; AECOM, 2014) developed for the Tuxedo Waste Disposal Site (the "Site"), and per New York State Department of Environmental Conservation (NYSDEC) instruction, AECOM conducted a biennial groundwater sampling event under NYSDEC Work Assignment No. D007626-36 at the Site. This report describes and presents the results of the groundwater sampling event conducted on September 8 – 9, 2016. As part of the evaluation process for the Site, available historical data provided by the NYSDEC is presented and compared to the most recent data.

1.1 Site Description

The Site is a former waste disposal facility located in the Town of Tuxedo, Orange County, New York (**Figure 1**). The Site consists of approximately 12 acres along State Route 17, in a rural area approximately one mile north of the Village of Tuxedo Park. The Site is located between State Route 17 (to the west) and an active rail line currently owned by the Metro-North Railroad to the east (**Figure 2**). The NYS Thruway (I-87) is located approximately 250 feet to the east of the rail line. The Site lies on two separate parcels of land with separate landowners. A majority of the Site is situated on a portion of a 12.2-acre parcel owned jointly by Renard Barone and Sarkis Khourouzian. The remainder is located on a portion of a 7.9-acre parcel formerly owned by the Georgia Tech Foundation (the property was sold to Ronald Iazzetti in 1994).

The Site is located in the Ramapo River Valley. The Ramapo River Valley is described as having steep grades with abrupt elevation changes (seen to the west of the Site), where the land rises approximately 300 feet along the Ramapo River Valley wall (NYSDEC ROD, 1992). The Ramapo River, located between the rail line and the NYS Thruway, is a Class A stream and a hydraulic connection has been determined to exist between the Site and the river; however, surface water and sediment samples collected from the river during the remedial investigation indicate that dumping activities had no measurable impact on the river at that time.

The Tuxedo Waste Disposal Site is a gentle hillside at the base of a steeply graded slope with dense tree cover. State Route 17 separates the steep slope from the Site. The north-northeast portions of the Site are a gently sloping hillside with bedrock outcrops, which transitions into a steep slope to the rail line. The cap of the landfill has a moderate grade and is covered with tall grasses.

Previous investigation of the Site states that before the remedial actions were implemented, the depth to bedrock ranged from 0 to approximately 70 feet below ground surface (bgs), with bedrock deepest and fill material thickest at the center of the Site (Metcalf & Eddy, 1991). Bedrock outcrops in the northern and eastern portions of the Site, located just west of the rail line, dip to the southwest.

The unconsolidated materials are highly variable in thickness and are comprised of construction and demolition (C&D) debris, recent alluvial deposits, outwash sand and gravel, and glacial till (Metcalf & Eddy, 1991).

Groundwater depth beneath the Site ranges from approximately 9 to 43 feet bgs. Groundwater flow occurs within two separate water-bearing units: unconsolidated soil and weathered bedrock; and unweathered, competent bedrock. Permeability studies from the Phase II Investigation and results from the Remedial Investigation/Feasibility Study (RI/FS) show connectivity between the two water-bearing units, resulting in one aquifer system. According to the RI/FS Report and the Record of

Decision (ROD), the natural direction of groundwater flow from the upper unconsolidated water-bearing unit is generally from the relatively high elevations west of the Site to the east, toward the Ramapo River. Groundwater flow direction in the competent bedrock is less defined due to natural irregularities in the bedrock (e.g., joints, fractures, and discontinuities). The water table at the perimeter of the Site is relatively shallow and is present in the unconsolidated soil layer.

The Site was added to the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site (Site No. 3-36-035) following the discovery of nonexempt waste at an active C&D debris landfill in 1987. The presence of nonexempt waste was in violation of the standards and regulations in place at that time. The RI/FS report was completed and submitted to the NYSDEC in 1989, and the Site was reclassified to Class 4. The ROD for this site was issued in February of 1992.

The selected remedy for the Site included: 1) excavation of fill from the southeast corner of the Site and the reclamation of this area, 2) design and installation of a cover on the landfill, including a gas collection layer, 3) installation of a passive gas collection and treatment system, 4) installation of a surface water diversion system, 5) implementation of site-use restrictions to protect the integrity of the remedy and 6) environmental monitoring to determine the effectiveness of the remedy.

An operation and maintenance (O&M) program was initiated in December 1996 and amended in January 1998. Presently, the Site is a capped landfill that utilizes wind turbine ventilators at selected locations to actively vent landfill gas under breezy conditions. In addition, monitoring for combustible gas and hydrogen sulfide is performed at the gas vents distributed across the landfill cap. Previous groundwater sampling events were performed in May 2005, November 2005, August 2007, June 2009, October 2011, and October 2014 to monitor the impacts of the landfill on the underlying aquifer.

2.0 Sampling

2.1 Sample Locations and Field Observations

Groundwater monitoring, which includes measuring and recording depth-to-groundwater, total well depth, and water quality parameters, is conducted on a biennial basis for twelve on-site wells. Depth-to-groundwater measurements are then utilized to calculate groundwater elevations in each of the wells (**Table 1**). During the September 2016 sampling event, the riser in MW-7 was obstructed and MW-1 was unable to be located due to overgrown vegetation. Therefore, only ten wells were sampled during the September 2016 groundwater sampling event. The overall conditions of all other wells were acceptable.

Due to the presence of the waste material prior to well installation, groundwater contour maps for the aquifer beneath the Site could not be developed. The composition and construction of the waste material and the landfill prohibits the natural flow of groundwater beneath and surrounding the Site. According to the Phase II investigation and RI/FS, the overall direction of groundwater flow in the unconsolidated aquifer beneath the Site and the surrounding area is predominantly to the east toward the Ramapo River, and the overall flow direction in the unweathered bedrock is controlled by joints, fractures, and discontinuities in the bedrock.

2.2 Groundwater Sampling Methodology

Prior to sampling each well, depth-to-groundwater and depth to bottom measurements are taken using a water level indicator. The indicator is decontaminated with a Liquinox® and spring water rinse and sprayed with distilled water before each use. Each monitoring well is purged of three water column volumes prior to sampling. Dependent on the purge volume, dedicated, polyethylene tubing and a submersible pump (e.g., Grundfos™) or a dedicated, polyethylene bailer is utilized. The pump is decontaminated between each monitoring well in a Liquinox® and potable water bath and then in a distilled water bath.

Water quality parameters, which include temperature, conductivity, specific conductivity, dissolved oxygen (DO), oxygen-reduction potential (ORP), pH, turbidity, color, and odor, are measured and recorded on the monitoring well sampling observation logs (**Appendix A**). A total of four sets of parameters are measured and recorded; one for the initial discharge removed from the well and one for each of the subsequent three water column volumes removed prior to sampling.

All samples are collected in laboratory supplied bottles, packed in a cooler with ice, and shipped to Mitkem Laboratories of Warwick, Rhode Island under standard chain-of-custody procedure. Each sample is analyzed for Target Analyte List (TAL) metals by United States Environmental Protection Agency (US EPA) Method 6010 and mercury by US EPA Method 7470.

2.3 Analytical Results

A cumulative summary of the analytical data collected by AECOM to date, including the September 2016 sampling event, is presented as **Table 2** and compared to the New York State Ambient Water Quality Standards (AWQS) and Guidance Values (GV) for groundwater as a drinking water source. Analytes detected and reported above the applicable AWQS or GV are presented in bold font in a shaded cell. A copy of the analytical results and chains-of-custody are included as **Appendix B**.

2.4 Historical Analytical Results

Historical data made available to AECOM by the NYSDEC are presented in **Table 3**. The available historical data for the Site included groundwater sampling events in October 2000 and May, August and October 2001. No other data for the Site were made available to AECOM at this time.

3.0 Summary of Analytical Results

Present and available historical data (**Tables 2 and 3**) were reviewed to determine if there are any notable trends in the concentrations of metals in the on-site monitoring wells. Previous investigations indicate that the primary contaminants of concern for the Site are aluminum, arsenic, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, sodium, and zinc.

The results of the September 2016 sampling event are displayed in **Figure 3** and summarized as follows:

- The results of the sample collected from monitoring well MW-2 reported relatively low concentrations of metals, none of which exceeded AWQS or GV. Generally, the concentrations decreased relative to the October 2014 sampling event.
- The sample results from monitoring well MW-3 reported iron and sodium in excess of the AWQS, with concentrations reported to be 515 µg/l and 107,000 µg/l, respectively. These results are a decrease from the October 2014 results and the historical data.
- Two metals (iron and sodium) exceeded the AWQS in the sample collected from MW-4, with concentrations reported to be 466 µg/l and 43,100 µg/l, respectively. Recent and historical data from samples collected from MW-4 indicate that iron and sodium are commonly detected at concentrations exceeding the AWQS, including the results of the October 2014 sampling event.
- The sample collected from monitoring well MW-5 contained no analytes in excess of AWQS or GV. Iron, manganese, and sodium have historically been detected at concentrations in excess of the AWQS; while in more recent data, only iron and manganese have been detected at concentrations exceeding the AWQS.
- Only one metal (manganese) exceeded the AWQS or GV in the sample collected from MW-6, with manganese reported to be 1,450 µg/l. These results are consistent with past sampling results.
- The September 2016 sampling results from monitoring well RI-1 reported a sodium concentration of 23,200 µg/l, an exceedance of the 20,000 µg/l AWQS. These results are consistent with the results of the October 2014 groundwater sampling event, when sodium was reported to be 22,700 µg/l.
- The RI-2 monitoring well sample results reported only one metal (sodium) in excess of the AWQS. Sodium was reported to be 53,400 µg/l, an increase from 51,600 µg/l in October 2014.
- The results of the sample collected from RI-3 in September 2016 reported exceedances of AWQS for three metals: iron (3,780 µg/l), manganese (999 µg/l), and sodium (32,300 µg/l). These results are consistent with the results of the October 2014 groundwater sampling event.

- The results of the sample collected from monitoring well RI-4 are consistent with the October 2014 results, with iron (2,430 µg/l) and manganese (402 µg/l) reported to exceed their respective AWQS. These results are consistent with historical and recent data, except in two previous sampling events. In October 2001, sodium was reported at a concentration exceeding AWQS and in November 2005, magnesium and sodium were reported at concentrations exceeding the GV (35,000 µg/l) for magnesium and the AWQS (20,000 µg/l) for sodium.
- The groundwater sample collected from monitoring well RI-5A reported no metals at concentrations that exceed the AWQS or GV. However, iron and sodium have been historically detected at concentrations in excess of the AWQS.

Overall, TAL metals concentrations in the Site wells remain consistent with historical data, with few notable trends, and mercury continues to not be detected or is detected in the on-site wells only at estimated concentrations (i.e., greater than the instrument detection limit and less than the contract required detection limit).

4.0 Conclusions

This report presents the activities completed by AECOM on behalf of the NYSDEC under Work Assignment No. D007626-36 at the Tuxedo Waste Disposal Site in Tuxedo, New York during the 2016 biennial groundwater sampling event.

4.1 Groundwater

As demonstrated in a summary of the September 2016 groundwater sampling event results (**Table 4**), the metals detected at concentrations greater than AWQS or GV most frequently were: sodium (five wells), thallium (five wells), iron (four wells), antimony (four wells), manganese (three wells), and selenium (two wells).

Overall, the concentration of TAL metals and mercury reported in the groundwater samples collected in September 2016 remained consistent with historical (October 2000 to October 2001) and recent (May 2005 to October 2014) data. Additionally, all available data indicates mercury has never been detected or has only been detected in the on-site wells at estimated concentrations.

5.0 Planned Activities and Recommendations

Based on all available data, AECOM recommends that mercury be removed from the list of analyses for all subsequent groundwater sampling events.

The obstruction in MW-7 and the vegetation obscuring MW-1 will be addressed during the next landfill gas monitoring event (June 2017). MW-1 will be located and the vegetation cleared. All attempts will be made to remove the obstruction in MW-7 and rehabilitate it. If MW-7 cannot be rehabilitated, the groundwater monitoring well should be properly decommissioned and a new monitoring well should be installed.

Groundwater should continue to be monitored on a biennial basis to document the concentration of TAL metals in the groundwater at the Site in accordance with the final SMP (AECOM, 2014). The next groundwater sampling event should be completed in 2018.

Tables

Table 1
Depth-to-Groundwater Measurements
and Groundwater Elevations (September 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Well ID	Well Coordinates		Well Construction	Well Type	Measuring Point Elevation (ft.)	Well Depth (ft. bgs)	September 8, 2016	
	Longitude	Latitude					Depth to Water (ft. bgs)	GW Elevation (ft.)
MW-1	41°12.822N	074°11.043W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	468.40	NM	NM	NA
MW-2	41°12.535N	074°11.106W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	480.06	89.86	26.28	453.78
MW-3	41°12.571N	074°10.990W	6" Steel Cutter Casing 3" PVC Riser	Bedrock	459.00	30.30	18.11	440.89
MW-4	41°12.599N	074°10.984W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	460.07	26.38	18.92	441.15
MW-5	41°12.706N	074°10.968W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	448.81	19.36	11.21	437.60
MW-6	41°12.729N	074°10.977W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	456.83	18.40	9.39	447.44
MW-7	41°12.820N	074°11.026W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	466.93	NM	NM	NA
RI-1	41°12.707N	074°10.971W	8" Steel Cutter Casing 2" Steel Riser	Bedrock	459.48	93.53	12.81	446.67
RI-2	41°12.728N	074°10.976W	6" Steel Surface Casing 4" Steel Riser and Screen	Interface	458.02	70.54	11.38	446.64
RI-3	41°12.568N	074°11.092W	6" PVC Surface Casing 2" PVC Riser and Screen	Interface	479.79	44.66	37.92	441.87
RI-4	41°12.777N	074°10.997W	4" Steel Surface Casing 2" PVC Riser and Screen	Overburden	463.45	16.87	15.95	447.50
RI-5A	41°12.746N	074°11.038W	4" Steel Surface Casing 2" PVC Riser and Screen	Bedrock	495.70	81.88	42.61	453.09

Notes:

Measuring Point Elevation is at top of PVC casing

NA - Not Available

NM - Not Measured; MW-7 is obstructed

bgs - below ground surface

GW - groundwater

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1							MW-2							MW-3							MW-4						
Sample Date		5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011	10/8/2014	9/9/2016	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014	9/8/2016	5/3/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014	9/9/2016
Analyte (µg/L)	AWQS or GV																												
Aluminum	NA	130J	114J	U	NS	261	337	NS	444	304	U	1060N*	1,330	505	92.3B	11,400	4,180	178	561N*	179B	2,690	292	63.4J	73.7J	U	60.3N*	U	3,090	290
Antimony	3	8.74J	U	U	NS	U	U	NS	5.5J	U	U	U	U	U	U	U	U	U	U	U	U	5.1B	9.19J	U	U	U	U	U	U
Arsenic	25	U	U	U	NS	U	U	NS	U	U	U	U	U	6.3B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	6.9B
Barium	1,000	4.85JN	U	U	NS	3.5B	9.4B	NS	9.96JN	4.4J	U	18.7J	19.4B	15.0B	7.3B	78.3JN	28.9J	13.8 J	17.3 J	10.2B	103B	29.6B	17.1JN	11.7J	10.1 J	21.1 J	12.6B	48.4B	26.7B
Beryllium	3 (GV)	U	U	U	NS	U	U	NS	U	U	U	U	U	U	U	0.58J	0.2J	U	U	U	U	0.084B	U	U	U	U	U	U	0.073B
Cadmium	5	U	U	U	NS	1.5B	U	NS	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	26,600	14,400	12,600	NS	5,580	9,290	NS	19,700	19,800	25,100	23,100	22,400	23,300	23,800	18,000	12,100	39,100	19,300	12,600	95,000	41,400	45,000	35,700	38,400	45,600	28,100	55,100	52,600
Chromium	50	1.16JN	U	1.7 J	NS	1.6B	3.3B	NS	1.02JN	U	U	3.65 J	3.8B	1.8B	0.95B	13N	6.2J	1.5 J	1.92 J	0.73B	3.4B	1.3B	0.343UN	0.79J	1.8 J	2.4 J	U	3.9B	1.1B
Cobalt	NA	U	U	2.3 J	NS	U	1.4B	NS	0.625J	U	U	U	1.8B	1.3B	0.36B	14.3J	1.8J	2.1 J	U	U	3.3B	1.3B	U	U	2.2 J	U	U	5.2B	0.64B
Copper	200	14.9J	U	U	NS	13.7B	5.8B	NS	9.22J	U	U	7.71J	4.8B	U	U	43.1	55.5	U	36.1	3.6B	8.6B	2.9B	U	U	U	8 J	U	15.3B	5.1B
Iron	300	635N	116	46.7 J	NS	962	889	NS	809N	454	U	1,570N*	1,780	671	125B	21,700N	8,350	221	1,110N*	471	4,180	515	150N	U	U	647N*	218	4,980	466
Lead	25	U	U	U	NS	U	U	NS	U	15.2	U	U	U	4.2	U	U	4.5J	U	U	U	U	U	U	U	U	U	U	U	U
Magnesium	35,000 (GV)	6,310	3,450J	2,870	NS	1,300	2,160	NS	5,010	4,730J	6,340	6,170	6,470	6,410	6,390	9,320	4,280	9,430	4,610	3,150	22,900	10,700	10,600	8,660	9,310	9,400	6,370	13,300	11,200
Manganese	300	17.6	4.5J	1.8 J	NS	31.7B	50.4	NS	37.8	7.3J	U	38.6	24.9B	24.1B	4.5B	958	319	19.3	46.5	13.6B	271	80.2	55.2	1.1J	3.1 J	15.2	13.0B	1,310	152
Mercury	0.7	U	0.077J	U	NS	U	U	NS	U	U	U	0.07UN	U	U	0.044B	0.04J	U	U	0.07UN	0.031B	U	U	U	U	U	0.07UN	U	0.062B	U
Nickel	100	U	U	U	NS	1.2B	2.4B	NS	U	U	U	U	2.1B	U	U	22J	8.0J	U	U	U	5.5B	2.1B	U	U	U	U	U	6.1B	2.5B
Potassium	NA	2,420J	1,090JN	589 J	NS	573B	493B	NS	960J	935JN	1,080	1,570	1,540	1,040	1,260	2,700J	1,730JN	1,770	2,030	1,210	3,390	1,970	2,830J	2,930JN	2,140	2,270	2,380	2,880	2,360
Selenium	10	U	U	U	NS	U	U	NS	U	26.9	5.6 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	NS	U	U	NS	U	U	U	U	U	U	U	4.32J	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	42,900	37,500	25,900	NS	36,100	40,600	NS	3,060J	2,910J	3,480	5,530N	4,710	4,090	4,130	35,700	18,300	46,200	68,300N	85,200	379,000	107,000	47,700	41,800	32,100	32,900N	35,900	39,900	43,100
Thallium	0.5 (GV)	U	4.5J	U	NS	U	U	NS	U	23.5	U	U	U	U	U	U	U	U	U	U	6.8B	U	U	U	U	U	U	6.2B	U
Vanadium	NA	4.5J	U	U	NS	1.3B	1.8B	NS	5.28J	U	2.5 J	5.42 J	6.4B	2.4B	2.8B	28.1J	1.9J	U	U	U	6.0B	1.1B	2.9J	U	U	U	U	7.6B	0.70B
Zinc	2,000 (GV)	37.2	23.6	37	NS	19.8B	15.1B	NS	27	11.2J	33	15.7 J	12.2B	U	U	82.9	30.8	34.7	27.4	12.5B	12.7B	6.4B	23.9	15.1J	34.4	23.8	14.1B	17.2B	5.4B

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.

U - Analyte was analyzed for, but not detected.

J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

N - Spiked sample recovery not within control limits.

* - Duplicate analysis is not within control limits.

** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled.

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-5								MW-6								RI-1								
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014	9/8/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011**		10/7/2014**		9/8/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/8/2014**		9/8/2016
Analyte (µg/L)	AWQS or GV																									
Aluminum	NA	520	83.3J	U	218N*	4,020	U	886	U	137J	79.2J	U	281N*	1,070	U	438	155B	22.0B	58.3J	673	97.6	408N*	1,620	3,210	172B	308
Antimony	3	6.88J	U	U	U	U	U	U	U	6.72J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5.8B
Arsenic	25	8.94J	U	U	4.54 J	U	U	8.1B	27.4	U	U	U	40.9	11.7B	U	24	U	U	U	U	U	U	U	U	U	U
Barium	1,000	98.7JN	67.7J	51.3	72.9	98.7B	64.6B	84.5B	63.0B	76.5JN	39.8J	37.2 J	137	114B	47.2B	99.1B	44.4B	46.8B	4.2JN	17.4J	U	14.7 J	22.0B	21.2B	16.2B	16.2B
Beryllium	3 (GV)	0.18J	U	U	U	0.28B	U	U	0.055B	U	U	U	U	U	U	U	U	0.058B	U	0.12J	U	U	U	U	U	0.15B
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	99,200	81,100	94,300	90,500	111,000	109,000	93,300	115,000	87,900	94,300	88,900	92,700	115,000	112,000	108,000	110,000	99,100	24,800	65,500	46,500	52,300	52,800	56,400	53,200	56,100
Chromium	50	2.28JN	1.6J	7.5	2.66 J	6.2B	U	4.0B	1.3B	1.16JN	1.4J	U	5.83	4.5B	U	5.7B	U	0.40B	11.1N	2.6J	3.4 J	11.5	1.6B	5.0B	0.96B	1.3B
Cobalt	NA	7.52J	2.5J	2.6 J	U	5.8B	U	7.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.84B	U	U
Copper	200	105	11.7J	13	45.8	88.3	9.8B	65.7	5.4B	17.3J	U	U	27.3	24.4B	U	31.1	7.8B	U	19.2J	45.3	3.8 J	19.9	5.4B	7.4B	19.1B	1.3B
Iron	300	22,000N	596	35.3 J	5,460N*	15,800	U	16,600	U	37,300N	951	4,510	72,900N*	30,500	U	36,000	1,940	U	223N	408	555	440N*	855	1,360	127B	201
Lead	25	U	U	U	2.43 J	5.9B	U	U	U	U	10.7	U	U	U	U	U	U	U	U	4.1J	U	2.03J	U	U	U	U
Magnesium	35,000 (GV)	15,900	17,200	20,200	10,100	18,400	17,200	22,500	16,600	12,800	10,000	12,000	10,900	12,700	12,100	11,800	12,000	8,530	7,150	11,000	7,740	8,760	9,400	10,500	9,860	9,920
Manganese	300	1,100	1,250	1,160	256	1,350	232	5,400	244	1,540	510	1,350	1,350	1,700	1,270	2,200	1,940	1,450	4.22J	5.4J	1.6J	8.4 J	31.9B	23.6B	18.3B	5.1B
Mercury	0.7	0.28	U	U	0.07UN	0.23	U	U	U	0.04J	U	U	0.15JN	U	U	U	U	U	U	U	U	0.07UN	U	U	0.057B	U
Nickel	100	1.69J	7.5J	5.9 J	U	9.9B	3.7B	7.8B	2.0B	U	U	U	U	1.9B	U	1.4B	U	U	5.62J	U	16.1 J	11.4J	2.6B	4.0B	0.92B	1.5B
Potassium	NA	6,640	6,700N	5,460	4,510	6,890	6,360	3,500	4,920	2,630J	3,330JN	3,850	3,790	5,300	4,950	3,810	3,870	3,840	45,000	2,310JN	5,900	4,230	3,170	2,630	2,550	2,760
Selenium	10	U	U	U	U	U	U	U	11.9B	U	9.0J	U	10.3	U	U	U	U	13.8B	U	U	U	U	U	U	U	U
Silver	50	1.68J	U	U	U	U	U	U	U	2.34J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	12,800	21,800	15,500	5,170N	16,800	17,100	12,500	11,100	3,170J	6,310	3,400	6,380N	12,300	11,400	11,700	14,400	8,300	33,100	25,800	24,800	20,400N	27,500	22,300	22,700	23,200
Thallium	0.5 (GV)	U	U	U	U	U	U	U	5.3B	U	8.2J	U	U	U	U	7.4B	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	8.48J	U	U	U	7.6B	U	3.9B	U	9.25J	U	U	5.73 J	4.7B	U	5.6B	U	U	3.88J	U	U	U	U	1.9B	1.2B	1.3B
Zinc	2,000 (GV)	48.7	41.5	46.1	32	45.8B	14.5B	31.8B	14.8B	24.1	25.3	32.9	36.6	25.6B	12.9B	11.3B	36.4B	U	30.8	17.6J	36.9	164	17.0B	6.0B	119	U

Notes:
All data presented in micrograms per liter (µg/L).
Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.
U - Analyte was analyzed for, but not detected.
J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).
N - Spiked sample recovery not within control limits.
* - Duplicate analysis is not within control limits.
** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled.
BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Table 2
Groundwater Analytical Results -
TAL Metals and Mercury
(2005 to 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		RI-2							RI-3							RI-4							RI-5A				
Sample Date		5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	5/3/2005	11/1/2005	8/7/2007	6/30/2009	10/11/2011**	10/7/2014**	9/9/2016	5/2/2005	11/2/2005	8/6/2007	6/30/2009	10/11/2011	10/7/2014	9/8/2016	10/11/2011	10/7/2014	9/9/2016		
Analyte (µg/L)	AWQS or GV																										
Aluminum	NA	31.1J	69.3J	U	21.1 JN*	U	U	U	35,800	438	26,400	24,200N*	52,200	U	89,900	2,990	5,630	2,080	2,590	440	654N*	1,080	1,910	912	654	318	152B
Antimony	3	10.2J	U	U	U	U	U	6.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	5.9B	U	U	U		
Arsenic	25	U	U	U	U	U	U	U	15.7	U	5.7 J	16.8	17.3B	U	33.8	U	4.6B	U	U	U	U	7.3B	U	U	U		
Barium	1,000	12JN	17.9J	7.0 J	26.1 J	10.5B	14.2B	11.8B	190JN	19.3J	158	140	334	18.5B	710	111B	134B	55.2JN	160J	61.4	62.1	45.8B	59.5B	62.0B	17.6B	17.6B	16.5B
Beryllium	3 (GV)	U	U	U	U	U	U	U	2.32J	U	1.4 J	1.48 J	3.9B	U	8.4	0.51B	1.2B	0.095J	0.25J	U	U	0.095B	U	U	U		
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.5J	U	0.626 J	1.2B	U	1.3B	U	U	
Calcium	NA	25,800	40,000	20,100	22,400	18,000	28,800	26,700	36,400	21,100	34,100	35,500	45,700	34,800	74,300	51,700	54,400	70,700	238,000	105,000	82,200	60,300	96,500	90,500	34,300	31,400	36,000
Chromium	50	846N	32.8	27.9	240	13.1B	21	3.0B	47.6N	U	30.2	37.7	70	U	130	4.1B	5.2B	3.1JN	11.9	U	2.61 J	1.9B	4.9B	1.9B	15.3B	6.7B	1.6B
Cobalt	NA	10.3J	U	U	U	U	U	U	40.2J	U	18.1	28.5	46.0B	U	141	5.4B	13.6B	5.12J	14.4J	U	U	2.3B	3.5B	3.3B	0.84B	U	0.42B
Copper	200	22J	U	U	13.8	U	U	U	137	U	62	74.8	168	U	458	49.4	35.6	26.7	47.3	9.1 J	17.2	12.2B	15.2B	22.4B	U	U	U
Iron	300	3,860N	109	160	1,150N*	120B	130B	U	71,500N	712	36,200	51,400N*	94,200	U	158,000	3,070	3,780	4,940N	7,160	1,890	2,030N*	2,850	4,060	2,430	339	173B	74.1B
Lead	25	U	U	U	U	U	U	U	64.5	U	30.3	42.2	55.1	U	203	10.3	9.5B	U	7	2.3 J	2.31 J	U	U	U	U	U	U
Magnesium	35,000 (GV)	7,190	11,200	5,450	4,820	5,070	7,860	6,820	22,200	4,210J	15,300	17,000	27,500	8,680	47,900	13,600	13,600	8,500	40,300	12,700	7,980	7,910	11,100	8,910	1,490	1,910	4,270
Manganese	300	201	60	8.6 J	59.8	28.8B	22.8B	7.4B	2,130	164	830	1,500	2,830	U	7,120	329	999	1,050	3,590	1,680	302	417	580	402	10.1B	U	6.4B
Mercury	0.7	U	U	U	0.1JN	U	U	U	0.25	U	U	0.12JN	0.18B	U	0.28	0.032B	U	U	U	U	0.1 JN	U	U	U	U	U	U
Nickel	100	1,730	39.2J	111	1,740	22.5B	21.2B	28.0B	68.2	U	31.8	51.2	97	U	184	4.9B	10.4B	11.7J	74.6	15.6 J	18.9 J	17.1B	19.8B	36.1B	U	U	U
Potassium	NA	11,300	2,200JN	1,060	7,750	839B	801B	1,230	5,260	1,410JN	6,990	3,930	7,430	1,150	9,890	1,740	2,010	16,700	45,100N	18,700	14,600	10,700	10,600	9,240	9,590	7,390	4,950
Selenium	10	U	U	U	U	U	U	U	U	U	U	U	15.0B	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Silver	50	U	U	U	U	U	U	U	2.04J	U	3.0 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20,000	47,100	63,700	36,300	36,300N	41,400	51,600	53,400	19,600	17,800	25,500	29,600N	38,300	34,200	31,800	30,300	32,300	13,900	100,000	19,200	10,100N	10,200	10,100	8,180	25,700	17,000	12,200
Thallium	0.5 (GV)	U	U	U	U	U	U	2.7B	U	U	U	U	U	U	U	U	U	U	U	U	U	6.4B	U	U	U	15.2B	
Vanadium	NA	3.82J	U	U	U	U	U	U	75.3	U	47.6	47.1	104	U	192	6.3B	5.6B	6.55J	U	U	U	2.2B	4.6B	1.6B	3.1B	2.5B	1.8B
Zinc	2,000 (GV)	39.7	20.6	37.9	26.1	14.2B	U	U	305	32.2	159	164	261	11.1B	535	16.6B	37.0B	50.8	101	56.5	41.5	33.1B	31.4B	72.6	12.9B	U	U

Notes:
All data presented in micrograms per liter (µg/L).
Metals analysis by ICP Method 6010, except mercury by USEPA Method 7470.
U - Analyte was analyzed for, but not detected.
J & B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).
N - Spiked sample recovery not within control limits.
* - Duplicate analysis is not within control limits.
** - Water quality measurements indicate turbidity greater than 50 NTU; Second column reports dissolved metals
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled.
BOLD font in shaded cell - indicates exce

Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1				MW-2				MW-3				MW-4				MW-5			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																				
Aluminum	NA	NS	130B	U	NS	528	300	92B	NS	1,140	210	260	410	489	U	78B	320	3,900	340	160B	170B
Antimony	3	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	9.2B	U	U	U
Barium	1,000	NS	U	U	NS	14.7B	U	U	NS	28.6B	U	U	U	23.7B	U	U	U	104B	U	U	U
Beryllium	3 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.79B	U	U	U
Cadmium	5	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	NS	18,000	9,700	NS	24,600	29,000	27,000	NS	41,300	22,000	42,000	41,000	39,500	39,000	43,000	40,000	92,000	110,000	99,000	97,000
Chromium	50	NS	U	U	NS	3.0B	U	U	NS	U	U	U	U	U	U	U	U	7.0B	U	U	U
Cobalt	NA	NS	U	U	NS	4.7B	U	U	NS	U	U	U	U	U	U	U	U	5.5B	U	U	U
Copper	200	NS	U	U	NS	2.5B	U	U	NS	5.2B	U	U	U	6.3B	U	U	U	101	63	U	26
Iron	300	NS	330	55B	NS	757	380	160	NS	1,740	180	410	650	830	83B	94B	570	17,400	5,900	2,700	3,700
Lead	25	NS	U	U	NS	2.3B	U	U	NS	2.6B	U	U	U	2.1B	U	U	U	11.7	5.7	U	U
Magnesium	35,000 (GV)	NS	4,700B	2,400B	NS	5,530	7,000	6,200	NS	9,850	5,400	10,000	9,300	10,700	11,000	11,000	10,000	24,000	16,000	25,000	22,000
Manganese	300	NS	26	U	NS	36.2	34	31	NS	81.3	7.5B	42	36	324	71	76	350	3,210	290	3,800	2,600
Mercury	0.7	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	0.56	U	U	U
Nickel	100	NS	U	U	NS	U	U	U	NS	2.4B	U	U	U	U	U	U	U	6.7B	U	U	U
Potassium	NA	NS	U	U	NS	1,380BE	U	U	NS	3,570BE	U	U	U	3,530BE	U	U	U	8,470E	7,000	6,000	5,700
Selenium	10	NS	U	U	NS	2.8UW	U	U	NS	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	NS	U	U	NS	3.0UN	U	U	NS	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	NS	40,000	29,000	NS	3,560B	5,000B	3,900B	NS	25,200	39,000	32,000	34,000	22,500	39,000	30,000	28,000	22,600	11,000	23,000	21,000
Thallium	0.5 (GV)	NS	U	U	NS	U	U	U	NS	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	NS	U	U	NS	3.1B	U	U	NS	2.3B	U	U	U	U	U	U	U	8.7B	U	U	U
Zinc	2,000 (GV)	NS	U	U	NS	9.7B*	U	U	NS	15.6B*	U	U	U	23.8*	U	U	U	58.8*	10.0B	U	10B

Notes:
All data presented in micrograms per liter (µg/L).
U - Analyte was analyzed for, but not detected.
B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).
E - Indicates an estimated value because of the presence of interference.
W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N - Spiked sample recovery not within control limits.
* - Duplicate analysis not within control limits.
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.
NA - No standard or guidance value exists for the analyte.
NS - Not sampled
BOLD font in shaded cell - indicates exceedance of AWQS or GV.



Table 3
Groundwater Analytical Results -
TAL Metals and Mercury
(2000 to 2001)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-6				RI-1				RI-2				RI-4			
Sample Date		10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001	10/26/2000	5/1/2001	8/2/2001	10/30/2001
Analyte (µg/L)	AWQS or GV																
Aluminum	NA	725	U	U	U	718	140B	100B	100B	96.3B	U	U	82B	5,960	3,600	90B	320
Antimony	3	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Arsenic	25	11.7	U	U	U	U	U	U	U	U	U	U	U	3.8B	U	U	U
Barium	1,000	47.7B	U	U	U	10.6B	U	U	U	11.2B	U	U	U	101B	U	U	U
Beryllium	3 (GV)	0.21B	U	U	U	U	U	U	U	U	U	U	U	0.24B	U	U	U
Cadmium	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Calcium	NA	92,700	110,000	98,000	120,000	50,800	74,000	57,000	54,000	19,700	43,000	32,000	30,000	90,400	64,000	95,000	120,000
Chromium	50	1.2B	U	U	U	3.4B	U	U	U	130	11	U	64	8.3B	U	U	U
Cobalt	NA	U	U	U	U	U	U	U	U	U	U	U	U	16.3B	U	U	U
Copper	200	30.3	U	U	U	13.4B	U	U	U	4.1B	U	U	U	37.4	90	U	U
Iron	300	15,300	8,900	5,900	5,600	752	190	70B	90B	804	260	110	870	11,600	12,000	240	1,200
Lead	25	5	U	U	U	U	U	U	U	U	U	U	U	10	12	U	U
Magnesium	35,000 (GV)	12,800	17,000	15,000	16,000	7,160	11,000	8,800	7,900	6,010	13,000	9,700	8,800	11,600	8,600	11,000	13,000
Manganese	300	2,050	1,600	1,900	2,300	7.9B	8.0B	U	U	79.4	64	43	87	1,500	1,200	390	350
Mercury	0.7	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nickel	100	U	U	U	U	6.2B	U	U	U	41	U	U	U	24.5B	U	U	U
Potassium	NA	3,770BE	U	U	U	2,860BE	U	U	U	1,390BE	U	U	U	28,500E	18,000	19,000	23,000
Selenium	10	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U	2.8UW	U	U	U
Silver	50	3.0BN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U	3.0UN	U	U	U
Sodium	20,000	3,840	7,000	4,100B	6,500	18,500	28,000	19,000	19,000	25,400	56,000	44,000	43,000	16,400	17,000	18,000	21,000
Thallium	0.5 (GV)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Vanadium	NA	2.1B	U	U	U	U	U	U	U	U	U	U	U	10.4B	U	U	U
Zinc	2,000 (GV)	25.5*	U	U	U	22*	U	U	U	30.7*	U	U	14B	67.3*	85	U	U

Notes:

All data presented in micrograms per liter (µg/L).

U - Analyte was analyzed for, but not detected.

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

E - Indicates an estimated value because of the presence of interference.

W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

NA - No standard or guidance value exists for the analyte.

NS - Not sampled

BOLD font in shaded cell - indicates exceedance of AWQS or GV.

Table 4
Summary of Groundwater
Analytical Results and Exceedances
(September 2016)

Tuxedo Waste Disposal Site
Site No. 3-36-035
Tuxedo, Orange County, New York

Monitoring Well ID		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	RI-1	RI-2	RI-3	RI-4	RI-5A
Sample Date		9/8/2016	9/9/2016	9/8/2016	9/9/2016	9/8/2016	9/8/2016	9/8/2016	9/8/2016	9/9/2016	9/8/2016	9/9/2016
Analyte (µg/L)	AWQS or GV											
Aluminum	NA	NA	92.3	292	290	U	22.0B	308	U	5,630	912	152
Antimony	3	NA	U	5.1B	U	U	U	5.8B	6.7B	U	5.9B	U
Arsenic	25	NA	U	U	6.9B	8.1B	U	U	U	4.6B	7.3B	U
Barium	1,000	NA	7.3B	29.6B	26.7B	63.0B	46.8B	16.2B	11.8B	134B	62.0B	16.5B
Beryllium	3 (GV)	NA	U	0.084B	0.073B	0.055B	0.058B	0.15B	U	1.2B	0.095B	U
Cadmium	5	NA	U	U	U	U	U	U	U	U	1.3B	U
Calcium	NA	NA	23,800	41,400	52,600	115,000	99,100	56,100	26,700	54,400	90,500	36,000
Chromium	50	NA	0.95B	1.3B	1.1B	1.3B	0.4B	1.3B	3.0B	5.2B	1.9B	1.6B
Cobalt	NA	NA	0.36B	1.3B	0.64B	U	U	U	U	13.6B	3.3B	0.42B
Copper	200	NA	U	2.9B	5.1 B	5.4B	U	1.3B	U	35.6	22.4B	U
Iron	300	NA	125B	515	466	U	U	201	U	3,780	2,430	74.1B
Lead	25	NA	U	U	U	U	U	U	U	9.5B	U	U
Magnesium	35,000 (GV)	NA	6,390	10,700	11,200	16,600	8,530	9,920	6,820	13,600	8,910	4,270
Manganese	300	NA	4.5B	80.2	152	244	1,450	5.1B	7.4B	999	402	6.4B
Mercury	0.7	NA	0.044B	U	U	U	U	U	U	U	U	U
Nickel	100	NA	U	2.1B	2.5B	2.0B	U	1.5B	28.0B	10.4B	36.1B	U
Potassium	NA	NA	1,260	1,970	2,360	4,920	3,840	2,760	1,230	2,010	9,240	4,950
Selenium	10	NA	U	U	U	11.9B	13.8B	U	U	U	U	U
Sodium	20,000	NA	4,130	107,000	43,100	11,100	8,300	22,300	53,400	32,300	8,180	12,200
Thallium	0.5 (GV)	NA	U	6.8B	U	5.3B	U	U	2.7B	U	6.4B	15.2B
Vanadium	NA	NA	2.8B	1.1B	0.7B	U	U	1.3B	U	5.6B	1.6B	1.8B
Zinc	2,000 (GV)	NA	U	6.4B	5.4B	14.8B	U	U	U	37.0B	72.6	U
Maximum Concentration (Metal)		NA	23,800 (Calcium)	107,000 (Sodium)	52,600 (Calcium)	115,000 (Calcium)	99,100 (Calcium)	56,100 (Calcium)	53,400 (Sodium)	54,400 (Calcium)	90,500 (Calcium)	36,000 (Calcium)

Notes:

All data presented in micrograms per liter (µg/L).

Metals analysis by ICP Method 6010.

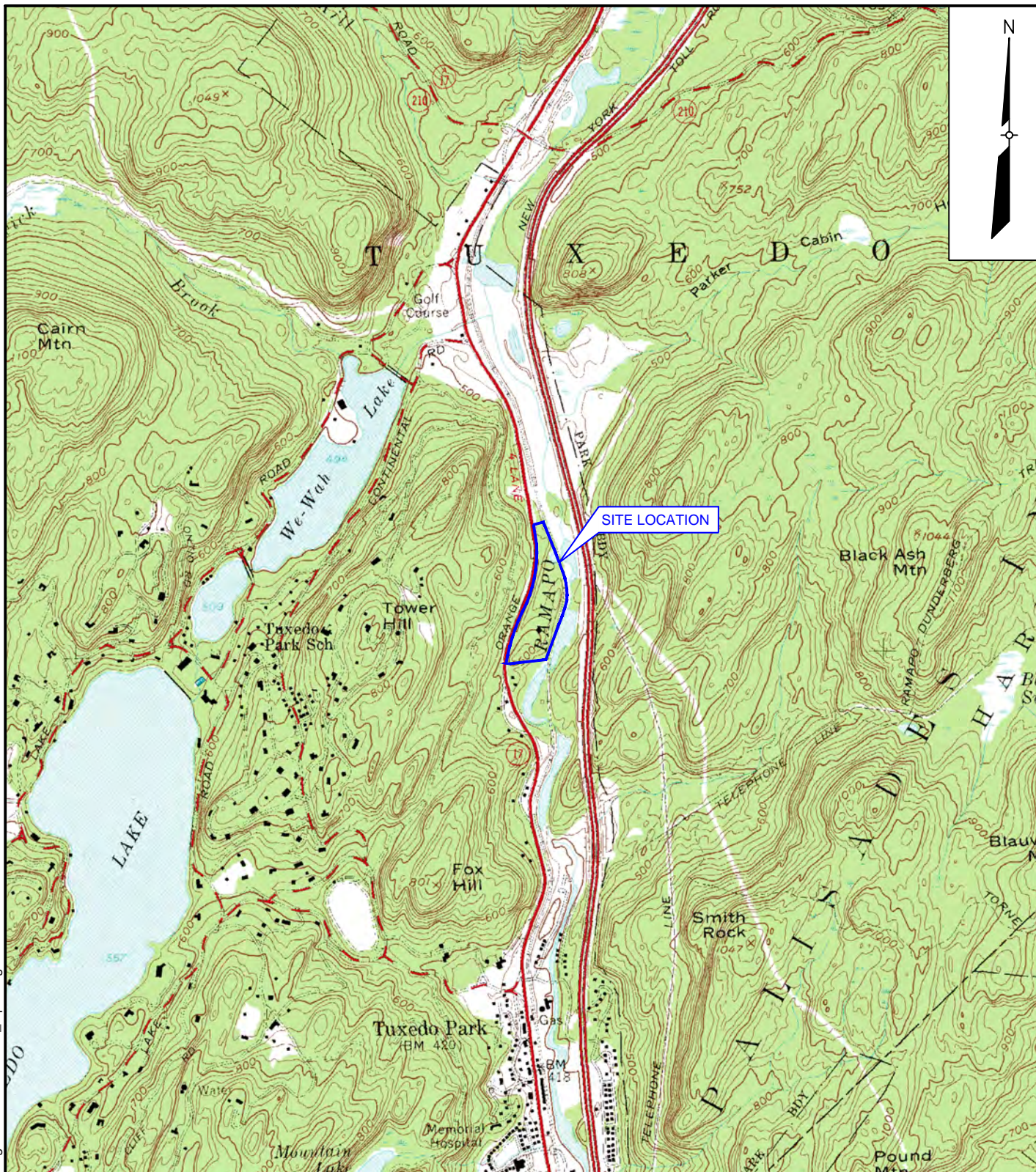
AWQS - New York State Ambient Water Quality Standards (TOGs 1.1.1); GV - guidance value.

U - Analyte was analyzed for, but not detected.

B - Estimated concentration above the instrument detection limit (IDL) but less than the contract required detection limit (CRDL).

BOLD font in shaded cell - indicates exceedances of AWQS or GV.

Figures



0 1000 2000 4000
SCALE IN FEET

NOTE: MAP DERIVED FROM U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, SLOATSBURG, NY-NJ, DATED 1955.

AECOM

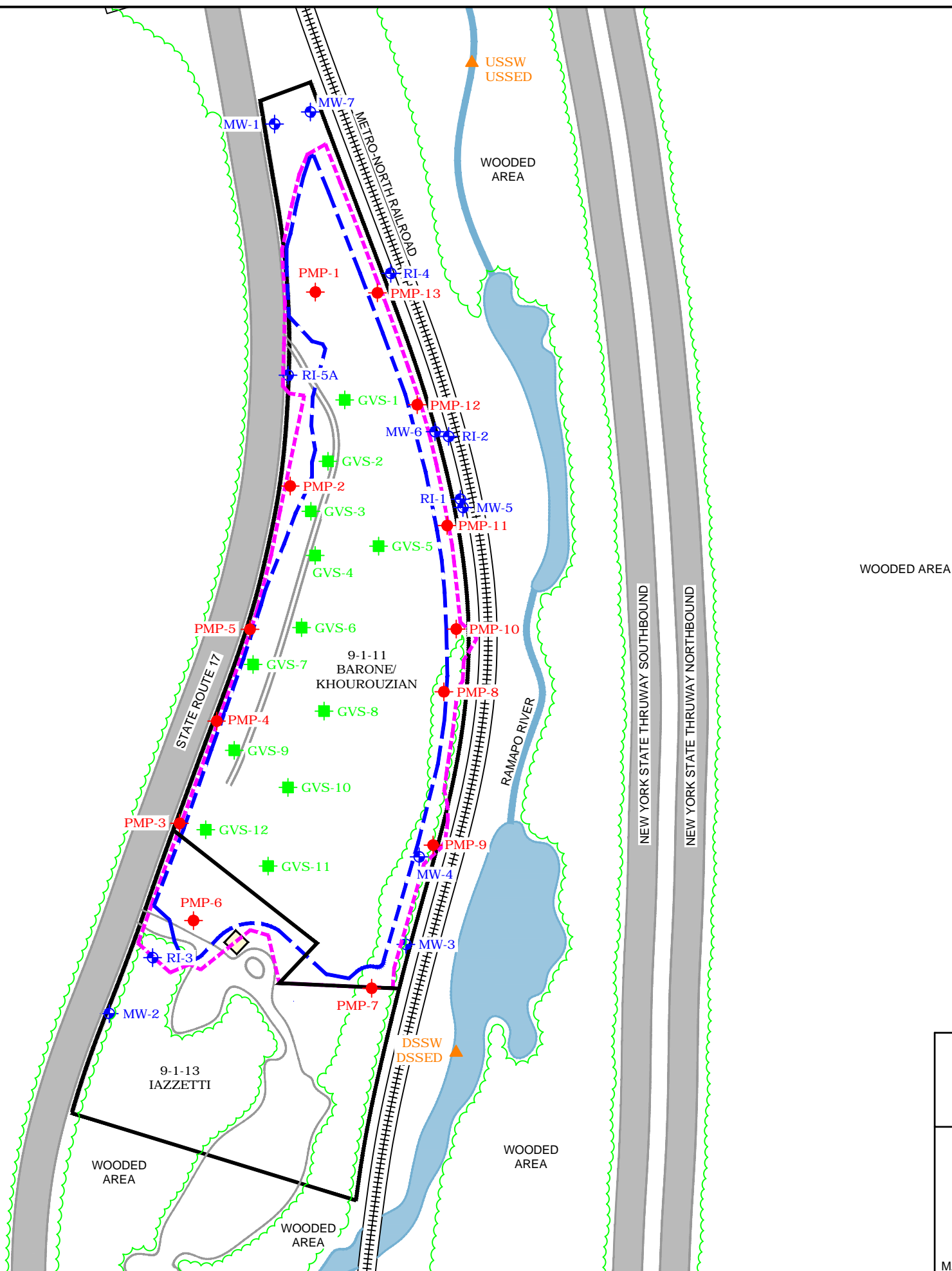
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FIGURE 1 SITE LOCATION MAP

NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

MARCH 2017

60323166



LEGEND

- MW-2 MONITORING WELL LOCATION
- PMP-2 PERIMETER MONITORING POINT LOCATION (APPROXIMATE)
- GVS-2 GAS VENT STATION LOCATION (APPROXIMATE)
- USSW UPSTREAM AND DOWNSTREAM SURFACE WATER AND SURFACE SEDIMENT SAMPLES (APPROXIMATE)
- USSED
- PROPERTY BOUNDARIES (APPROXIMATE)
- LIMIT OF GRADING (APPROXIMATE)
- FINAL LIMIT OF WASTE (APPROXIMATE)
- RAILROAD TRACKS
- BUILDING
- ROAD
- RAMAPO RIVER
- TREE LINE

NOTE:

1. FINAL LIMIT OF WASTE TAKEN FROM "REMEDIAL CLOSURE DESIGN - WASTE GRADING PLAN", CLOUGH, HARBOUR & ASSOCIATES, MARCH 1994.



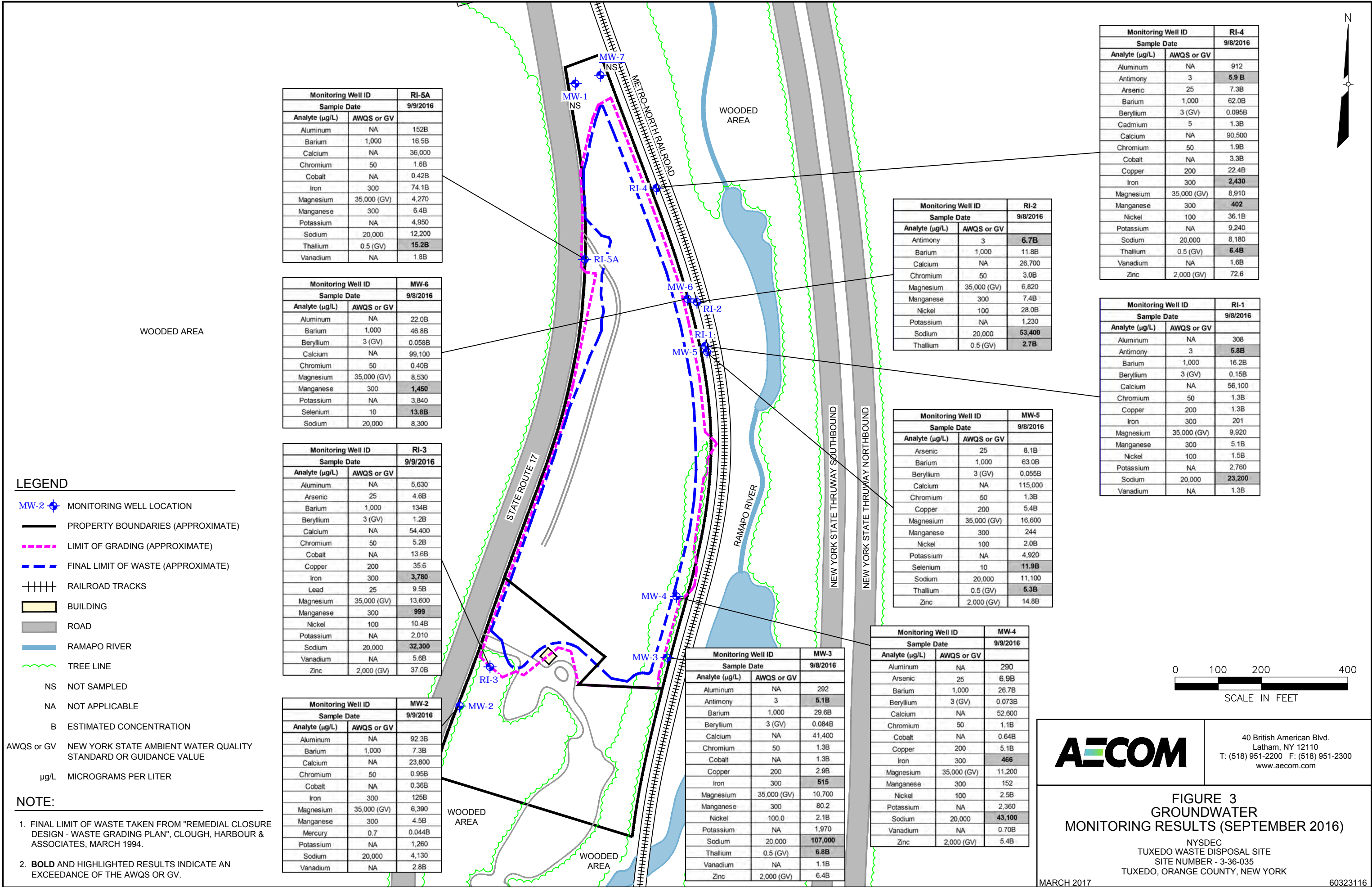
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FIGURE 2
SITE PLAN AND MONITORING
LOCATIONS

NYSDEC
TUXEDO WASTE DISPOSAL SITE
SITE NUMBER - 3-36-035
TUXEDO, ORANGE COUNTY, NEW YORK

MARCH 2017

60323116



Appendix A

Monitoring Well Sampling Observation Logs

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

R1-4

Date:

9/8/16

Samplers:

Sample Number:

R1-4

090816 QA/QC Collected? ✓

Purging / Sampling Method:

Three Well Volumes

1. L = Well Depth:

16.87 feet

2. D = Riser Diameter (I.D.):

feet

3. W = Depth to Water:

15.95 feet

4. C = Column of Water in Well:

feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

0.15 gal

6. 3(V) = Target Purge Volume

0.45 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, Mach 2100 G

Parameter	Units	Readings			
Time	24 hr	<u>1420</u>	<u>1422</u>	<u>1424</u>	<u>1426</u>
Water Level (0.33)	feet	<u>15.95</u>	<u>-</u>	<u>-</u>	<u>-</u>
Volume Purged	gal	<u>0</u>	<u>0.15</u>	<u>0.30</u>	<u>0.45</u>
Flow Rate	mL/min	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Turbidity (+/- 10%)	NTU	<u>13.8</u>	<u>52.1</u>	<u>44.3</u>	<u>46.7</u>
Dissolved Oxygen (+/- 10%)	%	<u>11.4</u>	<u>16.3</u>	<u>15.3</u>	<u>11.7</u>
Dissolved Oxygen (+/- 10%)	mg/L	<u>1.04</u>	<u>1.65</u>	<u>1.55</u>	<u>1.11</u>
Eh / ORP (+/- 10)	MeV	<u>81.9</u>	<u>77.1</u>	<u>44.3</u>	<u>36.2</u>
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.547</u>	<u>0.550</u>	<u>0.551</u>	<u>0.554</u>
Conductivity (+/- 3%)	mS/cm	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
pH (+/- 0.1)	pH unit	<u>6.08</u>	<u>6.07</u>	<u>6.07</u>	<u>6.04</u>
Temp (+/- 0.5)	C	<u>19.37</u>	<u>19.88</u>	<u>20.08</u>	<u>19.95</u>
Color	Visual	<u>Clear</u>	<u>Clear</u>	<u>Clear</u>	<u>Clear</u>
Odor	Olfactory	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>

Comments:

Sample @ 1428

Monitoring Well Purging / Sampling Form

Project Name and Number:

Taxedo

Monitoring Well Number:

MW-3

Date:

9/8/16

Samplers:

GD + MKC

Sample Number:

MW-3 090816

QA/QC Collected?

✓

Purging / Sampling Method:

Three Well Volumes

/ Grandfos (Submersible) Pump

1. L = Well Depth:

300.30 feet

2. D = Riser Diameter (I.D.):

- feet

3. W = Depth to Water:

18.11 feet

4. C = Column of Water in Well:

12.14 feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

3.04 gal

6. 3(V) = Target Purge Volume

9.12 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, Hach 2100
20.44

Parameter

Units

Readings

Time	24 hr	1128	1131	1134	1136			
Water Level (0.33)	feet	19.33	20.44	20.81	21.46			
Volume Purged	gal	-	3	6	9			
Flow Rate	mL/min							
Turbidity (+/- 10%)	NTU	9.05	10.3	30.0	32.0			
Dissolved Oxygen (+/- 10%)	%	28.9	41.9	32.4	29.1			
Dissolved Oxygen (+/- 10%)	mg/L	2.97	4.47	3.56	3.18			
EH / ORP (+/- 10)	MeV	25.2	40.3	32.4	33.5			
Specific Conductivity (+/- 3%)	mS/cm ^c	1.294	0.837	0.820	0.835			
Conductivity (+/- 3%)	mS/cm							
pH (+/- 0.1)	pH unit	7.78	7.39	6.72	6.45			
Temp (+/- 0.5)	C°	14.02	12.57	12.24	11.92			
Color	Visual	cloudy	clear	clear	clear			
Odor	Olfactory	none	none	none	none			

Comments:

sample @ 1138

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

MW-5

Date:

9/8/16

Samplers:

6D + MKC

Sample Number:

MW-5 090816

QA/QC Collected?

-

Purging / Sampling Method:

Three Well Volumes

- Bailing

1. L = Well Depth:

19.36 feet

2. D = Riser Diameter (I.D.):

feet

3. W = Depth to Water:

11.21 feet

4. C = Column of Water in Well:

feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

1.33 gal

6. 3(V) = Target Purge Volume

3.99 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.168	0.37	0.65	1.5

Water Quality Readings Collected Using

YS1556, Hach Z100a

Parameter	Units	Readings						
Time	24 hr	1229	1232	1236	1240			
Water Level (0.33)	feet	12.18	15.07	13.85	14.36			
Volume Purged	gal	-	-	-	-			
Flow Rate	mL/min	11.33	1.33	2.66	3.99			
Turbidity (+/- 10%)	NTU	48.4	46.2	68.2	68.0			
Dissolved Oxygen (+/- 10%)	%	28.7	28.9	29.8	26.4			
Dissolved Oxygen (+/- 10%)	mg/L	2.75	2.99	2.49	2.01			
Eh / ORP (+/- 10)	MeV	50.4	61.2	64.0	64.6			
Specific Conductivity (+/- 3%)	mS/cm ^c	0.685	0.697	0.704	0.705			
Conductivity (+/- 3%)	mS/cm	-	-	-	-			
pH (+/- 0.1)	pH unit	7.35	6.72	6.61	6.56			
Temp (+/- 0.5)	C°	17.74	15.55	15.45	15.37			
Color	Visual	cloudy	cloudy	cloudy	cloudy			
Odor	Olfactory	none	none	none	none			

Comments:

Sample @ ~~1242~~ 1242 (2)

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

Mw-6

Date:

9/8/16

Samplers:

GD + MKC

Sample Number:

Mw-6 090816

QA/QC Collected?

—

Purging / Sampling Method:

Three Well Volumes

1. L = Well Depth:

18.40 feet

2. D = Riser Diameter (I.D.):

feet

3. W = Depth to Water:

9.39 feet

4. C = Column of Water in Well:

feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

1147 gal

6. 3(V) = Target Purge Volume

4.41 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, Hach 2100 a

Parameter	Units	Readings						
Time	24 hr	1336	1341	1345	1349			
Water Level (0.33)	feet	10.11	9.97	10.10	10.15			
Volume Purged	gal	0	1.44	2.94	4.41			
Flow Rate	mL/min							
Turbidity (+/- 10%)	NTU	86.4	80.4	58.1	75.6			
Dissolved Oxygen (+/- 10%)	%	21.2	27.6	30.1	29.5			
Dissolved Oxygen (+/- 10%)	mg/L	1.88	2.45	2.82	2.74			
Eh / ORP (+/- 10)	MeV	-16.6	-57.5	-56.2	-53.9			
Specific Conductivity (+/- 3%)	mS/cm ^c	0.546	0.590	0.587	0.585			
Conductivity (+/- 3%)	mS/cm	—	—	—	—			
pH (+/- 0.1)	pH unit	7.07	6.58	6.95	6.88			
Temp (+/- 0.5)	C°	21.50	20.56	19.01	18.31			
Color	Visual	Cloudy	Cloudy	Cloudy	Cloudy			
Odor	Olfactory	None	None	None	None			

Comments:

Sample @ 1350 (2)

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

RI-1

Date:

9/8/2016

Samplers:

Mike Kuzia-Carmel, Greg Dunlavy

Sample Number:

RI-1 090816

QA/QC Collected?

No

Purging / Sampling Method:

Three Well Volumes

Ground For Pump

1. L = Well Depth:

93.53 feet

2. D = Riser Diameter (I.D.):

0.17 feet

3. W = Depth to Water:

12.81 feet

4. C = Column of Water in Well:

80.72 feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

13.16 gal

6. 3(V) = Target Purge Volume

39.48 gal

D (inches)	D (feet)
1-inch	0.08
<u>2-inch</u>	<u>0.17</u>
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	<u>2-inch</u>	3-inch	4-inch	6-inch
V (gal / ft)	0.041	<u>0.163</u>	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, Hach 2100

Parameter	Units	Readings						
Time	24 hr	<u>1227</u>	<u>1243</u>	<u>1258</u>	<u>1311</u>			
Water Level (0.33)	feet	<u>18.71</u>	<u>34.83</u>	<u>41.12</u>	<u>41.93</u>			
Volume Purged	gal	<u>init.</u>	<u>13</u>	<u>26</u>	<u>39</u>			
Flow Rate	mL/min							
Turbidity (+/- 10%)	NTU	<u>10.7</u>	<u>9.34</u>	<u>22.7</u>	<u>38.5</u>			
Dissolved Oxygen (+/- 10%)	%	<u>65.3</u>	<u>41.2</u>	<u>30.5</u>	<u>40.8</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>6.97</u>	<u>4.43</u>	<u>3.16</u>	<u>4.24</u>			
EH / ORP (+/- 10)	MeV	<u>43.8</u>	<u>28.9</u>	<u>-1.7</u>	<u>2.1</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.482</u>	<u>0.510</u>	<u>0.496</u>	<u>0.443</u>			
Conductivity (+/- 3%)	mS/cm	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
pH (+/- 0.1)	pH unit	<u>8.17</u>	<u>7.04</u>	<u>7.58</u>	<u>7.55</u>			
Temp (+/- 0.5)	C°	<u>13.44</u>	<u>12.64</u>	<u>13.42</u>	<u>13.33</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>			

Comments:

Sample ② 1315

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

RI-2

Date:

9/8/2016

Samplers:

Milac Kuzia-Carmel, Greg Dunlavy

Sample Number:

RI-2 090816

QA/QC Collected?

No

Purging / Sampling Method:

Three Well Volumes

/ Grundfos (Submersible) Pump

1. L = Well Depth:

2. D = Riser Diameter (I.D.):

3. W = Depth to Water:

4. C = Column of Water in Well:

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

6. 3(V) = Target Purge Volume

H = 70.54 feet
0.3865 feet
11.38 feet
39.16 feet
38.45 gal
115.36 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
<u>4-inch</u>	<u>0.33</u>
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	<u>4-inch</u>	6-inch
V (gal / ft)	0.041	0.163	0.37	<u>0.65</u>	1.5

Water Quality Readings Collected Using

YSI-556, Hach 2100

Parameter	Units	Readings						
Time	24 hr	<u>1330</u>	<u>1356</u>	<u>1418</u>	<u>1440</u>			
Water Level (0.33)	feet	<u>11.60</u>	<u>11.80</u>	<u>11.80</u>	<u>11.80</u>			
Volume Purged	gal	<u>init.</u>	<u>38.45</u>	<u>78</u>	<u>115.36</u>			
Flow Rate	mL/min							
Turbidity (+/- 10%)	NTU	<u>9.71</u>	<u>1.63</u>	<u>1.14</u>	<u>0.62</u>			
Dissolved Oxygen (+/- 10%)	%	<u>44.0</u>	<u>42.7</u>	<u>50.6</u>	<u>39.6</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>4.63</u>	<u>4.52</u>	<u>5.33</u>	<u>4.08</u>			
Eh / ORP (+/- 10)	MeV	<u>12.8</u>	<u>-27.7</u>	<u>73.1</u>	<u>65.9</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.308</u>	<u>0.492</u>	<u>0.488</u>	<u>0.489</u>			
Conductivity (+/- 3%)	mS/cm	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>			
pH (+/- 0.1)	pH unit	<u>7.61</u>	<u>7.06</u>	<u>6.39</u>	<u>6.56</u>			
Temp (+/- 0.5)	C°	<u>7.6 + 13.01</u>	<u>12.92</u>	<u>12.62</u>	<u>13.25</u>			
Color	Visual	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>			
Odor	Olfactory	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>			

Comments:

Sample ② 1445

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

MW-2

Date:

9/9/16

Samplers:

GD + M/C

Sample Number:

MW-2090816

QA/QC Collected?

—

Purging / Sampling Method:

Three Well Volumes

1. L = Well Depth:

89.86 feet

2. D = Riser Diameter (I.D.):

0.17 feet

3. W = Depth to Water:

26.28 feet

4. C = Column of Water in Well:

63.58 feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

10.36 gal

6. 3(V) = Target Purge Volume

31.09 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	<u>0.168</u>	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, March 2100 Q

Parameter	Units	Readings			
Time	24 hr	<u>1328</u>	<u>1347</u>	<u>1402</u>	<u>1427</u>
Water Level (0.33)	feet	<u>27.51</u>	<u>27.92</u>	<u>47.71</u>	<u>44.76</u>
Volume Purged	gal	<u>—</u>	<u>10.5</u>	<u>21</u>	<u>31.09</u>
Flow Rate	mL/min	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Turbidity (+/- 10%)	NTU	<u>24.5</u>	<u>137</u>	<u>14.4</u>	<u>16.3</u>
Dissolved Oxygen (+/- 10%)	%	<u>54.5</u>	<u>45.6</u>	<u>39.6</u>	<u>38.8</u>
Dissolved Oxygen (+/- 10%)	mg/L	<u>5.22</u>	<u>4.73</u>	<u>4.18</u>	<u>3.88</u>
Eh / ORP (+/- 10)	MeV	<u>-7.6</u>	<u>-3.0</u>	<u>15.8</u>	<u>13.0</u>
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.201</u>	<u>0.186</u>	<u>0.198</u>	<u>0.203</u>
Conductivity (+/- 3%)	mS/cm	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
pH (+/- 0.1)	pH unit	<u>6.75</u>	<u>7.07</u>	<u>7.19</u>	<u>6.61</u>
Temp (+/- 0.5)	C	<u>17.30</u>	<u>14.15</u>	<u>13.71</u>	<u>12.91</u>
Color	Visual	<u>clear</u>	<u>cloudy</u>	<u>cloudy</u>	<u>cloudy</u>
Odor	Olfactory	<u>organic</u>	<u>none</u>	<u>None</u>	<u>None</u>

Comments:

'rotting vegetables'

sample @ 1430

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

R1-3

Date:

9/9/16

Samplers:

CD + MKC

Sample Number:

R1-3 090916

QA/QC Collected?

—

Purging / Sampling Method:

Three Well Volumes

1. L = Well Depth:

44.66 feet

2. D = Riser Diameter (I.D.):

feet

3. W = Depth to Water:

37.92 feet

4. C = Column of Water in Well:

feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

1.10 gal

6. 3(V) = Target Purge Volume

3.3 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	<u>0.163</u>	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556 + Mach 2100A

Parameter	Units	Readings			
Time	24 hr	<u>1412</u>	<u>1416</u>	<u>1420</u>	<u>1423</u>
Water Level (0.33)	feet				
Volume Purged	gal	<u>0</u>	<u>1.1</u>	<u>2.2</u>	<u>3.3</u>
Flow Rate	mL/min	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Turbidity (+/- 10%)	NTU	<u>38.1</u>	<u>43.7</u>	<u>28.2</u>	<u>33.1</u>
Dissolved Oxygen (+/- 10%)	%	<u>33.7</u>	<u>31.2</u>	<u>30.8</u>	<u>29.0</u>
Dissolved Oxygen (+/- 10%)	mg/L	<u>3.52</u>	<u>3.33</u>	<u>3.21</u>	<u>3.03</u>
Eh / ORP (+/- 10)	MeV	<u>68.3</u>	<u>101.2</u>	<u>106.8</u>	<u>106.6</u>
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.487</u>	<u>0.498</u>	<u>0.500</u>	<u>0.501</u>
Conductivity (+/- 3%)	mS/cm	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
pH (+/- 0.1)	pH unit	<u>6.47</u>	<u>5.77</u>	<u>5.91</u>	<u>5.71</u>
Temp (+/- 0.5)	C°	<u>13.05</u>	<u>12.25</u>	<u>12.33</u>	<u>12.83</u>
Color	Visual	<u>Cloudy</u>	<u>Cloudy</u>	<u>Clear</u>	<u>Clear</u>
Odor	Olfactory	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>

Comments:

Sample @ 1425

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

MW-4

Date:

9/9/16

Samplers:

CD + MKC

Sample Number:

MW-4 090916

QA/QC Collected?

—

Purging / Sampling Method:

Three Well Volumes

1. L = Well Depth:

26.38 feet

2. D = Riser Diameter (I.D.):

0.17 feet

3. W = Depth to Water:

18.92 feet

4. C = Column of Water in Well:

9.46 feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

1.54 gal

6. 3(V) = Target Purge Volume

4.62 gal

D (inches)	D (feet)
1-inch	0.08
<u>2-inch</u>	<u>0.17</u>
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	<u>2-inch</u>	3-inch	4-inch	6-inch
V (gal / ft)	0.041	<u>0.163</u>	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556, Hach 7100

Parameter

Units

Readings

Time	24 hr	1225	1227	1229	1231			
Water Level (0.33)	feet	18.91	18.91	18.92	18.93			
Volume Purged	gal	init	1.5	3	4.76			
Flow Rate	mL/min	—	—	—	—			
Turbidity (+/- 10%)	NTU	26.2	40.6	39.5	44.0			
Dissolved Oxygen (+/- 10%)	%	33.7	30.4	31.9	28.3			
Dissolved Oxygen (+/- 10%)	mg/L	3.44	3.10	3.28	2.92			
EH / ORP (+/- 10)	MeV	74.0	87.2	94.9	100.4			
Specific Conductivity (+/- 3%)	mS/cm ^c	0.528	0.527	0.526	0.528			
Conductivity (+/- 3%)	mS/cm	—	—	—	—			
pH (+/- 0.1)	pH unit	7.69	7.22	6.94	6.78			
Temp (+/- 0.5)	C°	16.51	14.64	14.46	14.04			
Color	Visual	clear	cloudy	cloudy	cloudy			
Odor	Olfactory	none	none	none	none			

Comments:

Sample @ 1235

Monitoring Well Purging / Sampling Form

Project Name and Number:

Tuxedo

Monitoring Well Number:

R1-5A

Date:

9/9/16

Samplers:

GO + MKC

Sample Number:

R1-5A 090916 QA/QC Collected? —

Purging / Sampling Method:

Three Well Volumes - waterma

1. L = Well Depth:

81.88 feet

2. D = Riser Diameter (I.D.):

0.17 feet

3. W = Depth to Water:

17.12 feet

4. C = Column of Water in Well:

39.27 feet

5. V = Volume of Water in Well = $C(3.14159)(0.5D)^2(7.48)$

6.40 gal

6. 3(V) = Target Purge Volume

19.20 gal

D (inches)	D (feet)
1-inch	0.08
2-inch	0.17
3-inch	0.25
4-inch	0.33
6-inch	0.50

Conversion factors to determine V given C

D (inches)	1-inch	2-inch	3-inch	4-inch	6-inch
V (gal / ft)	0.041	0.163	0.37	0.65	1.5

Water Quality Readings Collected Using

YSI 556 + Mach 2100a

Parameter	Units	Readings						
Time	24 hr	<u>1124</u>	<u>1128</u>	<u>1133</u>	<u>1140</u>			
Water Level (0.33)	feet							
Volume Purged	gal	<u>0</u>	<u>6.5</u>	<u>13</u>	<u>19.5</u>			
Flow Rate	mL/min	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>			
Turbidity (+/- 10%)	NTU	<u>52.4</u>	<u>42.1</u>	<u>67.5</u>	<u>37.5</u>			
Dissolved Oxygen (+/- 10%)	%	<u>103.8</u>	<u>102.6</u>	<u>80.1</u>	<u>85.3</u>			
Dissolved Oxygen (+/- 10%)	mg/L	<u>10.12</u>	<u>10.51</u>	<u>9.44</u>	<u>8.53</u>			
Eh / ORP (+/- 10)	MeV	<u>16.4</u>	<u>21.7</u>	<u>23.8</u>	<u>31.4</u>			
Specific Conductivity (+/- 3%)	mS/cm ^c	<u>0.289</u>	<u>0.228</u>	<u>0.260</u>	<u>0.269</u>			
Conductivity (+/- 3%)	mS/cm	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>			
pH (+/- 0.1)	pH unit	<u>8.24</u>	<u>8.39</u>	<u>8.64</u>	<u>8.80</u>			
Temp (+/- 0.5)	C°	<u>16.73</u>	<u>14.12</u>	<u>13.54</u>	<u>15.62</u>			
Color	Visual	<u>cloudy</u>	<u>cloudy</u>	<u>cloudy</u>	<u>cloudy</u>			
Odor	Olfactory	<u>None</u>	<u>none</u>	<u>none</u>	<u>none</u>			

Comments:

Sample @ 1142

Appendix B

Laboratory Data

Laboratory Report

AECOM Technical Services, Inc.
40 British American Blvd.
Latham, NY 12110

Work Order: R0834
Project : Tuxedo Waste Disposal
Project #:

Attn: Mark Howard

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
R0834-01	MW-3	Aqueous	08-Sep-16 11:38	10-Sep-16 10:00
R0834-02	RI-1	Aqueous	08-Sep-16 13:15	10-Sep-16 10:00
R0834-03	MW-5	Aqueous	08-Sep-16 12:42	10-Sep-16 10:00
R0834-04	MW-6	Aqueous	08-Sep-16 13:50	10-Sep-16 10:00
R0834-05	RI-2	Aqueous	08-Sep-16 14:45	10-Sep-16 10:00
R0834-06	RI-4	Aqueous	08-Sep-16 14:28	10-Sep-16 10:00
R0834-07	RI-5A	Aqueous	09-Sep-16 11:42	10-Sep-16 10:00
R0834-08	MW-4	Aqueous	09-Sep-16 12:35	10-Sep-16 10:00
R0834-09	RI-3	Aqueous	09-Sep-16 14:25	10-Sep-16 10:00
R0834-10	MW-2	Aqueous	09-Sep-16 14:30	10-Sep-16 10:00

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the sample(s) as received. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

All applicable NELAP or USEPA CLP requirements have been met.

Use of the NELAP logo does not insure that Eurofins Spectrum Analytical is currently accredited for the specific test method or analyte. Please refer to our Quality page of our web site at www.EurofinsUS.com for the current list of certifications and fields of accreditation.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Certification List:

Connecticut	PH-0153
Florida	E87664
Massachusetts	M-RI907
New Hampshire	2060
New Jersey	RI001
New York	11522
Rhode Island	LAI00349
USDA	P330-16-00031
USEPA - ISM	EP-W-14-032
USEPA - SOM	EP-W-14-032
Dod ELAP	L2247



Authorized by:

Dawn E Wojcik

Dawn Wojcik
Laboratory Director

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

New York State Department of Environmental Conservation Sample Identification and Analytical Requirements Summary

Project Name : Tuxedo Waste Disposal

SDG : R0834

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		MSVOA Method #	MSSEMI Method #	GC* Method #	ME	Other
MW-3	R0834-01				SW6010_W	
MW-3	R0834-01				SW7470	
RI-1	R0834-02				SW6010_W	
RI-1	R0834-02				SW7470	
MW-5	R0834-03				SW6010_W	
MW-5	R0834-03				SW6010_W	
MW-5	R0834-03				SW7470	
MW-5	R0834-03				SW7470	
MW-6	R0834-04				SW6010_W	
MW-6	R0834-04				SW6010_W	
MW-6	R0834-04				SW7470	
MW-6	R0834-04				SW7470	
RI-2	R0834-05				SW6010_W	
RI-2	R0834-05				SW7470	
RI-4	R0834-06				SW6010_W	
RI-4	R0834-06				SW7470	
RI-5A	R0834-07				SW6010_W	
RI-5A	R0834-07				SW7470	
MW-4	R0834-08				SW6010_W	
MW-4	R0834-08				SW7470	
RI-3	R0834-09				SW6010_W	
RI-3	R0834-09				SW7470	
MW-2	R0834-10				SW6010_W	
MW-2	R0834-10				SW7470	

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

New York State Department of Environmental Conservation Sample Preparation and Analysis Summary ME

Project Name : Tuxedo Waste Disposal

SDG : R0834

Laboratory Sample ID	Matrix	Metals Requested	Date Received By Lab	Date Analyzed
SW6010_W				
R0834-01A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-02A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-03A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-03B	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-04A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-04B	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-05A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-06A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-07A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-08A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-09A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-10A	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-10ADUP	AQ	SW6010_W	9/10/2016	9/22/2016
R0834-10ADUP	AQ	SW6010_W	9/10/2016	9/21/2016
R0834-10AMS	AQ	SW6010_W	9/10/2016	9/21/2016
R0834-10AMS	AQ	SW6010_W	9/10/2016	9/22/2016
SW7470				
R0834-01A	AQ	SW7470	9/10/2016	9/22/2016
R0834-02A	AQ	SW7470	9/10/2016	9/22/2016
R0834-03A	AQ	SW7470	9/10/2016	9/22/2016
R0834-03B	AQ	SW7470	9/10/2016	9/22/2016
R0834-04A	AQ	SW7470	9/10/2016	9/22/2016
R0834-04B	AQ	SW7470	9/10/2016	9/22/2016
R0834-05A	AQ	SW7470	9/10/2016	9/22/2016
R0834-06A	AQ	SW7470	9/10/2016	9/22/2016
R0834-07A	AQ	SW7470	9/10/2016	9/22/2016
R0834-08A	AQ	SW7470	9/10/2016	9/22/2016
R0834-09A	AQ	SW7470	9/10/2016	9/22/2016
R0834-10A	AQ	SW7470	9/10/2016	9/22/2016

Parsons Spectrum Analytical, Inc. -- ESAI-RI

WorkOrder: R0834

Client ID: AECOM_LATHAM

Project: Tuxedo Waste Disposal

WO Name: Tuxedo Waste Disposal

Location: AECOM_TUXEDO,

Comments: N/A

Case:

SDG:

HC Due: 09/22/2016

Fax Due:

☐

Fax Report:

Report Level: ASP-A

Special Program:

EDD:

PO: 60323116.3

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
R0834-01A	MW-3	09/08/2016 11:38	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-01A	MW-3	09/08/2016 11:38	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-02A	RI-1	09/08/2016 13:15	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-02A	RI-1	09/08/2016 13:15	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-03A	MW-5	09/08/2016 12:42	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-03A	MW-5	09/08/2016 12:42	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-03B	MW-5	09/08/2016 12:42	09/10/2016	Aqueous	SW6010_W	/ Dissolved, TAL				Y	M4
R0834-03B	MW-5	09/08/2016 12:42	09/10/2016	Aqueous	SW7470	/ Dissolved, TAL					M4
R0834-04A	MW-6	09/08/2016 13:50	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-04A	MW-6	09/08/2016 13:50	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-04B	MW-6	09/08/2016 13:50	09/10/2016	Aqueous	SW6010_W	/ Dissolved, TAL				Y	M4
R0834-04B	MW-6	09/08/2016 13:50	09/10/2016	Aqueous	SW7470	/ Dissolved, TAL					M4
R0834-05A	RI-2	09/08/2016 14:45	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-05A	RI-2	09/08/2016 14:45	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-06A	RI-4	09/08/2016 14:28	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-06A	RI-4	09/08/2016 14:28	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-07A	RI-5A	09/09/2016 11:42	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-07A	RI-5A	09/09/2016 11:42	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-08A	MW-4	09/09/2016 12:35	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-08A	MW-4	09/09/2016 12:35	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-09A	RI-3	09/09/2016 14:25	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4

HT = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Client ID: AECOM_LATHAM

Project: Tuxedo Waste Disposal

WO Name: Tuxedo Waste Disposal

Location: AECOM_TUXEDO,

Comments: N/A

Case:

SDG:

PO: 60323116.3

HC Due: 09/22/2016

Fax Due:

☐

Fax Report:

Report Level: ASP-A

Special Program:

EDD:

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
R0834-09A	RI-3	09/09/2016 14:25	09/10/2016	Aqueous	SW7470	/ TAL					M4
R0834-10A	MW-2	09/09/2016 14:30	09/10/2016	Aqueous	SW6010_W	/ TAL				Y	M4
R0834-10A	MW-2	09/09/2016 14:30	09/10/2016	Aqueous	SW7470	/ TAL					M4

Sample Transmittal Documentation



eurofins

Spectrum Analytical

CHAIN OF CUSTODY RECORD

Special Handling:

- ☒ Standard TAT - 7 to 10 business days
☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
 Min. 24-hr notification needed for rushet
 Samples disposed after 60 days unless otherwise instructed.

Page 1 of 1

Report To: <u>Mark Howard</u> <u>AECom</u>	Invoice To: <u>AECom</u>	Project No: <u>60323116</u>
<u>40 British American Blvd</u>		Site Name: <u>Tuxedo Waste Disposal</u>
<u>Latham NY 12110</u>		Location: <u>Tuxedo</u> State: <u>NY</u>
Telephone #: <u>(518) 951-2200</u>		Sampler(s): <u>Michael Kuzin-Cornel</u>
Project Mgr: <u>Mark Howard</u>	Quote #: _____	<u>Greg Dunlavy</u>

F=Field Filtered 1=Na₂SO₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=Ascorbic Acid
 7=CH₃OH 8=NaHSO₄ 9=Deionized Water 10=H₃PO₄ 11= _____ 12= _____

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water
 O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
 X1= _____ X2= _____ X3= _____

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix				Containers				Analysis				Check if chlorinated	QA/QC Reporting Notes: * additional charges may apply	
					G=Grab	C=Composite	Relinquished by:	Received by:	Date:	Time:	Temp °C	Observed	Correction Factor	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		
MW-3	090816	9/8/16	1138	G					9/9/16	1530	23	23	0	N/A	N/A	1	X	NTU < 50, do not Filter	MA DEP MCP CAM Report? <input type="checkbox"/> Yes <input type="checkbox"/> No CT DPH RCP Report? <input type="checkbox"/> Yes <input type="checkbox"/> No
RI-1	090816		1315													1	X	NTU < 50, do not Filter	<input type="checkbox"/> Standard <input type="checkbox"/> No QC <input type="checkbox"/> DQA* <input type="checkbox"/> ASP A* <input type="checkbox"/> ASP B* <input type="checkbox"/> NJ Reduced* <input type="checkbox"/> NJ Full* <input type="checkbox"/> Tier II* <input type="checkbox"/> Tier IV*
MW-5	090816		1242													2	X	NTU > 50, Filter HNO ₃ present	<input type="checkbox"/> Other: _____ State-specific reporting standards: _____
MW-6	090816		1350													2	X	NTU > 50, Filter HNO ₃ present	
RI-2	090816		1445													1	X	NTU < 50, do not Filter	
RI-4	090816		1428													1	X	NTU < 50, do not Filter	
RI-5A	090916	9/9/16	1142													1	X	NTU < 50, do not Filter	
MW-4	090916		1235													1	X	NTU < 50, do not Filter	
RI-3	090916		1425													1	X	NTU < 50, do not Filter	
MW-2	090916		1430													1	X	NTU < 50, do not Filter	

Relinquished by: Michael Kuzin-Cornel Received by: Fidex
 Date: 9/9/16 Time: 1530 Temp °C: 23
 Observed: 23 Correction Factor: 0
 Condition upon receipt: ☒ Present ☐ Intact ☐ Broken
☐ Ambient ☒ Filled ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

Received By: <u>SB</u>		Page 01 of 00								
Reviewed By: <u>CS</u>		Log-in Date 09/10/2016								
Work Order: R0834	Client Name: AECOM Technical Services, Inc.									
Project Name/Event: Tuxedo Waste Disposal										
Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package. 1. Custody Seal(s) <u>Present / Absent</u> <u>Intact / Broken</u> 2. Custody Seal Nos. <u>N/A</u> 3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists <u>Present / Absent</u> 4. Airbill <u>AirBill / Sticker</u> <u>Present / Absent</u> 5. Airbill No. <u>FedEx 8104 1309 9580</u> 6. Sample Tags <u>Present / Absent</u> Sample Tag Numbers <u>Listed /</u> <u>Not Listed on Chain-of-Custody</u> 7. Sample Condition <u>Intact / Broken /</u> <u>Leaking</u> 8. Cooler Temperature Indicator Bottle <u>Present / Absent</u> 9. Cooler Temperature <u>2.3 °C</u> 10. Does information on TR/COCs and sample tags agree? <u>Yes / No</u> 11. Date Received at Laboratory <u>09/10/2016</u> 12. Time Received <u>10:00</u>		Preservation (pH)		Soil HeadSpace or Air Bubble > or equal to 1/4"						
		Lab Sample ID	HNO3		H2SO4	HCl	NaOH	H3PO4	VOA Matrix	
		R0834-01	<2							
		R0834-02	<2							
		R0834-03	<2							
		R0834-04	<2							
		R0834-05	<2							
		R0834-06	<2							
		R0834-07	<2							
		R0834-08	<2							
		R0834-09	<2							
		R0834-10	<2							
Sample Transfer										
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO									
Area #	Area #									
By	By									
On	On									
IR Temp Gun ID: MT-74		VOA Matrix Key: US = Unpreserved Soil A = Air UA = Unpreserved Aqueous H = HCl M = MeOH E = Encore N = NaHSO4 F = Freeze								
Coolant Condition: ICE										
Preservative Name/Lot No:										
		See Sample Condition Notification/Corrective Action Form Yes / <u>No</u>								

*** Metals ***

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: R0834

SW846 6010C, SW846 7470A

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test codes:
SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3005A

Aqueous Samples were prepared following procedures in laboratory test code: SW7470A

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

Instrument Code: OPTIMA4
Instrument Type: ICP
Description: Optima 8300 ICP-OES
Manufacturer: Perkin-Elmer
Model: Optima 8300 ICP-OES

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

Matrix spikes were performed on sample: MW-2 (R0834-10AMS).

Percent recoveries were within the QC limits.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

Duplicate analyses were performed on sample: MW-2 (R0834-10ADUP).

Relative percent differences were within the QC limits.

F. Serial Dilution (SD):

Serial Dilution analyses were performed on sample: MW-2 (R0834-10ASD).

Percent differences were within the QC limits.

G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Eurofins Spectrum Analytical, Inc. RI, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed:  _____

Date: 09/30/16

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.
- Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

- DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS Matrix Spike.
- MSD Matrix Spike Duplicate
- DUP Duplicate analysis
- SD Serial Dilution
- PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE


Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3
Lab Code: ESAI-RI Case No.: _____ SAS No.: _____ SDG No.: SR0834
SOW No.: SW846

EPA Sample No.	Lab Sample ID
<u>MW-2</u>	<u>R0834-10</u>
<u>MW-2D</u>	<u>R0834-10DUP</u>
<u>MW-2S</u>	<u>R0834-10MS</u>
<u>MW-3</u>	<u>R0834-01</u>
<u>MW-4</u>	<u>R0834-08</u>
<u>MW-5</u>	<u>R0834-03</u>
<u>MW-6</u>	<u>R0834-04</u>
<u>RI-1</u>	<u>R0834-02</u>
<u>RI-2</u>	<u>R0834-05</u>
<u>RI-3</u>	<u>R0834-09</u>
<u>RI-4</u>	<u>R0834-06</u>
<u>RI-5A</u>	<u>R0834-07</u>

Were ICP interelement corrections applied?	Yes/No	<u>Yes</u>
Were background corrections applied?	Yes/No	<u>Yes</u>
If yes-were raw data generated before application of background corrections?	Yes/No	<u>No</u>

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature

Signature:  Name: Sharyn B. Lawler
Date: 09/30/16 Title: QAD

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-2

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-10

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	92.3	B		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	7.3	B		P
7440-41-7	Beryllium	0.054	U		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	23800			P
7440-47-3	Chromium	0.95	B		P
7440-48-4	Cobalt	0.36	B		P
7440-50-8	Copper	1.2	U		P
7439-89-6	Iron	125	B		P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	6390			P
7439-96-5	Manganese	4.5	B		P
7439-97-6	Mercury	0.044	B		CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	1260			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	4130			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	2.8	B		P
7440-66-6	Zinc	3.2	U		P

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-3

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-01

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	292			P
7440-36-0	Antimony	5.1	B		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	29.6	B		P
7440-41-7	Beryllium	0.084	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	41400			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	2.9	B		P
7439-89-6	Iron	515			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	80.2			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	1970			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	107000			P
7440-28-0	Thallium	6.8	B		P
7440-62-2	Vanadium	1.1	B		P
7440-66-6	Zinc	6.4	B		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-4

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-08

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	290			P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	6.9	B		P
7440-39-3	Barium	26.7	B		P
7440-41-7	Beryllium	0.073	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	52600			P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	0.64	B		P
7440-50-8	Copper	5.1	B		P
7439-89-6	Iron	466			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	2360			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	43100			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	0.70	B		P
7440-66-6	Zinc	5.4	B		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-5

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-03

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11.0	U		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	8.1	B		P
7440-39-3	Barium	63.0	B		P
7440-41-7	Beryllium	0.055	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	115000			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	5.4	B		P
7439-89-6	Iron	47.0	U		P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	16600			P
7439-96-5	Manganese	244			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	2.0	B		P
7440-09-7	Potassium	4920			P
7782-49-2	Selenium	11.9	B		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	11100			P
7440-28-0	Thallium	5.3	B		P
7440-62-2	Vanadium	0.16	U		P
7440-66-6	Zinc	14.8	B		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-6

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-04

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	22.0	B		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	46.8	B		P
7440-41-7	Beryllium	0.058	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	99100			P
7440-47-3	Chromium	0.40	B		P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	1.2	U		P
7439-89-6	Iron	47.0	U		P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	8530			P
7439-96-5	Manganese	1450			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	3840			P
7782-49-2	Selenium	13.8	B		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	8300			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	0.16	U		P
7440-66-6	Zinc	3.2	U		P

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-1

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-02

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	308			P
7440-36-0	Antimony	5.8	B		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	16.2	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	56100			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	1.3	B		P
7439-89-6	Iron	201			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	9920			P
7439-96-5	Manganese	5.1	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	1.5	B		P
7440-09-7	Potassium	2760			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	23200			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	1.3	B		P
7440-66-6	Zinc	3.2	U		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-2

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-05

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11.0	U		P
7440-36-0	Antimony	6.7	B		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	11.8	B		P
7440-41-7	Beryllium	0.054	U		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	26700			P
7440-47-3	Chromium	3.0	B		P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	1.2	U		P
7439-89-6	Iron	47.0	U		P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	6820			P
7439-96-5	Manganese	7.4	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	28.0	B		P
7440-09-7	Potassium	1230			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	53400			P
7440-28-0	Thallium	2.7	B		P
7440-62-2	Vanadium	0.16	U		P
7440-66-6	Zinc	3.2	U		P

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-3

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-09

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5630			P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	4.6	B		P
7440-39-3	Barium	134	B		P
7440-41-7	Beryllium	1.2	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	54400			P
7440-47-3	Chromium	5.2	B		P
7440-48-4	Cobalt	13.6	B		P
7440-50-8	Copper	35.6			P
7439-89-6	Iron	3780			P
7439-92-1	Lead	9.5	B		P
7439-95-4	Magnesium	13600			P
7439-96-5	Manganese	999			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	10.4	B		P
7440-09-7	Potassium	2010			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	32300			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	5.6	B		P
7440-66-6	Zinc	37.0	B		P

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-4

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-06

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	912			P
7440-36-0	Antimony	5.9	B		P
7440-38-2	Arsenic	7.3	B		P
7440-39-3	Barium	62.0	B		P
7440-41-7	Beryllium	0.095	B		P
7440-43-9	Cadmium	1.3	B		P
7440-70-2	Calcium	90500			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	22.4	B		P
7439-89-6	Iron	2430			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	8910			P
7439-96-5	Manganese	402			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	36.1	B		P
7440-09-7	Potassium	9240			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	8180			P
7440-28-0	Thallium	6.4	B		P
7440-62-2	Vanadium	1.6	B		P
7440-66-6	Zinc	72.6			P

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

RI-5A

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Lab Sample ID: R0834-07

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	152	B		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	16.5	B		P
7440-41-7	Beryllium	0.054	U		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	36000			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.42	B		P
7440-50-8	Copper	1.2	U		P
7439-89-6	Iron	74.1	B		P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	4270			P
7439-96-5	Manganese	6.4	B		P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	4950			P
7782-49-2	Selenium	7.8	U		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	12200			P
7440-28-0	Thallium	15.2	B		P
7440-62-2	Vanadium	1.8	B		P
7440-66-6	Zinc	3.2	U		P

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Solid LCS Source:

LCS(D) ID:

Aqueous LCS Source:

LCS-85460

Analyte	Aqueous (ug/L)			Solid (mg/Kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	10000.0	10291.30	102.9						
Antimony	500.0	542.67	108.5						
Arsenic	500.0	408.04	81.6						
Barium	10000.0	10220.89	102.2						
Beryllium	250.0	256.75	102.7						
Cadmium	250.0	255.55	102.2						
Calcium	25000.0	25375.55	101.5						
Chromium	1000.0	993.78	99.4						
Cobalt	2500.0	2504.03	100.2						
Copper	1250.0	1231.12	98.5						
Iron	5000.0	4625.58	92.5						
Lead	500.0	505.41	101.1						
Magnesium	25000.0	25492.71	102.0						
Manganese	2500.0	2559.99	102.4						
Nickel	2500.0	2500.61	100.0						
Potassium	25000.0	26888.66	107.6						
Selenium	500.0	536.13	107.2						
Silver	1250.0	1251.11	100.1						
Sodium	25000.0	27135.75	108.5						
Thallium	500.0	468.58	93.7						
Vanadium	2500.0	2490.33	99.6						
Zinc	2500.0	2569.83	102.8						

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Solid LCS Source:

LCS(D) ID:

Aqueous LCS Source:

LCS-85481

Analyte	Aqueous (ug/L)			Solid (mg/Kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.64	100.9						

U.S. EPA - CLP

5A

EPA SAMPLE NO.

SPIKE SAMPLE RECOVERY

MW-2S

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	10500	92.3 B	10000	104		P
Antimony	75-125	558	5.1 U	500	112		P
Arsenic	75-125	456	3.9 U	500	91		P
Barium	75-125	10500	7.3 B	10000	105		P
Beryllium	75-125	260	0.054 U	250	104		P
Cadmium	75-125	259	0.53 U	250	104		P
Calcium	75-125	49500	23800	25000	103		P
Chromium	75-125	1010	0.95 B	1000	101		P
Cobalt	75-125	2540	0.36 B	2500	102		P
Copper	75-125	1250	1.2 U	1250	100		P
Iron	75-125	5050	125 B	5000	99		P
Lead	75-125	509	4.5 U	500	102		P
Magnesium	75-125	32500	6390	25000	105		P
Manganese	75-125	2630	4.5 B	2500	105		P
Nickel	75-125	2510	1.2 U	2500	101		P
Potassium	75-125	27900	1260	25000	107		P
Selenium	75-125	534	7.8 U	500	107		P
Silver	75-125	1290	2.7 U	1250	103		P
Sodium	75-125	30700	4130	25000	106		P
Thallium	75-125	492	2.4 U	500	98		P
Vanadium	75-125	2550	2.8 B	2500	102		P
Zinc	75-125	2570	3.2 U	2500	103		P

Comments:

U.S. EPA - CLP

6

EPA SAMPLE NO.

DUPLICATES

MW-2D

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		92.2861	B	90.1527	B	2.3		P
Antimony		5.1000	U	5.1000	U			P
Arsenic		3.9000	U	3.9000	U			P
Barium		7.2673	B	7.3243	B	0.8		P
Beryllium		0.0540	U	0.0540	U			P
Cadmium		0.5300	U	0.5300	U			P
Calcium		23790.9305		24443.8992		2.7		P
Chromium		0.9539	B	1.0985	B	14.1		P
Cobalt		0.3627	B	0.3600	U	200		P
Copper		1.2000	U	1.2000	U			P
Iron		125.3850	B	127.4203	B	1.6		P
Lead		4.5000	U	4.5000	U			P
Magnesium		6393.2818		6472.5985		1.2		P
Manganese		4.5375	B	4.4525	B	1.9		P
Nickel		1.2000	U	1.2000	U			P
Potassium	1000.0	1262.4358		1300.3372		3		P
Selenium		7.8000	U	7.8000	U			P
Silver		2.7000	U	2.7000	U			P
Sodium	1000.0	4129.7011		4229.8527		2.4		P
Thallium		2.4000	U	6.5944	B	200		P
Vanadium		2.7518	B	2.8689	B	4.2		P
Zinc		3.2000	U	3.2000	U			P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

MB-85481**FIMS2_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	09/22/16 16:55	C	09/22/16 17:22	C	09/22/16 17:37	C		C	
Mercury	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85460**OPTIMA3_160921A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	09/21/16 14:27	C	09/21/16 15:06	C	09/21/16 15:50	C		C	
Aluminum	11.0	U	27.9	B	11.0	U	11.0	U	21.914	B	P
Arsenic	3.9	U	5.0	B	3.9	U	3.9	U	3.900	U	P
Barium	1.2	B	1.5	B	1.2	B	1.8	B	0.730	U	P
Beryllium	0.1	U	0.1	U	0.1	B	0.1	U	0.054	U	P
Cadmium	0.5	U	0.5	U	0.5	U	0.5	U	0.530	U	P
Calcium	183.6	B	98.0	B	52.0	U	115.4	B	188.634	B	P
Chromium	0.3	U	0.3	B	0.3	U	0.3	U	0.250	U	P
Cobalt	0.4	U	0.5	B	0.4	U	0.4	U	0.419	B	P
Copper	1.2	U	1.2	U	1.2	U	1.2	U	1.200	U	P
Iron	47.0	U	47.0	U	47.0	U	47.0	U	47.000	U	P
Lead	4.5	U	4.5	U	4.5	U	4.5	U	4.500	U	P
Magnesium	5.2	U	15.3	B	5.8	B	5.2	U	5.200	U	P
Manganese	0.6	U	0.6	U	0.6	U	0.6	U	0.610	U	P
Nickel	1.2	U	1.2	U	1.2	U	1.2	U	1.200	U	P
Potassium	92.0	U	92.0	U	93.6	B	92.0	U	105.309	B	P
Selenium	7.8	U	7.8	U	7.8	U	7.8	U	7.800	U	P
Sodium	24.3	B	17.2	B	28.3	B	34.6	B	15.000	U	P
Thallium	-9.5	B	2.4	U	3.6	B	-4.9	B	8.258	B	P
Vanadium	0.6	B	0.4	B	0.4	B	0.6	B	0.160	U	P
Zinc	3.2	U	3.2	U	3.2	U	3.2	U	3.200	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85460**OPTIMA4_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	09/22/16 16:04	C	09/22/16 16:43	C	09/22/16 17:21	C		C	
Antimony	5.1	U	5.1	U	5.1	U	5.1	U	5.100	U	P
Silver	2.7	U	2.7	U	2.7	U	2.7	U	2.700	U	P

*** Metals ***

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : AECOM Technical Services, Inc.

Project: Tuxedo Waste Disposal

Laboratory Workorder / SDG #: R0834D

SW846 6010C, SW846 7470A (Dissolved Metals)

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous samples were reported as dissolved metals. The samples were filtered in the lab as soon as possible prior to digestion by method SW3005A and SW7470A.

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA

Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

Instrument Code: OPTIMA4
Instrument Type: ICP
Description: Optima 8300 ICP-OES
Manufacturer: Perkin-Elmer
Model: Optima 8300 ICP-OES

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

A Matrix Spike was not performed on any sample in this SDG.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

A Duplicate Analysis was not performed on any sample in this SDG.

F. Serial Dilution (SD):

A Serial Dilution Analysis was not performed on any sample in this SDG.

G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Eurofins Spectrum Analytical, Inc. RI, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed:  _____

Date: 09/30/16

Data Flag/Qualifiers (Page 1 of 2):

- U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).
- J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a “trace” concentration below the reporting limit and equal to or above the detection limit.
- D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis
- E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
- P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.
- A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

- N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
- * For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.
- L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.
- Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

- DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution
- RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.
- RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.
- RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.
- MS Matrix Spike.
- MSD Matrix Spike Duplicate
- DUP Duplicate analysis
- SD Serial Dilution
- PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

U.S.EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE


Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3
Lab Code: ESAI-RI Case No.: _____ SAS No.: _____ SDG No.: SR0834D
SOW No.: SW846

EPA Sample No.	Lab Sample ID
<u>MW-5</u>	<u>R0834-03</u>
<u>MW-6</u>	<u>R0834-04</u>

Were ICP interelement corrections applied?	Yes/No	<u>Yes</u>
Were background corrections applied?	Yes/No	<u>Yes</u>
If yes-were raw data generated before application of background corrections?	Yes/No	<u>No</u>

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature

Signature:  Name: Sharyn B. Lawler
Date: 09/30/16 Title: QAD

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-5

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Matrix (soil/water): WATER Lab Sample ID: R0834-03

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	74.5	B		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	6.5	B		P
7440-39-3	Barium	89.4	B		P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	117000			P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	2.8	B		P
7440-50-8	Copper	32.4			P
7439-89-6	Iron	5940			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	16900			P
7439-96-5	Manganese	2230			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	5.0	B		P
7440-09-7	Potassium	5110			P
7782-49-2	Selenium	10.1	B		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	9440			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	0.16	U		P
7440-66-6	Zinc	22.2	B		P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MW-6

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Matrix (soil/water): WATER Lab Sample ID: R0834-04

Level (low/med): MED Date Received: 09/10/2016

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	30.3	B		P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	3.9	U		P
7440-39-3	Barium	48.2	B		P
7440-41-7	Beryllium	0.054	U		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	99600			P
7440-47-3	Chromium	0.77	B		P
7440-48-4	Cobalt	0.40	B		P
7440-50-8	Copper	3.3	B		P
7439-89-6	Iron	7600			P
7439-92-1	Lead	4.5	U		P
7439-95-4	Magnesium	8670			P
7439-96-5	Manganese	1500			P
7439-97-6	Mercury	0.028	U		CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	3990			P
7782-49-2	Selenium	10.9	B		P
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	6430			P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	0.16	U		P
7440-66-6	Zinc	3.2	U		P

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Solid LCS Source:

LCS(D) ID:

Aqueous LCS Source:

LCS-85460

Analyte	Aqueous (ug/L)			Solid (mg/Kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Aluminum	10000.0	10291.30	102.9						
Antimony	500.0	542.67	108.5						
Arsenic	500.0	408.04	81.6						
Barium	10000.0	10220.89	102.2						
Beryllium	250.0	256.75	102.7						
Cadmium	250.0	255.55	102.2						
Calcium	25000.0	25375.55	101.5						
Chromium	1000.0	993.78	99.4						
Cobalt	2500.0	2504.03	100.2						
Copper	1250.0	1231.12	98.5						
Iron	5000.0	4625.58	92.5						
Lead	500.0	505.41	101.1						
Magnesium	25000.0	25492.71	102.0						
Manganese	2500.0	2559.99	102.4						
Nickel	2500.0	2500.61	100.0						
Potassium	25000.0	26888.66	107.6						
Selenium	500.0	536.13	107.2						
Silver	1250.0	1251.11	100.1						
Sodium	25000.0	27135.75	108.5						
Thallium	500.0	468.58	93.7						
Vanadium	2500.0	2490.33	99.6						
Zinc	2500.0	2569.83	102.8						

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Solid LCS Source:

LCS(D) ID:

Aqueous LCS Source:

LCS-85481

Analyte	Aqueous (ug/L)			Solid (mg/Kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Mercury	4.6	4.64	100.9						

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

MB-85398**FIMS2_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	09/22/16 16:55	C	09/22/16 17:22	C		C		C	
Mercury	0.028	U	0.028	U	0.028	U			0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

MB-85481**FIMS2_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C		C		C		C		C	
Mercury									0.028	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85398**OPTIMA3_160921A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	09/21/16 14:27	C	09/21/16 15:06	C		C		C	
Aluminum	11.0	U	27.9	B	11.0	U			11.000	U	P
Arsenic	3.9	U	5.0	B	3.9	U			3.900	U	P
Barium	1.2	B	1.5	B	1.2	B			0.730	U	P
Beryllium	0.1	U	0.1	U	0.1	B			0.054	U	P
Cadmium	0.5	U	0.5	U	0.5	U			0.530	U	P
Calcium	183.6	B	98.0	B	52.0	U			52.000	U	P
Chromium	0.3	U	0.3	B	0.3	U			0.250	U	P
Cobalt	0.4	U	0.5	B	0.4	U			0.360	U	P
Copper	1.2	U	1.2	U	1.2	U			1.200	U	P
Iron	47.0	U	47.0	U	47.0	U			47.000	U	P
Lead	4.5	U	4.5	U	4.5	U			4.500	U	P
Magnesium	5.2	U	15.3	B	5.8	B			5.200	U	P
Manganese	0.6	U	0.6	U	0.6	U			0.610	U	P
Nickel	1.2	U	1.2	U	1.2	U			1.200	U	P
Potassium	92.0	U	92.0	U	93.6	B			121.149	B	P
Selenium	7.8	U	7.8	U	7.8	U			7.800	U	P
Sodium	24.3	B	17.2	B	28.3	B			15.000	U	P
Thallium	-9.5	B	2.4	U	3.6	B			7.989	B	P
Vanadium	0.6	B	0.4	B	0.4	B			0.253	B	P
Zinc	3.2	U	3.2	U	3.2	U			3.200	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85460**OPTIMA3_160921A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C		C		C		C		C	
Aluminum									21.914	B	P
Arsenic									3.900	U	P
Barium									0.730	U	P
Beryllium									0.054	U	P
Cadmium									0.530	U	P
Calcium									188.634	B	P
Chromium									0.250	U	P
Cobalt									0.419	B	P
Copper									1.200	U	P
Iron									47.000	U	P
Lead									4.500	U	P
Magnesium									5.200	U	P
Manganese									0.610	U	P
Nickel									1.200	U	P
Potassium									105.309	B	P
Selenium									7.800	U	P
Sodium									15.000	U	P
Thallium									8.258	B	P
Vanadium									0.160	U	P
Zinc									3.200	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85398**OPTIMA4_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	09/22/16 16:04	C	09/22/16 16:43	C		C		C	
Antimony	5.1	U	5.1	U	5.1	U			5.100	U	P
Silver	2.7	U	2.7	U	2.7	U			2.700	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: 60323116.3

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0834D

Preparation Blank Matrix (soil/water): WATER

Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

MB-85460**OPTIMA4_160922A**

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C		C		C		C		C	
Antimony									5.100	U	P
Silver									2.700	U	P

Last Page of Data Report

Appendix E

Property Deeds

ORANGE COUNTY CLERK'S OFFICE RECORDING PAGE
THIS PAGE IS PART OF THE INSTRUMENT - DO NOT REMOVE



TYPE NAME(S) OF PARTY(S) TO DOCUMENT: BLACK INK

GEORGIA TECH FOUNDATION, INC
TO
RONALD IAZZETTI

SECTION 9 BLOCK 1 LOT 13

RECORD AND RETURN TO:
(Name and Address)

H.V. ABSTRACT CORP.
43 MAPLE AVENUE
NEW CITY, N.Y. 10956
914-634-8794/5

THERE IS NO FEE FOR THE RECORDING OF THIS PAGE

ATTACH THIS SHEET TO THE FIRST PAGE OF EACH

RECORDED INSTRUMENT ONLY

DO NOT WRITE BELOW THIS LINE

INSTRUMENT TYPE: DEED ☒ MORTGAGE ☐ SATISFACTION ☐ ASSIGNMENT ☐ OTHER ☐

PROPERTY LOCATION

2089 BLOOMING GROVE (TN)	4289 MONTGOMERY (TN)
2001 WASHINGTONVILLE (VLG)	4201 MAYBROOK (VLG)
2289 CHESTER (TN)	4203 MONTGOMERY (VLG)
2201 CHESTER (VLG)	4205 WALDEN (VLG)
2489 CORNWALL (TN)	4489 MOUNT HOPE (TN)
2401 CORNWALL (VLG)	4401 OTISVILLE (VLG)
2800 CRAWFORD (TN)	4600 NEWBURGH (TN)
2800 DEERPARK (TN)	4800 NEW WINDSOR (TN)
3089 GOSHEN (TN)	<input checked="" type="checkbox"/> 5089 TUXEDO (TN)
3001 GOSHEN (VLG)	5001 TUXEDO PARK (VLG)
3003 FLORIDA (VLG)	5200 WALLKILL (TN)
3005 CHESTER (VLG)	5489 WARWICK (TN)
3200 GREENVILLE (TN)	5401 FLORIDA (VLG)
3489 HAMPTONBURGH (TN)	5403 GREENWOOD LAKE (VLG)
3401 MAYBROOK (VLG)	5405 WARWICK (VLG)
3689 HIGHLANDS (TN)	5600 WAWAYANDA (TN)
3601 HIGHLAND FALLS (VLG)	5889 WOODBURY (TN)
3889 MINISINK (TN)	5801 HARRIMAN (VLG)
3801 UNIONVILLE (VLG)	
4089 MONROE (TN)	
4001 MONROE (VLG)	
4003 HARRIMAN (VLG)	
4005 KIRYAS JOEL (VLG)	

NO. PAGES 3 CROSS REF ☐
CERT. COPY ☐ AFFT. FILED ☐

PAYMENT TYPE: CHECK ☒
CASH ☐
CHARGE ☐
NO FEE ☐

CONSIDERATION \$ 40,000.
TAX EXEMPT ☐

MORTGAGE AMT \$ ☐
DATE ☐

MORTGAGE TYPE:

☐ (A) COMMERCIAL
☐ (B) 1 OR 2 FAMILY
☐ (C) UNDER \$10,000.
☐ (E) EXEMPT
☐ (F) 3 TO 6 UNITS
☐ (I) NAT.PERSON/CR.UNIO
☐ (J) NAT.PER-CR.UN/ OR
☐ (K) CONDO

CITIES

☐ 0800 MIDDLETOWN
☐ 1100 NEWBURGH
☐ 1300 PORT JERVIS

☐ 9899 HOLD

Joan A. Macchi

JOAN A. MACCHI
Orange County Clerk

RECEIVED FROM: *H. V. Abstract*

LIBER 4164 PAGE 234

RECEIVED

DEC 06 2010

AECOM - Albany, NY

STATE OF NEW YORK (COUNTY OF ORANGE) SS:
I, DONNA L. BENSON, COUNTY CLERK AND CLERK OF THE
SUPREME AND COUNTY COURTS, ORANGE COUNTY, NY,
HEREBY CERTIFY THAT I HAVE COMPARED THE ORIGINAL
THE ORIGINAL THEREOF FILED OR RECORDED IN THE
ON 11/6/95 AND THE SAME IS A TRUE AND
TRANSCRIPT THEREOF. IN WITNESS WHEREOF, I HAVE
HEREUNTO SET MY HAND AND AFFIXED MY OFFICIAL SEAL.

Donna L. Benson

COUNTY CLERK & CLERK OF THE SUPREME COUNTY COURTS,
ORANGE COUNTY DECEMBER 3, 2010

ORANGE COUNTY CLERK'S OFFICE 956 MLV
RECORDED/FILED 01/06/95 02:52:34 PM

FEES 44.00 EDUCATION FUND 15.00
SERIAL NUMBER: 004381

DEED CNTL NO 50622 RE TAX 160.00

Twp-191

CONSULT YOUR LAWYER BEFORE SIGNING THIS INSTRUMENT—THIS INSTRUMENT SHOULD BE USED BY LAWYERS ONLY.

THIS INDENTURE, made the 29th day of December, nineteen hundred and ninety-four
BETWEEN GEORGIA TECH FOUNDATION, INC., a corporation organized under
the laws of the State of Georgia with organization office and
a post office address at Atlanta, Georgia 30332, located at
225 North Avenue

party of the first part, and

RONALD IAZZETTI, residing at
(no number) Acoma Road
P.O. Box 515
Tuxedo Park, New York 10987

party of the second part,

WITNESSETH, that the party of the first part, in consideration of ~~two~~ ^{FORTY-THOUSAND (\$40,000.00)} dollars and other valuable
consideration paid by the party of the second part, does hereby grant and release unto the party of the
second part, the heirs or successors and assigns of the party of the second part forever,
ALL that certain plot, piece or parcel of land, with the building and improvements thereon erected,
situate, lying and being in the

SEE SCHEDULE A ATTACHED HERETO AND MADE A PART HEREOF.

This conveyance is made pursuant to a Resolution of the Board of
Trustees of Georgia Tech Foundation, Inc. duly adopted on December
20, 1994.

BEING AND INTENDED TO BE the same premises conveyed to the party of
the first part herein by deed dated December 12, 1977, made by
HAZARD E. REEVES and recorded in the Orange County Clerk's Office on
December 23, 1977, in Liber 2088, Page 70.

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and
roads abutting the above described premises to the center lines thereof; TOGETHER with the
appurtenances and all the estate and rights of the party of the first part in and to said premises; TO
HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or
successors and assigns of the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything
whereby the said premises have been encumbered in any way whatever, except as aforesaid.
AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of
the first part will receive the consideration for this conveyance and will hold the right to receive such
consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and
will apply the same first to the payment of the cost of the improvement before using any part of the total
of the same for any other purpose.
The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so
requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first
above written.

IN PRESENCE OF:

Paul J. McKenna

GEORGIA TECH FOUNDATION, INC.

By:

[Signature]
Vice President

LIBER 4164 PAGE 235

STATE OF NEW YORK, COUNTY OF

On the _____ day of _____, 19____, before me personally came

ss:

STATE OF NEW YORK, COUNTY OF

On the _____ day of _____, 19____, before me personally came

19____, before

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

GEORGIA

STATE OF ~~NEW YORK~~ COUNTY of FULTON

ss:

On the 27 day of December, 1994, before me personally came JAMES M. LANGLEY to me known, who, being by me duly sworn, did depose and say that he resides at No. 2347 WALTON PLACE, ATLANTA, GEORGIA, that he is the VICE PRESIDENT

of GEORGIA TECH FOUNDATION, INC., the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

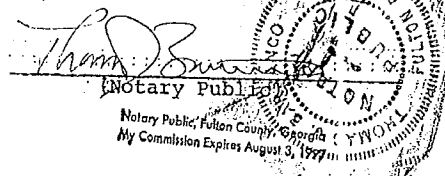
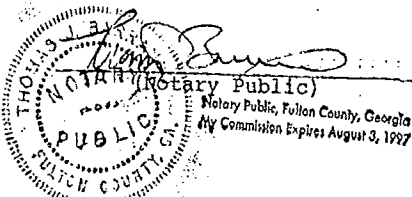
GEORGIA

STATE OF ~~NEW YORK~~ COUNTY of FULTON

ss:

On the 27 day of December, 1994, before me personally came JAMES PATRICK J. McINNES the subscribing witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides at No. 8445 HINDBROOK LANE, TUCKER, GEORGIA that he knows

JAMES M. Langley to be the individual described in and who executed the foregoing instrument; that he, said subscribing witness, was present and saw him execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.



Bargain and Sale Deed

WITH COVENANT AGAINST GRANTOR'S ACTS

TITLE No.

Two-191

GEORGIA TECH FOUNDATION, INC.

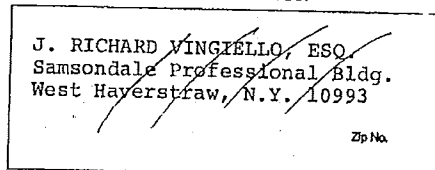
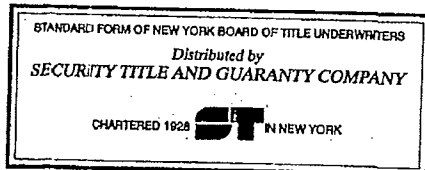
TO

RONALD IAZZETTI

SECTION 9
BLOCK 1
LOT 13

COUNTY OR TOWN Town of Tuxedo

RETURN BY MAIL TO:



H.V. ABSTRACT CORP.
43 MAPLE AVENUE
NEW CITY, N.Y. 10956
914-634-8794/5

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

LIBER 4164 PAGE 236

236

SCHEDULE A

Title No. TUX-191

Policy No.

ALL that piece, parcel or plot of land, situate, lying and being in the Town of Tuxedo, County of Orange and State of New York, bounded and described as follows:

BEGINNING at a point being located at the northwesterly corner of Lot Number 535, as shown on a Map entitled "Map of Property of The Tuxedo Park Association, Inc.", dated August, 1947, and filed in the Orange County Clerk's Office as Map Number 2320 on February 15, 1968, and going thence, along the easterly Right of Way of New York State Route 17 on the following six (6) courses and distances:

- (1) North 14° 17' 53" East, a distance of 224.37 feet to a point;
- (2) North 25° 54' 35" East, a distance of 234.58 feet to a point;
- (3) North 32° 49' 20" East, a distance of 137.45 feet to a point;
- (4) North 40° 38' 20" East, a distance of 83.68 feet to a point;
- (5) North 32° 51' 55" East, a distance of 105.96 feet to a point;
- (6) North 25° 23' 25" East, a distance of 87.86 feet to a point; and thence, along lands now or formerly of Anthony Cucolo, Sr., on the following three (3) courses and distances:

- (1) South 43° 54' 08" East, a distance of 299.04 feet to a point;
- (2) South 59° 22' 10" West, a distance of 93.64 feet to a point;
- (3) South 75° 39' 18" East, a distance of 250 feet more or less to a point; thence,

along the westerly right of way line of the Erie-Lackawanna Railroad Company on a curve to the south and east having a radius of 2914.43 feet and a length of 406.15 feet to a point, and going thence along lands of The Tuxedo Park Association, Inc., being on the westerly bank of the Ramapo River South 38° 32' 58" West, a distance of 240 feet more or less to a point located at the northeasterly corner of Lot Number 535, as shown on the aforesaid Map Number 2320, and going thence along the northerly line of Lot Number 535 North 75° 42' 07" West, a distance of 440 feet back to the point or place of BEGINNING.

LIBER 4164 PAGE 237

FORM 28-088-74 - (4-33)

NYSLTA CERTIFICATE OF TITLE-SCHEDULE A

THIS INDENTURE, made the 7th day of October, nineteen hundred and eighty-five

BETWEEN THRUWAY ASPHALT CO., a co-partnership consisting of

Frank D. Cooney, Jr., John T. Cooney and Edward

Petrillo, both residing at 125 Main St., Tarrytown, N.Y. 10591

party of the first part, and

Renard A. Barone
Route 17 P.O. 656
Tuxedo, New York 10987

and Sarkis Khourouzian
7 Ann Place
Sloatsburg, New York

party of the second part,

WITNESSETH, that the party of the first part, in consideration of Fifty-Five Thousand

(\$55,000.00)-----

dollars,

lawful money of the United States,

paid

by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings ~~and improvements~~ thereon erected, situate,

lying and being in the Town of Tuxedo, County of Orange, State of New York, lying on the easterly side of New York State Route 17 and being more particularly bounded and described as follows: BEGINNING at the northeasterly corner of a 1.375 acre parcel of land conveyed to PAUL BARTIE by the Tuxedo Park Association; Thence along the northeasterly line of said parcel and beyond, North 43 degrees 54' 08" West 260.67 feet to the easterly line of New York Route 17; Thence along the southeasterly line of New York State Route 17 on the following seven courses and distances: (1) North 31 degrees 01' 40" East 203.53 feet; (2) North 38 degrees 32' 10" East 193.33 feet; (3) North 18 degrees 07' 30" East 234.03 feet; (4) North 17 degrees 26' 40" East 75.98 feet; (5) North 15 degrees, 42' 30" East 232.41 feet; (6) North 13 degrees 14' 20" East 268.25 feet; (7) North 10 degrees 22' 10" West 175.00 feet; thence along lands to be retained by Tuxedo Park Association, North 83 degrees 11' 10" East 91.20 feet to the westerly line of the Erie Railroad Company; thence along the westerly line of the Erie Railroad Company on the following ten courses and distances: (1) South 10 degrees 12' 30" East 449.97 feet to a point of tangency; (2) On a curve to the right having a radius of 1383.00 feet for a distance of about 100.00 feet, the chord of said curve bears South 9 degrees 56' 20" East 100.00 feet; (3) A curve to the right having a radius of 1383.00 feet for a distance of about 97 feet, the chord of said curve bears South 6 degrees 47' 00" East 97.21 feet; (4) A curve to the right having a radius of 1383.00 feet for a distance of about 100 feet, the chord of said curve bears South 0 degrees 45' 30" West 100.45 feet; (5) A curve to the right having a radius of 1383.00 feet for a distance of about 171 feet, the chord of said curve bears South 0 degrees 36' 20" East 170.65 feet; (6) A curve to the right having a radius of 1383.00 feet for a distance of about 133 feet, the chord of said curve bears South 8 degrees 38' 20" West 133.15 feet; (7) A curve to the right having a radius of 1383.00 feet for a distance of about 153 feet, the chord of said curve bears South 14 degrees 27' 50" West 152.78 feet; (8) A curve to the right having a radius of 1383.00 feet for a distance of about 89 feet, the chord of said curve bears South 20 degrees 59' 10" West 88.51 feet; (9) A curve to the right having a radius of 1383.00 feet for a distance of about 138 feet, the chord of said curve bears South 24 degrees 14' 00" West 138.06 to a point of tangency; (10) South 25 degrees 43' 50" West 243.14 feet; thence along lands to be retained by Tuxedo Park Association North 76 degrees 31' 10" West 237.01 feet; thence North 30 degrees 37' 50" West 50.00 to the southeasterly line of lands now or formerly of Paul Bartie, thence along the southeasterly line of lands now or formerly of Paul Bartie, North 59 degrees 22' 10" East 81.85 feet to the point and place of beginning.

TOGETHER with all right, title and interest, if any, of the party of the first part of, in and to any streets and roads abutting the above-described premises to the center lines thereof,

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

~~AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the costs of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.~~

AND the party of the first part covenants as follows:

FIRST.—That said party of the first part is seized of the said premises in fee simple, and has good right to convey the same;

SECOND.—That the party of the second part shall quietly enjoy the said premises;

THIRD.—That the said premises are free from incumbrances, except as aforesaid;

FOURTH.—That the party of the first part will execute or procure any further necessary assurance of the title to said premises;

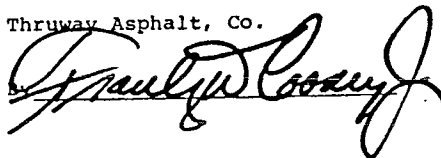
FIFTH.—That said party of the first part will forever warrant the title to said premises.

~~The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.~~

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.

IN PRESENCE OF:

Thruway Asphalt, Co.



STATE OF NEW YORK, COUNTY OF *Westchester* 53:

On the 7th day of October 1985, before me personally came Frank D. Cooney, Jr.

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

John T. Conover Jr

JAMES P. DONOHUE, JR.
Notary Public, State of New York
No. 60-4631181
Qualified in Westchester County
Commission Expires, March 30, 1986

STATE OF NEW YORK, COUNTY OF

On the _____ day of _____, 19____, before me personally came _____ to me known, who, being by me duly sworn, did depose and say that _____ he resides at No. _____

that he is the
of

in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

STATE OF NEW YORK, COUNTY OF

On the _____ day of _____ 19____, before me

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

STATE OF NEW YORK, COUNTY OF

On the day of 19 , before me
personally came
the subscribing witness to the foregoing instrument, with
whom I am personally acquainted, who, being by me duly
sworn, did depose and say that he resides at No.

that he knows

to be the individual described in and who executed the foregoing instrument; that he, said subscribing witness, was present and saw execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.

Title No. HA 5803

THRUWAY ASPHALT CO.

TO

BARONE & KHOUROUZIAN

Warranty Deed

The land affected by the within instrument
lies in Section in Block on the
Land Map of the County of

RECORDED AT REQUEST OF
And Return To:

BARONE & MACKAY, ESQS.
Tuxedo Square, P.O. Box 656
Tuxedo, New York 10987

Standard form of

NEW YORK BOARD

of

TITLE UNDERWRITERS

17-
2-
Haw Yácco

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

2436 79

RECEIVED
\$ 220.00
BANK OF AMERICA
NOV 7 1985
TRANSFER TAX
CLAY CO
COUNTY

Orange County Clerk's Office, has
Recorded on the 17th
of May 1885
at 9:21
A.M.
5436
and Examined.
1885

and Examined,
Munro S. Munro

STATE OF NEW YORK (COUNTY OF ORANGE)
 TOWN OF TOWN
 L. BENSON COUNTY OF ORANGE
 SUPREME AND COUNTY COURTS OF ORANGE
 COUNTY OF ORANGE
 I HEREBY CERTIFY THAT THE FOREGOING IS
 THE ORIGINAL THEREOF FILED OR RECORDED IN
 CH. 4/17/85 AND THE SAME IS A TRUE
 TRANSCRIPT THEREOF. IN WITNESS WHEREOF
 I HAVE HEREUNTO SET MY HAND AND AFFIRMED
 THE FOREGOING TRUE AND CORRECT.

Donna J. Brown
COUNTY CLERK & CLERK OF THE SUPREME COUNTY COURTS,
ORANGE COUNTY DECEMBER 3, 2012